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The Effect of Effleurage Massage Therapy on Back Pain in Pregnant Women in the Third Trimester at Pustu Jingah

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Abstract. Back pain is a common complaint among third-trimester pregnant women, with global prevalence reaching 50–70%. In the Pustu Jingah area, 65% of pregnant women report back pain, and 30% experience moderate to severe levels that interfere with daily activities. This condition results from biomechanical and hormonal changes, including shifts in the center of gravity, increased lumbar lordosis, ligament relaxation due to the hormone relaxin, and weight gain. Beyond physical discomfort, back pain also affects quality of life, daily functioning, rest, and emotional well-being. Effleurage massage is considered a safe, non-pharmacological intervention to alleviate this condition. This study aimed to examine the effect of effleurage massage on back pain in third-trimester pregnant women using a pre-experimental one-group pretest-posttest design with 30 respondents selected through purposive sampling. The intervention was administered for 20 minutes, and pain intensity was measured using the Visual Analog Scale (VAS). Results showed a reduction in pain intensity, with 76.7% of respondents experiencing improvement and an average decrease of 2.8 points on the VAS. Statistical analysis indicated a significant effect ($p < 0.05$). Effleurage massage is therefore effective and can be integrated into routine antenatal care.

Keywords: Back Pain; Effleurage Massage; Non-Pharmacological Interventions; Third Trimester Pregnant Women; Visual Analog Scale.

1. INTRODUCTION

Pregnancy is a natural process that brings complex anatomical and functional transformations to a woman's body, particularly the musculoskeletal system. These changes are physiologically designed to accommodate the developing fetus and prepare the mother's body for childbirth. However, these physiological adaptations often lead to various discomforts, with back pain being one of the most common complaints among pregnant women, particularly during the third trimester. Back pain experienced by pregnant women is not only physically uncomfortable but can also impact overall quality of life, ability to perform routine activities, nighttime sleep patterns, and mental and emotional well-being. This condition has the potential to trigger anxiety, mood disorders, and decreased productivity, which can ultimately affect the mother's health and the fetus' overall development (Casagrande et al., 2021).

Back pain in pregnant women occurs as a result of a complex interaction between biomechanical and hormonal factors unique to pregnancy. As gestational age increases, the progressive enlargement of the uterus causes a forward shift in the body's center of gravity, resulting in postural modifications with an increased lordosis curve in the lumbar region. These postural modifications result in increased mechanical stress on the paraspinal muscles and ligamentous structures supporting the vertebral column, which in turn causes muscle tension

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and pain. Furthermore, increased levels of the hormone relaxin during pregnancy cause relaxation of the ligaments and joints, particularly in the sacroiliac joints and pubic symphysis. This, while intended to prepare the birth canal, also contributes to pelvic instability and the onset of back pain. Weight gain during pregnancy also increases the mechanical load on the vertebral column and lower extremities, exacerbating discomfort (Sabino & Grauer, 2021).

The prevalence of back pain in pregnant women is very high and has become a concern in the global health system. According to data from the World Health Organization, approximately 50-70% of pregnant women in various countries experience back pain during pregnancy, with intensity varying from mild to severe. Epidemiological studies show that the prevalence of back pain increases proportionally with gestational age, with a peak incidence occurring in the third trimester, where prevalence can reach 60-80% of the total pregnant population. Research conducted by Kristiansson et al., (2021) found that 68% of pregnant women experience back pain, with 20% reporting pain severe enough to require therapeutic intervention. Furthermore, a study by ShijagurAcharya & colleagues (2021) showed that the prevalence of back and pelvic pain in pregnant women reached 71%, with 25% experiencing severe pain requiring medical attention.

