



The Effectiveness of the Counter Pressure and Endorphin Massage Techniques for Managing First-Stage Labor Pain in Childbearing Women at the Tangerang City Maternity Clinic

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Abstract

Labor pain during the first stage of childbirth is a complex physiological and psychological experience that may negatively affect maternal outcomes if not properly managed. This study aimed to determine the effectiveness of combined counter-pressure and endorphin massage techniques in reducing labor pain among childbearing women in Tangerang City. A quasi-experimental pretest-posttest control-group design was used with 30 parturient women, divided into an intervention group ($n = 15$) and a control group ($n = 15$). Pain intensity was measured using the McGill Pain Questionnaire before and after treatment. The intervention group received counter-pressure and endorphin massage during uterine contractions, while the control group received standard care. Data were analyzed using the Wilcoxon signed-rank test and Mann-Whitney U test ($p < 0.05$). Results showed a significant reduction in pain intensity in the intervention group ($p = 0.000$), while no significant change was found in the control group ($p = 1.000$). Pain scores in the intervention group decreased from severe to moderate levels. In conclusion, combined counter-pressure and endorphin massage techniques are effective, safe, and low-cost non-pharmacological interventions for reducing first-stage labor pain. They may improve maternal comfort, especially in low-resource settings.

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Introduction

Childbirth is a physiological process characterized by cervical dilation, effacement, and uterine contractions, which are commonly associated with significant pain (JNPK-KR, 2017). During the active phase of the first stage of labor, the frequency and intensity of uterine contractions increase,

causing stronger pain sensations among laboring women. Labor pain is not only a physical response but is also influenced by psychological, emotional, and socio-cultural factors, including previous childbirth experiences and individual pain thresholds (Bobak et al., 2012). According to Maryunani (2010), labor pain occurs due to uterine muscle contractions, cervical dilation, stretching of the birth canal, and fetal descent during labor. If labor pain is not managed properly, mothers may experience anxiety, fear, fatigue, and stress, which can negatively affect the labor process and maternal well-being (Nurasiah et al., 2012). In many cases, fear of labor pain may even influence mothers' preferences regarding delivery methods.

Maternal mortality remains an important public health issue, particularly in developing countries. The World Health Organization reported that maternal mortality rates are still relatively high in many developing regions compared to developed countries (World Health Organization, 2014). In Indonesia, maternal mortality also continues to be a concern in maternal health services. Budijanto (2018) reported that the maternal mortality rate in Indonesia, based on the 2015 Intercensal Population Survey (SUPAS), was 305 per 100,000 live births. Achadi (2019) explained that maternal deaths are still associated with complications during pregnancy and childbirth, including prolonged and obstructed labor. This condition shows that improving the quality of maternal care, including labor pain management, remains an important aspect of maternity services.

Pain during labor is often perceived as one of the most difficult experiences for mothers. Rahmawati and Ningsih (2019) discussed the use of counter-pressure techniques as non-pharmacological interventions to reduce pain intensity and improve maternal comfort during the active phase of labor. These findings indicate that supportive interventions during childbirth may help mothers cope better with labor pain.

Preliminary observations conducted at a maternity clinic in Tangerang City showed that many mothers experienced moderate to severe pain during labor and expressed fear of vaginal delivery because of painful childbirth experiences. Some mothers even preferred cesarean delivery because they were worried about experiencing severe pain again. Mothers in the active phase of labor frequently require supportive interventions to improve comfort and reduce pain during childbirth. These findings suggest that this condition indicates that labor pain management should not only focus on reducing pain intensity but also on improving mothers' emotional comfort and confidence during labor.

Various methods have been used to manage labor pain, including pharmacological and non-pharmacological approaches. Pharmacological interventions may effectively reduce pain but can also cause side effects and are not always accessible in all healthcare settings. Therefore, non-pharmacological methods are increasingly recommended because they are considered safer, less invasive, relatively affordable, and easier to implement. Several studies and reviews have discussed the role of complementary and non-pharmacological interventions in labor pain management (Jones et al., 2012; Smith et al., 2018). These approaches may be more practical for primary maternal healthcare settings because they can be applied with simple equipment and minimal risk.

