IJH INTERNATIONAL JOURNAL OF HEALTH
Volume 02 Number 01 (May 2026)
e-ISSN: 3164-8835; p-ISSN: 3164-8827

The effect of endorphin massage on reducing anxiety levels during the first stage of labor

Didin Prasetya Cahyaningsih[1], Rifzul Maulina[1]

[1]Bachelor of Midwifery Study Program, Faculty of Health Sciences, ITSK RS. dr. Soepraoen, Malang, Indonesia

Corresponding Author: Didin Prasetya, prasetyadidin8@gmail.com

Check for updates

Abstract:
Anxiety during the first stage of labor can intensify pain, slow labor progress, and weaken women's childbirth experience. Endorphin massage, a simple touch-based technique, may promote relaxation, but evidence from primary midwifery settings is limited. This study aimed to examine the effect of endorphin massage on anxiety among women in the first stage of labor. A one-group pretest–posttest pre-experimental study was conducted at an independent midwifery practice (TPMB Diah Ulul) in Probolinggo City, Indonesia, in 2025, involving 25 laboring women recruited through total sampling. Endorphin massage was delivered for 20–30 minutes during the active phase of the first stage, and anxiety was measured before and after the intervention using the Hamilton Anxiety Rating Scale (HARS) and compared with a paired-samples t-test. The mean HARS score decreased from 29.9 ± 4.2 to 13.9 ± 3.8 (mean difference 16.0; 95% CI 14.3–17.7; $t = 19.5$; $p < 0.001$; Cohen's dz = 3.90), and the proportion of women with severe anxiety fell from 48.0% to 4.0%. Endorphin massage was associated with a substantial reduction in anxiety during the first stage of labor. It is a low-cost, safe, and feasible complement to routine intrapartum care; controlled trials are needed to confirm causality.

Keywords:
anxiety; endorphin massage; first stage of labor; midwifery care; non-pharmacological intervention

Article Info:
Submitted: 20-11-2025
Revised: 13-05-2026
Accepted: 14-05-2026
Published: 17-05-2026

https://doi.org/10.53713/ijh.v2i1.568

This work is licensed under the CC BY-SA License.

INTRODUCTION

Childbirth is a normal physiological event, but for many women it is also one of the most emotionally demanding experiences of their lives. Anxiety and fear commonly rise as contractions intensify during the first stage of labor. These emotions are not only uncomfortable; they have clinical consequences. In a cohort of 2,206 women, fear of childbirth was associated with a longer duration of labor (Adams et al., 2012), and a systematic review linked fear of childbirth to more obstetric interventions, more requests for cesarean birth, and more negative birth experiences (Dencker et al., 2019). For this reason, the World Health Organization model of intrapartum care places a positive childbirth experience, including emotional support and non-pharmacological comfort measures, at the center of quality maternity care (Oladapo et al., 2018).

Volume 02 Number 01 (May 2026)
e-ISSN: 3164-8835; p-ISSN: 3164-8827

A growing body of evidence supports non-pharmacological approaches for reducing anxiety around birth. A systematic review identified massage, relaxation, music, and psychoeducational strategies as promising options for lowering anxiety during pregnancy, labor, and the postpartum period (Domínguez-Solís et al., 2021). Cochrane reviews found that massage and relaxation techniques may reduce labor pain and improve women's sense of control and emotional experience (Smith et al., 2018a, 2018b). Continuous support during labor, which often involves comforting touch, is likewise associated with better outcomes and fewer negative feelings about childbirth (Bohren et al., 2017), and women consistently describe supportive touch from companions as reassuring (Bohren et al., 2019).

Although non-pharmacological interventions have shown potential in improving women's experiences during childbirth, their benefits may depend on how consistently emotional and physical support is provided throughout labor. Continuous support, including reassuring touch and emotional encouragement, has been associated with better childbirth outcomes and fewer negative feelings about the birth experience (Bohren et al., 2017). Women's perceptions of supportive touch also highlight the importance of comfort, reassurance, and a sense of safety during labor (Bohren et al., 2019). Similarly, massage and relaxation techniques may improve women's ability to cope with labor pain and enhance their sense of control (Smith et al., 2018a, 2018b). These findings suggest that supportive touch-based interventions may serve not only as physical comfort measures but also as an important component of emotional support during childbirth.

Endorphin massage is a gentle, rhythmic, light-touch massage applied to the back, shoulders, and arms. Its rationale is physiological. Slow, non-noxious stroking of the skin stimulates sensory pathways that promote oxytocin release and activate calming, anti-stress responses (Uvnäs-Moberg et al., 2015). Massage has also been shown to lower cortisol and increase serotonin and dopamine (Field et al., 2005), changes that may counteract the stress response during labor. Relaxation massage is considered safe during pregnancy when basic precautions are followed (Mueller & Grunwald, 2021). Clinical trials support these mechanisms. Therapeutic touch reduced pain and anxiety during labor (Pinar & Demirel, 2021); partner- and midwife-delivered back massages lowered state anxiety compared with usual care (Ataş & Özerdoğan, 2025); and back massages reduced anxiety among primigravida (Bepari et al., 2025). Other trials of massage have reported less perceived pain and greater birth satisfaction (Gönenç & Terzioğlu, 2020; Unalmis Erdogan et al., 2017).

