International Journal of Nursing and Midwifery Science (IJNMS)

http://ijnms.net/index.php/ijnms
e- ISSN: 2686-2123
p- ISSN: 2686-0538
ORIGINAL RESEARCH

IMPLEMENTATION OF PREGNANT MASSAGE AT THE BL40 (WEIZHONG) ACUPRESSURE POINT TO REDUCE LOWER BACK PAIN IN PREGNANT WOMEN IN THE 2ND AND 3RD TRIMESER

Naning Puji Suryantini
Universitas Bina Sehat PPNI Mojokerto
Corresponding Email: naning.bidan82@gmail.com

ABSTRACT

Lower back pain is the most common form of discomfort during pregnancy experienced by mothers, especially in the second and third trimesters. Hormonal changes, weight gain, and biomechanical adaptations of the body are the main factors causing this complaint. The impact is not only pain but also disrupts daily activities, sleep quality, and increases stress. Pharmacological management is not always safe, so non-pharmacological interventions are more recommended. One potential method is pregnancy massage with stimulation of the BL40 (Weizhong) acupressure point, which works to relax muscles, improve circulation, and stimulate the release of endorphins. This study used a quasi-experimental design with a pretest–posttest without a control group. The sample consisted of 30 pregnant women in their second and third trimesters who experienced lower back pain and received antenatal care at the Sujiati Nur Elys TPMB, Dlanggu District, Mojokerto Regency. The intervention was given three times a week, with pain measured using the Numeric Rating Scale (NRS). The results showed that before the intervention, the majority of respondents experienced severe pain (53.3%), while after the intervention, none experienced severe pain. A total of 26.7% of respondents had no pain, 53.3% had mild pain, and 20% had moderate pain. The Wilcoxon test showed p = 0.000 ($p < 0.05$), indicating a significant difference before and after the intervention. Thus, pregnancy massage at the BL40 point has been proven effective in reducing lower back pain in pregnant women.

Keywords

Pregnant massage **; Acupressure ; BL40 point; Lower back pain; Pregnant women**

INTRODUCTION

Pregnancy is a crucial period that begins with conception and continues until the fetus develops in the womb. This period lasts approximately 280 days, or 40 weeks, calculated from the first day of the last menstrual period . (Handayani et al., 2025).During this period, the pregnant woman's body undergoes various physiological, psychological, and hormonal changes. These adaptations often lead to physical and emotional discomfort, which

can impact the mother's quality of life. One of the most common physical complaints is musculoskeletal discomfort. This condition primarily occurs in the second and third trimesters due to changes in posture due to the enlarging uterus, weight gain, and the effects of the hormone relaxin, which affects the ligaments and muscles of the back, leading to lower back pain *(* LBP).(Almanda et al., 2024)

Globally, the WHO (2023) reports that low back pain (LBP) is estimated to affect 40–70% of pregnant women (Salari et al., 2023; Huang et al., 2024). LBP not only impacts physical health but also affects daily activities and reduces the mother's quality of life. In Indonesia, the prevalence of back pain in pregnant women ranges from 60–80%, mostly with mild to moderate intensity (Widiyastika et al., 2023). Data from East Java shows a prevalence rate of around 65%, meaning more than half of pregnant women experience LBP (Handayani & Wardiyah, 2023). In Mojokerto Regency, a 2023 maternal health survey reported that 65% of pregnant women in the second and third trimesters experienced LBP, but only 30% received optimal non-pharmacological interventions (Mojokerto Regency Health Office, 2023). Initial interviews at one of the TPMB in Mojokerto in August 2025 showed that all 30 pregnant women in their second–third trimester complained of lower back pain with varying intensity from mild to severe.

The discomfort caused by back pain affects the mother physically and psychologically. Excessive stress impacts the hormonal system, such as increased levels of adrenaline and noradrenaline, as well as muscle tension. This can lead to biochemical dysregulation, which impacts the well-being of pregnant women. In fact, stress and anxiety are known to trigger increased corticotropin levels, which interact with oxytocin, causing premature contractions and potentially leading to premature labor (Nurbaiti & Tiwi, 2024).

Managing lower back pain in pregnant women is crucial and can be achieved through pharmacological and non-pharmacological therapies. Pharmacological approaches involve the use of opioids, non-steroidal anti-inflammatory drugs (NSAIDs), and other analgesics (Resmi & Tyarini, 2020). Non-pharmacological interventions are preferred because they are considered safer and have fewer side effects. One example is *pregnancy massage* with stimulation of the BL40 (Weizhong) acupressure point. *Pregnant massage* is a massage technique specifically for pregnant women that aims to promote relaxation, improve circulation, reduce cramps, lower back pain, and lower stress levels. Acupressure works by applying pressure to specific points to stimulate the release of endorphins, which suppress pain transmission to the spinal cord and brain while increasing blood and oxygen supply to the affected area, thereby reducing symptoms (Ministry of Health of the Republic of Indonesia, 2021). The BL40 point itself is known to be effective in reducing lower back pain due to its strategic position along major nerve and muscle pathways (Chan, 2024).