Massage-based interventions are among the most commonly used complementary approaches for labor pain management. Previous studies have shown that massage therapy may help mothers feel more relaxed, decrease anxiety, and reduce pain intensity during labor (Gallo et al., 2013; Hamidzadeh et al., 2012). Low back massage has also been associated with improved maternal comfort and satisfaction during childbirth (Unalmis Erdogan et al., 2017). Massage therapy is generally believed to help mothers cope better with labor pain because tactile stimulation may reduce pain perception and promote relaxation (Field, 2016; Field, 2020). From the researcher's perspective, massage interventions are practical because they can be performed easily by healthcare providers and may create a more supportive labor environment for mothers.

One of the massage techniques frequently used during labor is counter-pressure massage. This technique involves applying firm pressure to the lumbosacral area during uterine contractions.

Counter-pressure massage may help reduce pain perception during labor. Previous studies have discussed the use of counter-pressure techniques to reduce pain intensity during the active phase of labor (Kacar & Özcan Keser, 2021; Safitri & Putri, 2021). Dinengsih (2018) also reported that counter-pressure massage was effective in reducing labor pain during the first stage of labor.

Another complementary intervention commonly used during childbirth is endorphin massage. This technique involves light touch or gentle massage to stimulate the release of endorphins, natural substances produced by the body to reduce pain and promote relaxation. Several studies have discussed the benefits of endorphin massage in reducing labor pain and improving maternal comfort during childbirth (Aprillia et al., 2020; Leni, 2017). Wahida et al. (2015) also discussed the relationship between endorphin stimulation and maternal comfort during labor. In addition, Kuswandi (2013) explained that relaxation approaches and supportive touch may help mothers feel calmer and more confident during childbirth. These findings suggest that labor pain management should not only focus on reducing pain intensity but also on improving mothers' emotional comfort and confidence during labor.

Supportive care during labor is also considered important in improving childbirth experiences. Continuous support, relaxation techniques, and complementary interventions may help mothers cope better with labor pain and emotional stress. Several studies and reviews discussed the role of supportive care and complementary therapies in maternal health services (Bohren et al., 2017; Thomson et al., 2019). Integrative approaches combining massage, relaxation, and supportive care have also been discussed as beneficial strategies for labor pain management (Levett et al., 2016; Levett et al., 2021). Complementary therapies may contribute not only to pain reduction but also to maternal comfort and positive childbirth experiences (Smith, Armor, & Dahlen, 2021).

Based on the evidence above, non-pharmacological interventions such as counter-pressure and endorphin massage techniques have been widely discussed as approaches for labor pain management. However, previous studies have generally evaluated these techniques as separate interventions, focusing mainly on pain intensity reduction. In contrast, evidence regarding their simultaneous integration and role in improving maternal pain controllability and coping capacity during labor remains limited, particularly in Indonesian maternity care settings.

This study contributes to the current literature by introducing a multimodal non-pharmacological intervention that combines counter-pressure and endorphin massage within a single pain management approach. The integration of mechanical sacral stimulation and endogenous opioid modulation provides a synergistic mechanism for regulating labor pain. In addition, this study proposes a broader perspective in labor pain management by emphasizing not only pain reduction but also the transformation of severe pain into a more controlled and manageable experience. Therefore, this study offers both conceptual and clinical contributions toward the development of safe, low-cost, and practical maternal pain management strategies in low-resource healthcare settings. This approach may also strengthen the integration of evidence-based complementary therapies into routine maternal healthcare practice.

Therefore, this study aims to analyze the effectiveness of combined counter-pressure and endorphin massage techniques in reducing labor pain during the first stage of labor among childbearing women in Tangerang City.

Materials and Methods

This quasi-experimental study employed a non-randomized pretest-posttest control group design to evaluate the effects of counter-pressure and endorphin massage on labor pain during the first stage of labor. The study was conducted at a midwife's private practice in Tangerang City, Indonesia, between August and September 2025.

Thirty women in the active phase of first-stage labor were recruited using total sampling and assigned to intervention (n=15) and control (n=15) groups. Women with singleton pregnancies who agreed to participate were included, while those with high-risk pregnancies or pharmacological pain management were excluded.