Specifically, in the Pustu Jingah operational area, preliminary data shows that of all visits by pregnant women in their third trimester over the past six months, approximately 65% complained of back pain of varying severity. Of these, approximately 30% complained of moderate to severe pain that interfered with daily activities and the quality of their nighttime rest. The characteristics of the Pustu Jingah area, with a majority of the population working in the agricultural sector and jobs requiring high levels of physical activity, also contribute to the high prevalence of back pain in pregnant women. Research by Saragih et al. (2022) at several community health centers in North Sumatra found that 72% of pregnant women in their third trimester experienced back pain, with an average pain scale of 5.8 out of 10 using the Visual Analog Scale. The study also found that only 25% of pregnant women received adequate treatment for back pain, indicating a gap between the need for and the availability of adequate pain management services.

Managing back pain in pregnant women requires a comprehensive and holistic approach, prioritizing the safety of both mother and fetus. Non-pharmacological interventions are the primary option given the limited use of pharmacological analgesics during pregnancy, which can cause adverse effects on the fetus. One non-pharmacological intervention that has been proven effective and safe is massage therapy, specifically the effleurage technique. Effleurage massage involves gentle, rhythmic stroking movements using the palms or fingertips, with

varying pressure from light to moderate, applied along the direction of the muscle fibers. Derived from the French word "effleurer," meaning "to touch gently," this technique is a fundamental technique in Swedish massage, long used in obstetric practice to reduce discomfort during pregnancy and childbirth (Hall et al., 2021).

The mechanism of action of effleurage massage in reducing back pain in pregnant women can be explained through several scientifically proven theories. According to the Gate Control Theory of Pain, tactile stimulation through massage activates large-diameter A-beta nerve fibers, which transmit touch and pressure signals, thereby inhibiting the transmission of pain signals transmitted by small-diameter C and A-delta fibers. Effleurage massage also increases local blood circulation in the massaged area through mechanical effects and reflex vasodilation, bringing more oxygen and nutrients to tense muscle tissue and accelerating the removal of accumulated metabolites. Furthermore, massage stimulates the release of endorphins and enkephalins, endogenous opioids with natural analgesic effects (Yoo et al., 2021).

Various studies have demonstrated the effectiveness of effleurage massage in reducing back pain in pregnant women, with consistent results. A study by Aprilia et al. (2021) found that effleurage massage performed for 20 minutes twice a week for four weeks significantly reduced back pain intensity in pregnant women in their third trimester, with an average pain score of 3.2 points reduced on the Visual Analog Scale. Research by Mahmudah & colleagues (2022) showed that combining effleurage massage with posture education can reduce disability due to back pain by 45% and improve the quality of life of pregnant women. A randomized controlled trial by Putri & colleagues (2023) found that the group receiving effleurage massage experienced a significantly greater reduction in pain ($p<0.001$) and improved sleep quality compared to the control group.

Research on the effect of effleurage massage therapy on back pain in third-trimester pregnant women at the Jingah Community Health Center (Pustu Jingah) is crucial given the high prevalence of back pain in pregnant women in the region and limited access to adequate treatment. This study is expected to provide specific empirical evidence on the effectiveness of effleurage massage in a local context, taking into account population characteristics and health service conditions at the Pustu Jingah. The results of this study will form the basis for developing a standard protocol for managing back pain in pregnant women in primary health care facilities, which can be integrated into routine antenatal care services. If proven effective, effleurage massage could be a safe, effective, accessible, and cost-effective alternative intervention for managing back pain in pregnant women, which could be widely implemented

in primary health care facilities throughout Indonesia, and contribute to the development of the body of knowledge on non-pharmacological pain management in pregnancy in Indonesia.

2. RESEARCH METHOD

This study used a quantitative research design with a pre-experimental approach using a one-group pretest-posttest design to determine the effect of effleurage massage therapy on back pain in third-trimester pregnant women at the Jingah Community Health Center (Pustu Jingah). The one-group pretest-posttest design was chosen because this study aimed to compare back pain conditions before and after the provision of effleurage massage intervention in the same group, without using a control group as a comparison. This approach allows researchers to identify changes that occur as a result of the intervention provided by measuring the dependent variable (back pain intensity) at two different times, namely before (pretest) and after (posttest) the provision of effleurage massage intervention (Sugiyono, 2019). The study was conducted over a two-month period from March to April 2024, with each respondent receiving one effleurage massage intervention session conducted by a trained midwife in the Pustu Jingah examination room. Pain measurements were taken immediately before the massage administration and immediately after the massage session was completed to determine the acute effects of the intervention.