Several studies support the effectiveness of this method. Research at the Sumbersari Community Health Center (Puskesmas) showed that prenatal massage significantly reduced lower back pain in pregnant women in their third trimester. Using a sample of 30 respondents and measured using the NRS scale, the Wilcoxon test demonstrated a significant difference before and after the intervention ($p < 0.05$) (Pratiwi, 2023). Another study by Robaniyah et al. (2024) at the Karang Rejo Community Health Center in Tarakan City also demonstrated that acupressure at points BL23, GV3, GV4, and BL40 effectively reduced the intensity of lower back pain in 34 pregnant women in their third trimester with significant results ($p < 0.05$) (Robaniyah et al., 2024).

Non-pharmacological interventions for lower back pain, such as yoga, prenatal exercises, and warm compresses, have been widely studied. However, studies focusing on prenatal massage with BL40 (Weizhong) point stimulation are still limited. Therefore, researchers are interested in conducting a study entitled "Implementation of Pregnant Massage at the BL40 (Weizhong) Acupressure Point to Reduce Lower Back

Pain in Pregnant Women in the Second and Third Trimesters at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency."

METHOD

This study used **a quantitative method** with **a quasi-experimental design (quasi-experiment)** using *a pretest-posttest design without a control group* . The study was conducted to determine the effect of **pregnancy massage with stimulation of the BL40 (Weizhong) acupressure point** on **reducing lower back pain in pregnant women in the second and third trimesters** . The intervention was carried out **three times a week** , with pain levels measured using **the Numeric Rating Scale (NRS)** before and after the procedure.

The independent variable of this study is **the implementation of pregnant massage at the BL40 (Weizhong) acupressure point** , while the dependent variable is **the intensity of lower back pain** in pregnant women. The subjects of this study consisted of **30 pregnant women in their second and third trimesters** who experienced *low back pain* and underwent antenatal care at **TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency** , who were selected through **a total sampling method** .

Data collection was carried out using **an observation sheet** to record changes in the pain scale according to the research indicators. The research procedures included: (1) selecting and providing informed consent to respondents, (2) measuring the initial pain level (*pretest*), (3) providing *pregnant massage intervention* at point BL40 three times a week, and (4) measuring the final pain level (*posttest*).

Data analysis used **the Wilcoxon Signed Rank Test** to examine differences in pain levels before and after the intervention. The results were used to assess the effectiveness of *pregnancy massage* at the BL40 acupressure point as **a non-pharmacological therapy alternative** in reducing lower back pain in pregnant women and supporting improvements in the quality of antenatal care (ANC) services.

RESULT

General Data

1. Respondent Characteristics Based on Age

Table 1Frequency Distribution of Respondents Based on Age at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency

Age	Respondents	
	F	%
<20 years	0	0
20-35 years	28	93.3
>35 years	2	6.7
Amount	30	100.0

Source: Primary Research Data, 2025

Table 1 shows that based on age characteristics, almost all respondents were aged 20-35 years, namely 28 respondents (93.3%).

2 Respondent Characteristics Based on Education

Table 2Frequency Distribution of Respondents Based on Education at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency

Education	Respondents	
	F	%
Elementary (elementary, middle school)	0	0
Middle School (SMA)	22	73.3
Higher Education (College)	8	26.7
Amount	30	100.0

Source: Primary Research Data, 2025

Based on Table 2, it is known that the majority of respondents had secondary education (high school), namely 22 respondents (73.3%), and 8 respondents (26.7%) had tertiary education.

3 Respondent Characteristics Based on Occupation

Table 3Frequency Distribution of Respondents Based on Occupation at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency

Work	Respondents	
	F	%
Work	18	60.0
Doesn't work	12	40.0
Amount	30	100.0

Source: Primary Research Data, 2025

Based on table 3, it is known that the majority of respondents are working, namely 18 respondents (60%), and 12 respondents (40%) are not working.

4 Respondent Characteristics Based on Parity

Table 4Frequency Distribution of Respondents Based on Parity at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency

Parity	Intervention Group	
	F	%
Primigravida	16	53.3
Multigravida	14	46.7
Grandemultigravida	0	0
Amount	30	100.0

Source: Primary Research Data, 2025

Table 4 shows that the parity of respondents was similar between primigravidas and multigravidas. The majority of respondents were primigravidas, at 16 (53.3%).