Pain intensity was measured before and after intervention using the McGill Pain Questionnaire (MPQ), a standardized instrument widely used for multidimensional pain assessment. The questionnaire consists of sensory and affective pain descriptors that allow comprehensive evaluation of labor pain intensity. The Indonesian version of the MPQ had previously been validated in maternal pain assessment studies in Indonesia. The validity test yielded item correlation coefficients ranging from 0.42 to 0.81, exceeding the minimum acceptable threshold ($r > 0.30$). Reliability testing showed good internal consistency with a Cronbach's alpha coefficient of 0.87, indicating that the instrument was reliable for assessing labor pain among childbearing women. The intervention group received a combination of counter-pressure and endorphin massage during uterine contractions, whereas the control group received standard maternity care without massage intervention.

The massage interventions were administered directly by the researcher, assisted by a certified midwife who had experience in maternity care and non-pharmacological pain management techniques. Prior to data collection, both intervention providers participated in a standardized training session led by a senior maternity practitioner to ensure uniformity in massage procedures. The training included demonstration, supervised practice, and competency assessment regarding massage technique, pressure application, duration, and timing during labor contractions.

Counter-pressure massage was applied by exerting firm, continuous pressure with the heel of the hand on the sacral region, particularly at the lower back area corresponding to the mother's pain location during uterine contractions. The pressure intensity was adjusted according to maternal comfort while maintaining consistent moderate-to-firm pressure. Each counter-pressure intervention lasted approximately 30–60 seconds during each contraction.

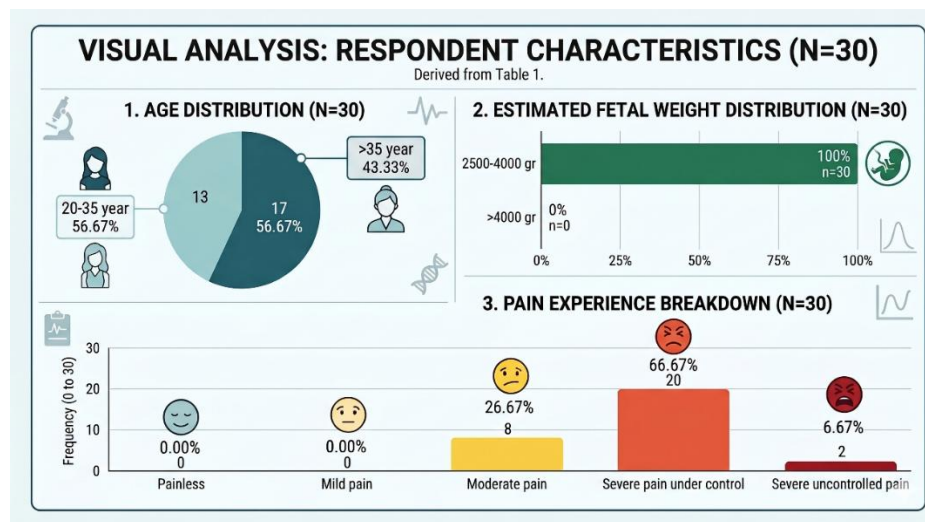
Endorphin massage was subsequently administered through gentle rhythmic stroking and light touch along the shoulders, upper back, arms, and lower back to promote relaxation and stimulate endorphin release. This technique was performed for approximately 10–15 minutes between contraction intervals.

The interventions were initiated during the active phase of the first stage of labor (cervical dilatation 4–7 cm) and repeated throughout labor, depending on contraction frequency and maternal condition. To ensure procedural consistency among all participants, the researchers used a standardized operating procedure (SOP) and intervention checklist containing detailed steps for hand placement, pressure intensity, duration, and massage sequence. The massage techniques were adapted from established maternity massage guidelines and applied using the same intervention protocol for all participants. Monitoring and supervision were conducted throughout the intervention process to maintain adherence to the protocol.

Data were analyzed using univariate and bivariate statistics. Due to non-normal data distribution, the Wilcoxon signed-rank test and Mann-Whitney U test were applied. Statistical significance was established at $p < 0.05$. Ethical approval and informed consent were obtained prior to data collection, and participant confidentiality was maintained throughout the study.

Results and Discussions

Figure 1. *Respondent Characteristics*



The analysis of respondent characteristics (N = 30) showed that most participants were aged 20–35 years (56.67%), while 43.33% were aged 36 or older, indicating that the intervention was applied across different maternal age groups. All respondents had estimated fetal weights within the normal range (2500–4000 g), minimizing the potential influence of fetal size on labor pain outcomes and strengthening the study's internal validity.