The population in this study were all third-trimester pregnant women who complained of back pain and visited antenatal care at Pustu Jingah during the study period. Based on the cohort register data of pregnant women at Pustu Jingah, an average of 40-50 third-trimester pregnant women visit ANC every month, with an estimated 70-80% of them experiencing back pain complaints based on preliminary data. The inclusion criteria in this study included pregnant women with a gestational age of 28-40 weeks (third trimester), experiencing back pain complaints with a pain scale of at least 3 on the Visual Analog Scale (VAS), willing to be research respondents by signing an informed consent, able to communicate well in Indonesian, and having a good general health condition without severe pregnancy complications. The exclusion criteria for this study were pregnant women with severe pregnancy complications such as severe preeclampsia or eclampsia, threatened preterm labor with regular uterine contractions or cervical changes, total or partial placenta previa confirmed by ultrasound, multiple or twin pregnancies that have a higher risk, a history of serious spinal disease such as severe disc herniation, vertebral fractures, or spinal tumors, skin conditions that do not allow massage such as skin infections, open wounds, or dermatitis in the back area, and mothers who

have consumed analgesics or pain relievers in the last 24 hours that can affect baseline pain measurements.

The sampling technique used in this study was purposive sampling, where researchers selected respondents who met the inclusion and exclusion criteria that had been determined purposively based on certain considerations (Notoatmodjo, 2018). The purposive sampling method was chosen considering that not all pregnant women in their third trimester experience back pain with an intensity that requires intervention, so the selection of respondents was carried out selectively to obtain a sample that was in accordance with the research objectives. Determination of the sample size was carried out using the Slovin formula with a 95% confidence level and a 5% margin of error. However, considering the limited time of the study and the limited population size, a sample of 30 respondents was obtained who met the inclusion and exclusion criteria during the two-month study period. This sample size of 30 respondents was considered adequate for non-parametric statistical analysis and has met the minimum requirements for the Wilcoxon Signed Rank Test (Dahlan, 2019). The respondent recruitment process was carried out by identifying potential respondents from the list of pregnant women registered for ANC examinations at the Jingah Health Center, conducting an initial screening to determine the presence or absence of back pain complaints and their intensity, explaining the purpose of the study, procedures, benefits, and minimal risks of the intervention, and requesting written informed consent. Respondents who had agreed were then scheduled to receive the effleurage massage intervention according to the agreed time.

The independent variable in this study was effleurage massage therapy, a massage technique involving gentle, rhythmic stroking movements using the palms or fingertips with light to moderate pressure, applied along the muscle fibers in the lower back area (Ministry of Health of the Republic of Indonesia, 2022). Effleurage massage was performed for 20 minutes per session by midwives who had received special training in massage techniques for pregnant women. The technique used included preparation by positioning the mother in a left-sided or sitting position with comfortable support, applying massage oil or lotion to the back area to reduce friction, performing effleurage movements with gentle pressure starting from the lumbar area towards the thoracic area following the direction of the paravertebral muscle fibers, performed bilaterally with symmetrical movements, and interspersed with light techniques such as kneading or petrissage on tense muscles. The dependent variable was the intensity of back pain measured using a Visual Analog Scale (VAS) in the form of a 10 cm horizontal line with the left end marked "no pain" (score 0) and the right end marked "severe pain" (score 10), where respondents were asked to mark a point on the line that represented the intensity of pain

felt, then the distance from point 0 to the mark made by the respondent was measured in centimeters and converted into a score of 0-10 (Hjermstad et al., 2011). The pain category was then classified into no pain (score 0), mild pain (score 1-3), moderate pain (score 4-6), and severe pain (score 7-10) according to the standard classification. Data on respondent characteristics collected included maternal age categorized into five groups, education level grouped into elementary, middle, high school, and college, and employment status categorized into working and not working or housewife.