5 Respondent Characteristics Based on Pregnancy Trimester

Table 5Frequency Distribution of Respondents Based on Trimester of Pregnancy at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency

Trimester	Respondents	
	F	%
Second Trimester	9	30.0
Third Trimester	21	70.0
Amount	30	100.0

Source: Primary Research Data, 2025

Based on Table 5, the majority of respondents were pregnant women in their third trimester, namely 21 respondents (70%). Nine respondents (30%) were pregnant women in their second trimester.

Special Data

1 Distribution of Pain Scale Based on *Numeric Rating Scale (NRS*) Before Intervention

Table 6Distribution of Pain Scale Based on *the Numeric Rating Scale (NRS)* Before Intervention at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency

Lower Back Pain Before Intervention	Respondents	
	F	%
No Pain	0	0
Mild Pain (1-3)	4	13.3
Moderate Pain (4-6)	10	33.3
Severe Pain (7-10)	16	53.3
Amount	30	100

Source: Primary Research Data, 2025

Based on Table 6, before the intervention, most respondents experienced severe lower back pain (16 respondents (53.3%). Nearly half of the respondents experienced moderate pain (33.3%), and a small proportion experienced mild pain (4 respondents (13.3%).

2 Distribution of Pain Scale Based on *Numeric Rating Scale (NRS*) After Intervention

Table 7Distribution of Pain Scale Based on *the Numeric Rating Scale (NRS)* After Intervention at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency

Lower Back Pain After Intervention	**Respondents**	
	F	**%**
No Pain	8	26.7
Mild Pain (1-3)	16	53.3
Moderate Pain (4-6)	6	20.0
Severe Pain (7-10)	0	0
Amount	30	100

Source: Primary Research Data, 2025

Based on Table 7 after the intervention, the majority of respondents experienced mild pain, namely 16 respondents (53.3%). Eight respondents (26.7%) experienced no pain, and six respondents (20%) experienced moderate pain. No patients experienced severe pain.

4 Differences in Lower Back Pain Levels Before and After Intervention

Table 8Differences in Lower Back Pain Levels Before and After Intervention

Lower Back Pain	Before Intervention		After Intervention	
	F	%	F	%
No Pain	0	0	8	26.7
Mild Pain (1-3)	4	13.3	16	53.3
Moderate Pain (4-6)	10	33.3	6	20.0
Severe Pain (7-10)	16	53.3	0	0
Amount	30	100	30	100
Willcoxon Statistical Test *: p-value* 0.000 < α 0.05				

Source: Primary Data, 2025

Table 8 shows a comparison of lower back pain levels before and after the intervention. There was a decrease in lower back pain levels before and after the intervention, from 100% of respondents experiencing lower back pain to 8 respondents (26.7%) experiencing no pain.

The results of the statistical test with *Willcoxon* showed a *p-value of* 0.000 < α 0.05 so that H1 $_{was}$ accepted, which means there was a difference in the level of lower back pain between before and after the intervention at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency.

DISCUSSION

Lower Back Pain Before Intervention

The results showed that before the intervention, all 30 respondents (100%) experienced lower back pain, with the majority in the severe pain category (53.3%), followed by moderate pain (33.3%), and mild pain (13.3%). No respondents experienced no pain. Risk factors that cause pregnant women to experience lower back pain include age, parity, occupation, physical activity, and a previous history of low back pain (Daneau et al., 2025).

The research results showed that the majority of respondents were in the 20–35 age group (93.3%), while the remainder were over 35 years old (6.7%). The age of 20–35 is considered a healthy reproductive age, where reproductive organs function optimally and the risk of pregnancy complications is relatively low (Maryana et al., 2024). However, even at a healthy reproductive age, musculoskeletal

complaints can still arise due to the physiological and biomechanical changes typical during pregnancy, especially in the later trimesters (Leung, 2025). This reinforces the idea that the main factor causing low back pain is not only age, but also the body's adaptation to the ongoing pregnancy (Daneau et al., 2025).

In terms of education level, the majority of respondents had secondary education (73.3%), while the remainder had tertiary education (26.7%). Educational level influences mothers' understanding of health information and their ability to manage complaints during pregnancy (Handayani et al., 2025a). Mothers with higher education tend to more quickly understand the benefits of complementary therapies and be proactive in seeking solutions to pain complaints, while mothers with secondary education still require basic education to practice therapy appropriately (Prameswari et al., 2025).