In Indonesia, anxiety in health care settings is common and often goes unrecognized in routine practice (Afandi et al., 2024a, 2024b). Independent midwifery practices (*Tempat Praktik Mandiri Bidan*, TPMB) are an important point of intrapartum care, especially for women with low-risk pregnancies, yet they rarely use structured strategies to address maternal anxiety. Endorphin massage is attractive in this setting because it requires no equipment, can be taught to midwives and birth companions, and fits local expectations of caring touch. However, the evidence remains thin. An Indonesian study reported only a modest decrease in labor anxiety after husband-delivered endorphin massage, using a small sample and a non-standardized observation sheet (Nikmah et al., 2022). Most other studies have focused on labor pain rather than anxiety, and few have used a standardized, clinician-rated anxiety instrument such as the Hamilton Anxiety Rating Scale (HARS) in routine primary midwifery care.

Volume 02 Number 01 (May 2026)
e-ISSN: 3164-8835; p-ISSN: 3164-8827

Therefore, this study aimed to examine the effect of endorphin massage on anxiety levels among women in the first stage of labor at TPMB Diah Ulul, Probolinggo City, Indonesia. The findings are expected to provide practical evidence to support the integration of a simple, low-cost, and culturally acceptable comfort measure into routine intrapartum midwifery care.

METHODS

This study used a quantitative pre-experimental design with a one-group pretest–posttest approach. Anxiety was measured in the same participants immediately before and after endorphin massage. The report follows the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) statement (Des Jarlais et al., 2004). The study was conducted at TPMB Diah Ulul, an independent midwifery practice providing antenatal, intrapartum, and postnatal care in Probolinggo City, East Java, Indonesia. Data were collected in 2025. The population comprised all women admitted in the first stage of labor during the study period. Total sampling was used, so every eligible woman was invited, resulting in 25 participants.

Women were eligible if they were in the active phase of the first stage of labor, conscious, cooperative, able to communicate effectively, and willing to participate. Women with obstetric complications, emergency conditions requiring immediate medical intervention, or contraindications to massage were excluded. Because total sampling was used, no a priori sample size was calculated. A sensitivity analysis for a two-tailed paired t-test ($\alpha = 0.05$, power = 0.80) showed that 25 participants were sufficient to detect a within-subject effect size of $dz \geq 0.58$ (Faul et al., 2007).

Endorphin massage was performed by trained personnel following a standardized procedure. The technique consisted of gentle, rhythmic, light fingertip strokes applied to the back, shoulders, and upper arms to induce relaxation and emotional comfort. Each woman received one session lasting approximately 20–30 minutes during the active phase of the first stage of labor. Standard intrapartum care continued throughout the study period.

Anxiety was measured with the Hamilton Anxiety Rating Scale (HARS), a clinician-rated instrument consisting of 14 items covering psychological and somatic symptoms (Hamilton, 1959). Each item is scored from 0 (not present) to 4 (very severe), giving a total score of 0–56, with higher scores indicating more severe anxiety. Total scores were categorized as no anxiety (<14), mild (14–20), moderate (21–27), severe (28–41), and very severe (42–56). The HARS has shown acceptable inter-rater reliability, validity, and sensitivity to change (Maier et al., 1988).

After eligibility was confirmed and informed consent was obtained, baseline anxiety (pretest) was assessed with the HARS. Endorphin massage was then delivered, and anxiety was reassessed with the same instrument after the session was completed (posttest). Participant characteristics, including age, parity, education, and occupation, were recorded using a structured form.

Participant characteristics and anxiety categories were summarized using frequencies and percentages, and HARS scores were summarized as mean ± standard deviation (SD), minimum, and maximum. Pretest and posttest scores were compared using a paired-samples t-test after the normality of the difference scores was checked. The mean difference is reported with its 95% confidence interval (CI). Effect size was expressed as Cohen's dz, calculated as $t/\sqrt{n}$ (Lakens, 2013).

Volume 02 Number 01 (May 2026)
e-ISSN: 3164-8835; p-ISSN: 3164-8827

Statistical significance was set at $p < 0.05$ (two-tailed). The study followed the principles of the Declaration of Helsinki, including respect for autonomy, beneficence, non-maleficence, and confidentiality. All participants received a full explanation of the study objectives, procedures, benefits, and potential risks, and written informed consent was obtained before data collection. Participation was voluntary; women could withdraw at any time without affecting their care, and all data were anonymized.

RESULTS

A total of 25 women in the first stage of labor participated, and all completed both assessments. As shown in Table 1, most participants were aged 20–35 years (72.0%), more than half were primiparous (56.0%), most had completed secondary education (60.0%), and most were housewives (68.0%).