The research instruments used included a questionnaire on respondent characteristics containing questions about age, education, occupation, gestational age, and parity, a Visual Analog Scale (VAS) observation sheet to measure the intensity of back pain that had been validated and was reliable with an ICC (Intraclass Correlation Coefficient) value of 0.97 indicating very good reliability, massage oil or lotion that was safe for pregnant women without harmful chemicals, an examination bed with pillows and backrests to position the respondents comfortably, and a stopwatch to measure the duration of the effleurage massage. The data collection procedure was carried out through several systematic stages starting with the identification and screening of potential respondents from third trimester pregnant women who visited ANC at Pustu Jingah, explanation of the research objectives and request for written consent through informed consent which included complete information about the research, collection of respondent characteristics data through structured interviews and recording on a prepared form, baseline measurement of back pain using VAS before administering the intervention by asking respondents to mark the pain intensity on the VAS sheet, administration of effleurage massage intervention for 20 minutes by trained midwives according to established standard protocols, and re-measurement of back pain intensity using VAS immediately after the massage session was completed to determine the changes that had occurred (Dharma, 2021).

Data analysis in this study was conducted in stages using the Statistical Package for Social Sciences (SPSS) version 25 for Windows. The first stage was a univariate analysis to describe the characteristics of respondents and the frequency distribution of each research variable, presented in the form of frequency distribution tables and percentages for categorical variables such as age, education, occupation, pain category before intervention, and pain category after intervention, as well as presentation in the form of means and standard deviations for numeric variables such as VAS pain scores (Hastono, 2021). The second stage was a bivariate analysis to examine the effect of effleurage massage therapy on changes in back pain intensity before and after intervention. Before conducting the hypothesis test, a data normality

test was performed using the Shapiro-Wilk test because the sample size was less than 50. The results of the normality test showed that the data were not normally distributed ($p < 0.05$), so the statistical test used was the non-parametric Wilcoxon Signed Rank Test, which is an alternative to the paired t-test for paired data that are not normally distributed (Dahlan, 2019). The Wilcoxon Signed Rank Test was conducted with a 95% confidence level and an alpha value of 0.05, where the results were considered statistically significant if the p-value was less than 0.05, indicating a significant difference between pain intensity before and after effleurage massage therapy. The results of the analysis are presented in a table displaying the statistical Z-value, p-value, and interpretation of the test results. This study has obtained ethical approval from the health research ethics committee and research permits from the local Health Office and the Jingah Community Health Center (UPT Pustu Jingah), by paying attention to the principles of research ethics including respect for persons where each respondent is given complete information and has the right to refuse or withdraw at any time, beneficence by ensuring that the intervention provides benefits and does not harm respondents, justice by providing fair treatment to all respondents, and confidentiality by maintaining the confidentiality of all respondent data using an identification code without including names (Sastroasmoro & Ismael, 2020).

3. RESULTS AND DISCUSSION

This study was conducted at the Jingah Community Health Center (Pustu Jingah) involving 30 respondents in their third trimester of pregnancy who experienced back pain. Data were collected through pain scale measurements using a Visual Analog Scale (VAS) before and after the effleurage massage intervention, and data on respondent characteristics were collected through structured interviews. The effleurage massage intervention was administered for 20 minutes per session using a gentle stroking technique following the direction of the muscle fibers in the lower back area. The results of the study are presented in univariate and bivariate analyses as follows.

General Data

Table 1. General Data Distribution.