Most respondents experienced controlled severe pain (66.67%), followed by moderate pain (26.67%), while only 6.67% reported uncontrolled severe pain. None of the respondents experienced mild or painless labor. These findings suggest that labor pain during the active phase is generally intense but can become more manageable with supportive non-pharmacological interventions.

The findings also indicate that the combination of counter-pressure and endorphin massage may help improve maternal coping capacity during labor by reducing pain perception and promoting comfort. Rather than eliminating pain, the intervention appears to transform pain into a more controlled and tolerable experience. This supports the potential role of multimodal non-pharmacological approaches in improving childbirth experiences, particularly in low-resource maternity settings.

Figure 2. Frequency distribution of pain levels in women in the first stage of labor before and after the application of the Counter Pressure and Endorphin Massage techniques

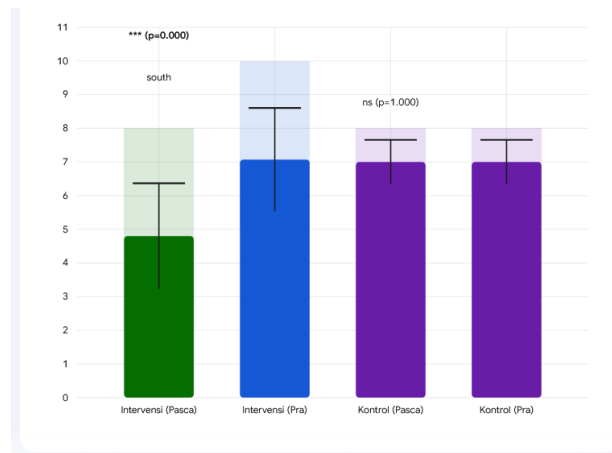


Figure 2 demonstrates a significant reduction in pain levels in the intervention group after the application of counter-pressure and endorphin massage techniques ($p = 0.000$). In contrast, the control group showed no significant change in pain intensity ($p = 1.000$). These findings indicate that the observed pain reduction was associated with the intervention rather than the natural progression of labor.

The decrease in pain intensity may be related to pain-modulation mechanisms, in which tactile stimulation and relaxation reduce maternal pain perception and improve comfort during contractions. The combination of counter-pressure and endorphin massage appears to have complementary effects, reducing discomfort and enhancing relaxation simultaneously.

This study also highlights that the intervention not only reduced pain scores but also improved the controllability of labor pain. The findings support previous evidence suggesting that combined non-pharmacological interventions can enhance maternal comfort and coping during childbirth. These techniques may therefore serve as practical, safe, and low-cost approaches for labor pain management in clinical maternity care.

Figure 3. A Study on the Effectiveness of Counter Pressure and Endorphin Massage in Reducing Pain in Women in the First Stage of Labor

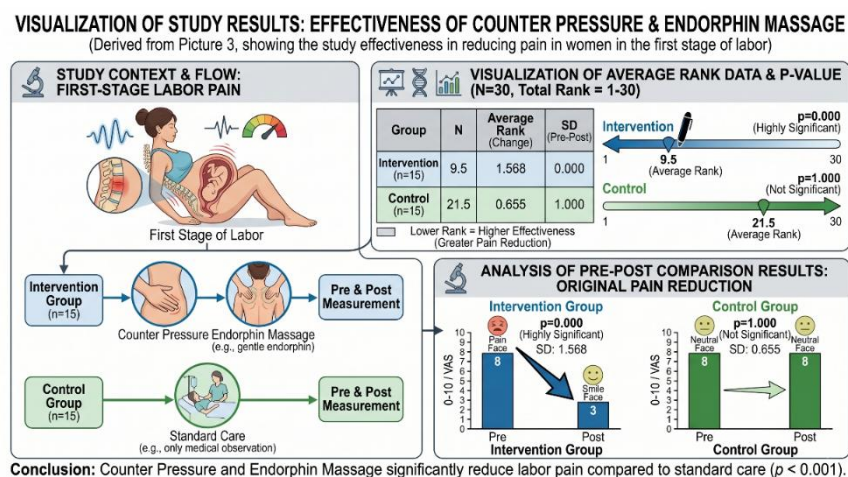


Figure 3 illustrates the effectiveness of combined counter-pressure and endorphin massage techniques in reducing labor pain during the first stage of labor. The intervention group showed

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significantly lower pain scores than the control group ($p = 0.000$). Pain scores in the intervention group decreased from severe levels before intervention to moderate levels after treatment, whereas the control group showed little change.