Based on occupation, 60% of respondents were employed and 40% were unemployed. Strenuous physical activity such as prolonged standing, bending, or carrying excessive weight can increase the risk of lower back pain by increasing mechanical stress on the spine (Pisoh et al., 2025). This is consistent with the theory that pregnant women who work high-activity jobs are at higher risk of experiencing *low back pain* (Daneau et al., 2025).

In terms of parity, the majority of respondents were primigravidas (53.3%), while 46.7% were multigravidas, and there were no grandemultigravidas. According to Pisoh et al. (2025), primigravidas are more susceptible to discomfort during pregnancy because their bodies are adapting to hormonal and biomechanical changes for the first time. Meanwhile, multigravidas are usually more accustomed to it, although they are still at risk of experiencing back pain due to repeated musculoskeletal strain from previous pregnancies.

Based on gestational age, the majority of respondents were in their third trimester (70%), with the remainder in their second trimester (30%). According to Leung (2025), lower back pain is more common in the final trimester due to the increasingly significant enlargement of the uterus, a forward shift in the center of gravity, and increased lumbar lordosis, which puts excessive pressure on the back muscles and ligaments. Furthermore, the hormone relaxin, which peaks in the second and third trimesters, also contributes to sacroiliac joint instability, further exacerbating pain (Bertucci et al., 2023).

Pathophysiologically, the primary cause of low back pain during pregnancy is a combination of hormonal and mechanical changes. The hormones relaxin and progesterone cause pelvic ligaments to loosen, thereby reducing joint stability and triggering pain (Bertucci et al., 2023). Furthermore, the enlarging uterus shifts the center of gravity forward, increasing lumbar lordosis and increasing the mechanical load on the spine (Daneau et al., 2025). This condition is exacerbated by significant weight gain during pregnancy, averaging 10–16 kg, which increases pressure on the intervertebral discs (Ahmadi et al., 2025).

Besides physical factors, psychological aspects also play a role. According to Nurbaiti & Tiwi (2024), excessive stress during pregnancy can increase corticotropin and adrenaline hormones, which contribute to muscle tension and heighten pain perception. This explains why most respondents in this study experienced severe pain before the intervention. This demonstrates a clear gap between existing facts and theories.

Lower Back Pain After Intervention

The results of this study indicate that changes in lower back pain in respondents were very significant after *pregnancy massage* with stimulation of the BL40 acupressure point. Before the intervention,

the majority of respondents were in the **severe pain category (53.3%) ,** followed by **moderate pain (33.3%)** , and only a small proportion experienced **mild pain (13.3%) ,** with no respondents being pain-free. After the intervention, there was a significant change, namely **26.7% of respondents no longer felt pain , 53.3% only experienced mild pain ,** and the rest **20% still experienced moderate pain , with** no respondents remaining in the severe pain category. This change is not merely a statistical decrease, but rather represents **a significant clinical transformation.** in pregnant women. This means that this therapy successfully shifted the pain profile of the respondents from one that disrupted daily activities to a much milder, even pain-free, condition.

This decrease is consistent with the therapy's mechanism of action. *Pregnant massage* can improve blood circulation, reduce muscle spasms, lower cortisol levels, and increase the release of endorphins, which function as the body's natural analgesics (Nurbaiti & Tiwi, 2024). Meanwhile, acupressure at the BL40 point works through *the gate control theory,* providing non-noxious sensory stimulation that closes the pain transmission gate in the spinal cord (Daneau et al., 2025). Pressure at this point also increases the release of endorphins and serotonin, and improves lumbar tissue metabolism (Pisoh et al., 2025).

This research supports the results of Pratiwi's (2023) study, which demonstrated that prenatal massage effectively reduces lower back pain in pregnant women in the third trimester. Similarly, Robaniyah et al.'s (2024) study showed that acupressure on the BL40 point significantly reduced musculoskeletal pain in pregnant women.

Effectiveness of Implementing Pregnant Massage Point BL40

Analysis using the Wilcoxon test showed a p-value of 0.000 < α 0.05, indicating a significant difference between pain levels before and after the intervention. Thus, pregnancy massage at the BL40 point has been shown to be effective in reducing lower back pain in pregnant women in their second and third trimesters.

This effectiveness can be explained from two perspectives. First, *prenatal massage* promotes muscle relaxation, improves circulation, and reduces stress hormones (Simiati et al., 2024). Second, stimulation of the BL40 point provides an analgesic effect through a neurophysiological mechanism, namely the release of endorphins (Bertucci et al., 2023). The combination of the two produces a synergistic effect, resulting in faster and more significant pain relief than either intervention alone.