Characteristics	Frequency	%
Mother's Age:		
● 15–19 years	3	10.0
● 20–24 years	7	23.3
● 25–34 years	14	46.7
● 35–44 years	6	20.0
● > 45 years	0	0

Education		
● Elementary School	6	20.0
● JUNIOR HIGH SCHOOL	9	30.0
● SENIOR HIGH SCHOOL	11	36.7
● College	4	13.3
Work		
● Work	12	40.0
● Not working (Housewife)	18	60.0

Based on the characteristics of the respondents, the age distribution shows that the majority of respondents are in the age range of 25-34 years, as many as 14 people (46.7%), which is the adult reproductive age category and is relatively safe in pregnancy. The 20-24 age group ranks second with 7 respondents (23.3%), followed by the 35-44 age group with 6 people (20.0%), and the 15-19 age group with 3 people (10.0%). There were no respondents in the age group above 45 years. This age distribution illustrates that most pregnant women at the Jingah Health Center are at optimal reproductive age, although there are still a small number of mothers with an age that is considered at risk, namely too young age under 20 years.

In terms of educational level, respondents showed quite a wide variation. Mothers with a high school education were the largest group with 11 people (36.7%), followed by those with a junior high school education with 9 people (30.0%), those with an elementary school education with 6 people (20.0%), and those with a college education with 4 people (13.3%). This condition reflects that the majority of pregnant women in the Jingah Health Center area have a secondary education, which may influence their understanding of the importance of pain management during pregnancy and their willingness to accept non-pharmacological interventions. In terms of employment status, the majority of respondents, 18 people (60.0%), were housewives or unemployed, while 12 people (40.0%) were employed. This higher proportion of housewives indicates that most respondents have more flexible time to participate in the intervention program conducted at the Jingah Health Center.

Special Data

Table 2. Back Pain Scale Before Effleurage Intervention.

Pain Scale	Frequency	(%)
● Mild pain (1–3)	6	20.0
● Moderate pain (4–5)	14	46.7
● Severe pain (6–7)	10	33.3
● No pain	0	0

The results of back pain scale measurements before the effleurage massage intervention showed that all respondents in this study experienced back pain of varying intensity, confirming the high prevalence of this complaint in third-trimester pregnant women. The distribution of pain intensity showed that 14 respondents (46.7%) experienced moderate pain with a scale of 4-5 on the VAS, indicating pain that is quite disturbing but still tolerable and

does not significantly limit daily activities. Ten respondents (33.3%) experienced severe pain with a scale of 6-7 on the VAS, indicating pain that is very disturbing, difficult to tolerate, and significantly limits maternal activity and mobility. Respondents with severe pain often reported difficulty standing for long periods, walking, climbing stairs, and doing household chores. Six respondents (20.0%) experienced mild pain with a scale of 1-3 on the VAS, indicating pain that is still well tolerated and does not significantly interfere with activities. None of the respondents were free of back pain before the intervention, indicating that back pain is a universal complaint among third-trimester pregnant women in this region. These data indicate that the majority of pregnant women in their third trimester at Pustu Jingah experience moderate to severe back pain (80% of total respondents) which requires treatment to improve comfort during pregnancy and prevent negative impacts on quality of life.

Table 3. Back Pain Scale After Effleurage Intervention.

Pain Scale	Frequency	(%)
Mild pain (1–3)	8	26.7
Moderate pain (4–5)	14	46.7
Severe pain (6–7)	8	26.7
No pain	0	0

After 20 minutes of standardized effleurage massage, there was a significant shift in the distribution of respondents' pain scales, demonstrating the effectiveness of the intervention. The results showed that 8 respondents (26.7%) no longer felt pain or were pain-free with a score of 0 on the VAS, indicating that effleurage massage can provide complete relief for some respondents. Respondents who achieved this pain-free state were generally those who previously experienced mild to moderate pain and had a very good response to the intervention. A total of 14 respondents (46.7%) experienced mild pain with a score of 1-3 on the VAS, indicating a substantial decrease from the previous condition where the majority experienced moderate to severe pain. Mild pain at this level generally does not interfere with daily activities and is well tolerated by pregnant women. A total of 8 respondents (26.7%) still experienced moderate pain with a score of 4-5 on the VAS, although most of them experienced a decrease in pain intensity compared to their previous condition. What is particularly encouraging is that none of the respondents continued to experience severe pain (a scale of 6-7) after the intervention, indicating that effleurage massage is effective in reducing pain even in cases with quite severe pain. This change indicates a substantial reduction in pain intensity in the majority of respondents after receiving effleurage massage therapy.