These findings suggest that the combined intervention was effective in improving maternal comfort during labor. The integration of counter-pressure and endorphin massage may provide synergistic benefits through mechanical stimulation and relaxation, thereby reducing pain perception during uterine contractions.

Unlike studies evaluating single techniques, this study demonstrates the potential benefit of combining two non-pharmacological methods within one intervention approach. The results emphasize that effective labor pain management should focus not only on reducing pain intensity but also on helping mothers maintain better control and coping ability during childbirth. Therefore, these techniques may be considered useful complementary interventions for routine maternal care, particularly in low-resource healthcare settings.

Result

Based on Figure 2, the reduction in pain intensity during the first stage of labor was greater in the intervention group (mean 4.80)—which received massage using the counter-pressure technique and the endorphin massage method—than in the control group (mean 7.00). From Figure 3, it is evident that the Mann-Whitney U test yielded a p -value of 0.000; therefore, it can be concluded that there is a significant difference between the intervention group, which received the counter-pressure technique and the endorphin massage method, and the control group. Based on the research findings, it was found that the average pain score among women in the first stage of labor before the application of the counter-pressure technique and the endorphin massage method was 7.07. The study results also showed that the majority of laboring mothers, before receiving the counter pressure technique and the endorphin massage method, experienced moderate pain (8 respondents, 26.67%), 20 respondents (66.67%) experienced controlled severe pain, and 2 respondents (6.67%) experienced uncontrolled pain. After receiving the counter-pressure technique and endorphin massage, there was a change in pain intensity: 4 respondents (13.33%) experienced mild pain, 12 (40%) moderate pain, and 14 (46.67%) controlled severe pain.

Discussion

The findings of this study demonstrated that the combination of counter-pressure and endorphin massage significantly reduced labor pain during the first stage of labor compared to the control group ($p=0.000$), with lower mean pain scores in the intervention group (4.8) than in the control group (7.00). These findings suggest that the combined intervention effectively improves pain control and enhances maternal comfort during the active phase of labor.

The reduction in pain may be associated with pain-modulation mechanisms in which tactile stimulation inhibits pain-signal transmission and promotes relaxation. Gentle massage may also stimulate endogenous opioid release, contributing to decreased pain perception and emotional comfort. These findings are consistent with previous studies reporting that massage techniques may reduce labor pain intensity and improve maternal coping and satisfaction during childbirth (Field, 2016; Smith et al., 2018; Safitri & Putri, 2021; Wahida et al., 2015). Similar results were also reported by Aprillia et al. (2020), Gallo et al. (2013), Hamidzadeh et al. (2012), Unalmis Erdogan et al. (2021), Bohren et al. (2017), Thomson et al. (2019), and Sade and Özkan (2025), who highlighted the benefits of supportive and complementary interventions in reducing pain and anxiety during labor.

Based on these findings, counter-pressure and endorphin massage may be considered simple, safe, and practical non-pharmacological approaches for labor pain management, particularly in low-resource maternity settings. These techniques may help midwives and healthcare providers improve maternal childbirth experiences during the active phase of labor.

This study has several limitations. The sample size was relatively small and limited to a single maternity clinic, potentially limiting the generalizability of the findings. In addition, the non-randomized design may increase the risk of selection bias. Future studies with larger sample sizes, randomized controlled designs, and multicenter settings are recommended to strengthen evidence regarding the effectiveness of counter-pressure and endorphin massage during labor.