This therapy is also relatively safe, affordable, and easily performed by trained healthcare professionals, making it suitable for integration into *antenatal care services* at primary healthcare facilities. This aligns with the Indonesian Ministry of Health's 2021 recommendation, which encourages the implementation of complementary therapies in obstetric care to improve the well-being of pregnant women.

Pregnant massage at the BL40 point has the dual benefit of reducing the intensity of lower back pain physiologically while providing psychological comfort. The gentle touch of the massage can enhance the emotional bond between mother and fetus, reduce anxiety, and improve sleep quality (Friska & Masliyah, 2025). Therefore, prenatal massage at the BL40 point should be included in comprehensive *antenatal care* , especially for pregnant women in the second and third trimesters who are prone to musculoskeletal complaints such as *low back pain* (LBP).

CONCLUSION

Based on the results of research on the implementation of *pregnant massage at the BL40 (Weizhong)* acupressure point at TPMB Sujiati Nur Elys, Dlanggu District, Mojokerto Regency, it can be concluded that:

1. Before the intervention, all respondents (100%) experienced lower back pain, with the majority of respondents experiencing severe pain, namely 16 respondents (53.3%).
2. After receiving *pregnancy massage intervention* using the BL40 (*Weizhong*) acupressure point three times a week, there was an increase in the number of respondents (26.7%) who did not experience pain. No respondents experienced severe pain.
3. Based on the statistical test with *Willcoxon , the p-value* results were 0.000, which means there was a significant difference so that the implementation of *pregnant massage* at acupressure points BL40 (*Weizhong*) is effective in reducing the level of lower back pain in pregnant women in the second and third trimesters.

REFERENCES

Ahmadi, S., Ziaei, S., & Moradi, F. (2025). Maternal physiological adaptations during pregnancy and their clinical implications. International Journal of Obstetrics and Gynecology, 162(3), 145–153.

Almanda, S., Mansoben, N., & Fitriani, F. (2024). The Effect of Progressive Muscle Relaxation on Changes in Low Back Pain in Pregnant Women. *Journal of Nursing* , *16* (4), 1417–1424.

Anggeriani, R., Sari, SD, & Lamdayani, R. (2024). The effect of endorphin massage on reducing back pain in third trimester pregnant women. *Lentera Perawat* , *5* (2), 196–200.

Bertucci, E., Gerosa, C., Pinares-Garcia, P., et al. (2023). Relaxin in pregnancy: A narrative review of a pleiotropic hormone. Reproductive Sciences, 30(2), 291–304.

Daneau, C., Carvalho, A., Dumas, G., et al. (2025). Changes in pregnancy-related hormones, neuromechanical adaptations, and clinical pain status throughout pregnancy. PLOS ONE, 20(7), e0300981.

Friska, D., & Masliyah, E. (2025). The Effect of Endorphin Massage on Anxiety of Pregnant Women in the Third Trimester of Gravida 1 at Maracang Health Center in 2024. *Journal of Social Technology* , *5* (8), 3148–3155.

Handayani, S., Fajri, UN, Fitriyani, T., & Zulfatunnisa, N. (2025a). Midwifery Care for Pregnancy. *Tahta Media Publisher* .

Handayani, S., Fajri, UN, Fitriyani, T., & Zulfatunnisa, N. (2025b). Midwifery Care for Pregnancy. *Publisher: Tahta Media* .

Leung, C. J. (2025). Pregnancy-related hip and pelvic musculoskeletal issues. Current Reviews in Musculoskeletal Medicine, 18(1), 45–56.

Maryana, N., Pribadi, PS, & Anggraini, V. (2024). *The Concept of Pregnancy and Physiological Adaptation in Pregnant Women* . NEM Publisher.

Nurbaiti, N., & Tiwi, LS (2024). Knowledge and Perception of Pregnant Women about Acupressure in Overcoming Discomfort in Pregnancy. *Baiturrahim Jambi Academic Journal* , *13* (2), 201–207.

Prameswari, DA, Haniyah, S., & Triana, NY (2025). PREGNANCY MASSAGE EDUCATION AND DISCOMFORT DURING PREGNANCY IN PREGNANT WOMEN IN PREGNANCY WOMEN CLASS IN BOJONGSARI VILLAGE,

BANYUMAS REGENCY. *Mejuajua: Journal of Community Service* , *5* (1), 40–47.

Simiati, NM, Udayani, NPMY, Sumawati, NMR, Purnamayanthi, PPI, & Pratiwi, AE (2024). The Effect of Prenatal Massage on Reducing Back Pain in Third Trimester Pregnant Women in the Working Area of UPTD Abiansemal I Health Center. *Jurnal Genta Kebidanan* , *13* (2), 31–36.