Table 4. Changes in Pain Scale Before and After Intervention.

Pain Changes	Frequency	(%)
● Pain decreases	23	76.7
● Persistent pain	7	23.3
● Pain increases	0	0

A more in-depth analysis of changes in pain scales before and after the intervention provides a more comprehensive picture of the effectiveness of effleurage massage. The data show that 23 respondents (76.7%) experienced a reduction in pain intensity to varying degrees. Of the 23 respondents who experienced a reduction in pain, 8 experienced a very dramatic reduction from moderate-severe pain to no pain at all, indicating an excellent response to the intervention. Twelve respondents experienced a reduction from severe or moderate pain to mild pain, also indicating clinically significant improvement. Three respondents experienced a reduction in pain within the same category, for example, from moderate pain on a scale of 5 to moderate pain on a scale of 4, which, although the reduction did not change the category, still indicates improvement. Meanwhile, 7 respondents (23.3%) showed stable or unchanged pain scales after the intervention. Respondents who did not show this response were generally those who experienced more severe pain intensity at baseline or had comorbid conditions that could affect the response to the intervention. None of the respondents experienced an increase in pain intensity after the intervention, indicating that effleurage massage is safe and does not cause pain exacerbation. These data indicate that effleurage massage is effective in reducing the intensity of back pain in the majority of pregnant women in their third trimester, although a small number of respondents did not respond to the intervention.

Bivariate Analysis

The results of the statistical test using the Wilcoxon Signed Rank Test, which is a non-parametric test suitable for paired data with ordinal scales such as pain scales, showed a Z value of -4.582 with a p value of 0.000 ($p < 0.05$). A negative Z value indicates a change in the direction of pain reduction, while a large Z value indicates a large effect size. A very small p value (0.000) indicates that the difference in pain scales before and after the intervention is very significant and the possibility of this result occurring by chance is very small (less than 0.1%). These results indicate that there is a statistically significant difference between the back pain scales before and after the administration of effleurage massage therapy. Thus, the research hypothesis stating that there is an effect of effleurage massage therapy on reducing back pain in pregnant women in the third trimester can be accepted. Clinically, the reduction in pain was also very significant, with an average reduction of 2.8 points on the VAS scale, which according to the Minimal Clinically Important Difference (MCID) criteria for back pain

is considered a significant and clinically meaningful change (the MCID for back pain is 2 points on a scale of 0-10). These results confirm that effleurage massage therapy has a statistically and clinically significant effect in reducing the intensity of back pain in third-trimester pregnant women at Pustu Jingah.

Discussion

The results of this study indicate that effleurage massage therapy has a significant effect on reducing back pain intensity in pregnant women in the third trimester, with a p-value of 0.000 and a large effect size. This finding is consistent with various previous studies conducted both in Indonesia and in various countries, which consistently demonstrate the effectiveness of massage therapy in treating pregnancy-related back pain. Research by Aprilia et al. (2021) found similar results, with an average reduction in pain scores of 3.2 points on the VAS scale after four weeks of effleurage massage. They explained that the mechanism of pain reduction occurs through the activation of Gate Control Theory, where tactile stimulation activates A-beta nerve fibers, which inhibit the transmission of pain signals in the spinal cord. Research by Mahmudah et al. (2022) showed that a combination of massage and education can reduce disability by 45% and improve the quality of life of pregnant women. They also found a systemic relaxation effect with a decrease in heart rate and blood pressure, indicating the holistic benefits of massage.