Conclusion

This study provides robust evidence that the combined use of counter-pressure and endorphin massage techniques significantly reduces pain during the first stage of labor compared to standard care. The intervention not only lowers pain intensity but also transforms severe pain into a more controlled and manageable condition, highlighting a clinically meaningful shift from pain elimination to pain modulation. This finding reinforces the effectiveness of multimodal, non-pharmacological approaches in improving maternal comfort and childbirth experiences. From a mechanistic perspective, integrating tactile stimulation with endogenous opioid activation provides a synergistic pathway for pain relief, supporting the adoption of combined interventions over single-technique approaches. The absence of significant changes in the control group further confirms that structured intervention is essential for effective labor pain management. These findings carry important implications for maternal health policy and clinical practice. First, non-pharmacological pain management techniques such as counter-pressure and endorphin massage should be formally incorporated into national maternal care guidelines and standard operating procedures for intrapartum care. Second, there is a need to strengthen healthcare providers'—particularly midwives'—capacity through structured training programs to ensure the correct and consistent application of these techniques in clinical settings. Third, integrating these interventions into routine antenatal education programs can empower pregnant women with knowledge and preparedness for labor pain management, thereby reducing fear and increasing confidence in vaginal delivery. Fourth, given their low cost, safety, and ease of implementation, these techniques are particularly suitable for scaling up in primary healthcare facilities and low-resource settings, contributing to more equitable maternal care services. At the policy level, the adoption of evidence-based, non-pharmacological pain management strategies may contribute to broader maternal health goals, including improving the quality of care, enhancing patient satisfaction, and potentially reducing unnecessary cesarean section rates driven by fear of labor pain. Future policies should also encourage large-scale, multicenter research to strengthen the evidence base and support integration into national and international maternal health frameworks. By repositioning labor pain management as a holistic, patient-centered component of maternal care, this study offers a strategic pathway to improve both clinical outcomes and maternal well-being.

References

- Achadi, E (2019). *Kematian maternal dan neonatal di Indonesia - Rakernas 2019*. Edisi tahun 2019. Jakarta: Fakultas Ilmu Kesehatan Masyarakat, Universitas Indonesia.
- Aprillia, Y., Ritchmond, T., & Herawati, T. (2020). The effectiveness of endorphin massage on labor pain reduction during the active phase. *International Journal of Nursing and Health Services*, 3(4), 453–460. <https://doi.org/10.35654/ijnhs.v3i4.338>
- Bobak, I. M., Lowdermilk, D. L., & Jensen, M. D. (2012). *Buku ajar keperawatan maternitas* (Edisi Indonesia). EGC.
- Bohren, M. A., Hofmeyr, G. J., Sakala, C., Fukuzawa, R. K., & Cuthbert, A. (2017). Continuous support for women during childbirth. *Cochrane Database of Systematic Reviews*, 2017(7), CD003766. <https://doi.org/10.1002/14651858.CD003766.pub6>