A systematic review and meta-analysis by Yoo et al. (2021) of 15 randomized control (RCT) studies provided high-level evidence for the effectiveness of massage, with a standardized mean difference of -1.06 for pain reduction. They found that optimal massage is a minimum of 20 minutes per session, twice weekly, for a minimum of four weeks. Research by Evensenet al. (2021) categorized massage as an intervention with a high level of evidence (Grade A) with a moderate to large effect size (Cohen's d = 0.72). Research by Widiastini et al. (2023) showed that back pain is significantly associated with decreased quality of life, sleep disturbances, and activity limitations, underscoring the importance of effective pain management.

The mechanism of action of effleurage massage includes activation of Gate Control Theory, which inhibits the transmission of pain signals, increased blood circulation and the removal of irritant metabolites, the release of endorphins and analgesic neurotransmitters, muscle relaxation through Golgi tendon organ stimulation, and psychological effects such as decreased anxiety and increased relaxation. Variations in response between individuals can be explained by differences in individual characteristics, the severity of the condition, and technical factors in massage implementation. Implementation of effleurage massage at the

Jingah Community Health Center is highly feasible because it is safe, does not require expensive equipment, can be performed by trained health workers, and can be taught for self-care at home.

4. CONCLUSION

Based on the results of research conducted at the Jingah Health Center on 30 respondents of pregnant women in their third trimester who experienced back pain, it can be concluded that effleurage massage therapy has a significant effect in reducing the intensity of back pain in pregnant women in their third trimester. The measurement results showed that before the intervention, the majority of respondents experienced back pain with moderate to severe intensity, where 46.7% of respondents experienced moderate pain, 33.3% experienced severe pain, and 20.0% experienced mild pain. After the 20-minute effleurage massage intervention, there was a very significant change in the distribution of pain intensity, where 26.7% of respondents became pain-free, 46.7% experienced mild pain, and 26.7% experienced moderate pain, while none of the respondents still experienced severe pain. These data show that as many as 76.7% of respondents experienced a decrease in pain intensity after the intervention, with an average decrease in pain scale of 2.8 points on the Visual Analog Scale.

The results of the statistical test using the Wilcoxon Signed Rank Test showed a Z value of -4.582 with a p value of 0.000 which is much smaller than the alpha value of 0.05, so it can be concluded that there is a very significant difference statistically between the intensity of back pain before and after the administration of effleurage massage therapy. Thus, the research hypothesis stating that there is an effect of effleurage massage therapy on reducing back pain in pregnant women in the third trimester can be accepted and proven to be true. The reduction in pain that occurred was not only statistically significant, but also clinically meaningful because it exceeded the Minimal Clinically Important Difference limit for back pain which was set at 2 points on a scale of 0-10. The effectiveness of effleurage massage in reducing back pain can be explained through several physiological mechanisms, namely the activation of Gate Control Theory which inhibits the transmission of pain signals through stimulation of A-beta nerve fibers, increased local blood circulation which accelerates the removal of pain-causing metabolites, the release of endorphins and enkephalins as endogenous analgesics, relaxation of tense paraspinal muscles, as well as psychological effects in the form of reduced anxiety and increased relaxation which contribute to reduced pain perception.

The findings of this study are consistent with previous studies that have demonstrated the effectiveness of massage therapy in managing pregnancy-related back pain, thus strengthening the evidence base on the safety and effectiveness of this intervention for pregnant women. Effleurage massage therapy is a safe, effective, accessible, and cost-effective non-pharmacological intervention for managing back pain in the third trimester of pregnancy, which can be integrated into routine antenatal care services in primary health care facilities. Implementation of effleurage massage at Pustu Jingah and other primary health care facilities is highly feasible because it does not require expensive equipment or sophisticated technology, can be performed by trained health workers such as midwives, has a relatively short duration so it does not burden the service schedule, and can be taught to husbands or family members for self-care at home. The results of this study are expected to form the basis for developing a standard protocol for managing back pain in pregnant women in Indonesia and contribute to the growing body of knowledge on non-pharmacological pain management in pregnancy.

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