- Budijanto, D. (2018). *Profil kesehatan Indonesia tahun 2017*. Kementerian Kesehatan Republik Indonesia.
- Dinengsih, S. (2018). *Efektivitas massage counterpressure terhadap penurunan nyeri persalinan kala I fase aktif di praktik mandiri bidan di Kota Tangerang, Provinsi Banten tahun 2018*. Prosiding Sidang Ilmiah Kongres XVI Ikatan Bidan Indonesia (IBI), Jakarta, Indonesia.
- Field, T. (2016). Massage therapy research review. *Complementary Therapies in Clinical Practice*, 24, 19–31. <https://doi.org/10.1016/j.ctcp.2016.07.007>
- Field, T. (2020). Massage therapy research review. *Complementary Therapies in Clinical Practice*, 40, 101223. <https://doi.org/10.1016/j.ctcp.2020.101223>
- Gallo, R. B. S., Santana, L. S., Marcolin, A. C., Ferreira, C. H. J., Duarte, G., & Quintana, S. M. (2013). Massage reduced the severity of pain during labor: A randomized trial. *Journal of Physiotherapy*, 59(2), 109–116. [https://doi.org/10.1016/S1836-9553\(13\)70163-9](https://doi.org/10.1016/S1836-9553(13)70163-9)
- Hamidzadeh, A., Shahpourian, F., Orak, R. J., & Montazeri, A. (2012). Effects of massage therapy on labor pain and anxiety: A randomized controlled trial. *Journal of Obstetrics and Gynecology Research*, 38(2), 377–383. <https://doi.org/10.1111/j.1447-0756.2011.01774.x>
- JNPK-KR. (2017). *Asuhan persalinan normal, asuhan esensial bagi ibu bersalin dan bayi baru lahir serta penatalaksanaan komplikasi segera pascapersalinan dan nifas*. Jaringan Nasional Pelatihan Klinik Kesehatan Reproduksi.
- Jones, L., Othman, M., Dowswell, T., Alfirevic, Z., Gates, S., Newburn, M., & Jordan, S. (2012). Pain management for women in labour: An overview of systematic reviews. *Cochrane Database of Systematic Reviews*, (3), CD009234. <https://doi.org/10.1002/14651858.CD009234.pub2>
- Kacar, P., & Özcan Keser, N. (2021). The effect of mechanical massage applied to the lumbosacral region on labor pain. *European Journal of Midwifery*, 5, 1–7. <https://doi.org/10.18332/ejm/132883>
- Kuswandi, L. (2013). *Keajaiban hypnobirthing*. Pustaka Bunda.
- Leni, C. (2017). Terapi endorfin massage untuk menurunkan intensitas nyeri pada fase aktif persalinan. *Jurnal SMART Kebidanan*, 4(2), 1–8. <https://doi.org/10.34310/sjkb.v4i2.117>
- Levett, K. M., Smith, C. A., Bensoussan, A., Dahlen, H. G., & McLachlan, H. L. (2016). Complementary therapies for labour and birth study: A randomised controlled trial of antenatal integrative medicine for pain management in labour. *BMJ Open*, 6(7), e010691. <https://doi.org/10.1136/bmjopen-2015-010691>
- Levett, K. M., Smith, C. A., Bensoussan, A., Dahlen, H. G., & McLachlan, H. L. (2021). Integrative medicine approaches to labor pain management: A randomized controlled trial follow-up study. *Midwifery*, 95, 102943. <https://doi.org/10.1016/j.midw.2021.102943>
- Maryunani, A. (2010). *Nyeri dalam persalinan: Teknik dan cara penanganannya*. Trans Info Media.
- Nurasiah, A., Rukmawati, A., & Badriah, D. L. (2012). *Asuhan persalinan normal bagi bidan*. PT Refika Aditama.
- Rahmawati, L., & Ningsih, M. P. (2019). Efektifitas teknik counter pressure dan abdominal lifting terhadap pengurangan rasa nyeri pada ibu bersalin kala I fase aktif di BPM Kota Padang. *Jurnal Medikes (Media Informasi Kesehatan)*, 6(2), 217–224. <https://doi.org/10.36743/medikes.v6i2.190>
- Sade, G., & Özkan, H. (2025). The effect of mechanical massage on labor pain, duration, and maternal satisfaction: A randomized controlled trial. *BMC Pregnancy and Childbirth*, 25(1), 823. <https://doi.org/10.1186/s12884-025-07977-3>
- Safitri, E., & Putri, A. R. (2021). Counter-pressure massage for reducing labor pain intensity in active-phase mothers. *Strada Jurnal Ilmiah Kesehatan*, 10(1), 764–771. <https://doi.org/10.30994/sjik.v10i1.673>

- Smith, C. A., Armor, M., & Dahlen, H. G. (2021). Complementary therapies for pain management in labour: An updated review. *Cochrane Database of Systematic Reviews*. <https://doi.org/10.1002/14651858.CD012546.pub2>
- Smith, C. A., Levett, K. M., Collins, C. T., Armor, M., Dahlen, H. G., & Sukanuma, M. (2018). Massage, reflexology, and other manual methods for pain management in labour. *Cochrane Database of Systematic Reviews*, (3), CD009290. <https://doi.org/10.1002/14651858.CD009290.pub3>
- Thomson, G., Feeley, C., Moran, V. H., Downe, S., & Oladapo, O. T. (2019). Women's experiences of pharmacological and non-pharmacological pain relief methods for labor and childbirth: A qualitative systematic review. *Reproductive Health*, 16(1), 71. <https://doi.org/10.1186/s12978-019-0735-4>
- Unalmis Erdogan, S., & Yanikkerem, E. (2021). Effects of back massage on pain and satisfaction during labor. *Complementary Therapies in Clinical Practice*, 42, 101288. <https://doi.org/10.1016/j.ctcp.2020.101288>
- Unalmis Erdogan, S., Yanikkerem, E., Goker, A., & Gokyildiz Surucu, S. (2017). Effects of low back massage on perceived birth pain and satisfaction. *Complementary Therapies in Clinical Practice*, 28, 169–175. <https://doi.org/10.1016/j.ctcp.2017.06.005>
- Wahida, S., Nooryanto, M., & Andarini, S. (2015). Terapi murottal Al-Qur'an surat Ar-Rahman meningkatkan kadar β -endorphin dan menurunkan intensitas nyeri pada ibu bersalin kala I fase aktif. *Jurnal Kedokteran Brawijaya*, 28(3), 213–216. <https://doi.org/10.21776/ub.jkb.2015.028.03.7>