Table 1. Characteristics of Participants (n = 25)

Characteristics	Category	Frequency (n)	Percentage (%)
Age	<20 years	3	12.0
	20–35 years	18	72.0
	>35 years	4	16.0
Parity	Primipara	14	56.0
	Multipara	11	44.0
Education Level	Primary School	4	16.0
	Secondary School	15	60.0
	Higher Education	6	24.0
Occupation	Housewife	17	68.0
	Private Employee	5	20.0
	Entrepreneur	3	12.0

Table 2 shows a clear shift in anxiety categories after the intervention. Before endorphin massage, nearly half of the women had severe anxiety (48.0%), and 44.0% had moderate anxiety. After the intervention, the proportion with severe anxiety fell to 4.0% (−44.0 percentage points), moderate anxiety fell to 32.0% (−12.0 percentage points), and mild anxiety rose from 8.0% to 64.0% (+56.0 percentage points).

Table 2. Distribution of HARS Anxiety Categories Before and After Endorphin Massage (n = 25)

Anxiety Category	Pretest n (%)	Posttest n (%)
Mild Anxiety	2 (8.0)	16 (64.0)
Moderate Anxiety	11 (44.0)	8 (32.0)
Severe Anxiety	12 (48.0)	1 (4.0)

As presented in Table 3, the mean HARS score decreased from 29.9 ± 4.2 at pretest, which lies in the severe range, to 13.9 ± 3.8 at posttest, which lies at the border between no anxiety and mild anxiety. The paired-samples t-test showed a statistically significant difference between pretest and posttest scores ($t = 19.5$; $p < 0.001$).

Volume 02 Number 01 (May 2026)
e-ISSN: 3164-8835; p-ISSN: 3164-8827

Table 3. Comparison of HARS Anxiety Scores Before and After Endorphin Massage (n = 25)

Variable	Mean ± SD	Minimum	Maximum	Mean Difference	t-value	p-value
Pretest Anxiety Score	29.9 ± 4.2	22	37	16.0	19.5	<0.001
Posttest Anxiety Score	13.9 ± 3.8	8	22			

Note: HARS = Hamilton Anxiety Rating Scale; SD = standard deviation; paired-samples t-test.

Table 4 summarizes the magnitude and precision of the change. The mean reduction of 16.0 points (95% CI 14.3–17.7) corresponds to a 53.5% decrease from the baseline score. The effect size was very large (Cohen's dz = 3.90), and the confidence interval was narrow and far from zero, indicating a consistent reduction in anxiety across participants.

Table 4. Magnitude and Precision of the Change in HARS Anxiety Scores (n = 25)

Parameter	Value	Interpretation
Mean difference (pretest − posttest)	16.0	Average reduction in HARS score
SD of the difference	4.1	Derived from t and n
95% CI of the mean difference	14.3 to 17.7	Does not include zero
Degrees of freedom	24	n − 1
Relative reduction from baseline	53.5%	16.0 / 29.9
Effect size (Cohen's dz)	3.90	Very large effect
Achieved power (α = 0.05)	>0.99	Adequate for this effect

Note: HARS = Hamilton Anxiety Rating Scale; SD = standard deviation; CI = confidence interval. Values were derived from the paired-samples t-test (t = 19.5).

DISCUSSION

This study found that endorphin massage was associated with a marked reduction in anxiety among women in the first stage of labor. The mean HARS score fell by 16 points, from the severe range to the border of the mild range, and severe anxiety almost disappeared after the intervention. The effect was statistically significant and very large. Clinically, this means that most women moved from a state in which anxiety could interfere with coping and labor progress to a state in which they felt calmer and more in control. Given that fear and anxiety are linked to longer labor and more negative birth experiences (Adams et al., 2012; Dencker et al., 2019), even part of this improvement is likely to be meaningful for women and their caregivers. The result is also notable because more than half of the participants were primiparous, a group that often reports higher anxiety because of limited childbirth experience. To our knowledge, this is one of the few studies to evaluate endorphin massage with a standardized, clinician-rated anxiety scale in an Indonesian independent midwifery practice, which reflects the real conditions in which many low-risk women give birth.

These findings are consistent with previous research on touch-based care during labor. In Indonesia, Nikmah et al. (2022) also observed lower anxiety after endorphin massage, although the reduction in their study was smaller, falling from 30.00 to 26.19. Several differences may explain why the change in the present study was larger. Our sessions lasted 20–30 minutes rather than about 10 minutes, the massage was delivered by trained personnel rather than by husbands, and anxiety was measured with a standardized clinician-rated scale rather than an observation sheet. Internationally, randomized trials have shown that therapeutic touch reduces labor anxiety (Pinar

Volume 02 Number 01 (May 2026)
e-ISSN: 3164-8835; p-ISSN: 3164-8827

& Demirel, 2021), that massage by partners or midwives produces lower state anxiety than usual care (Ataş & Özerdoğan, 2025), and that back massage reduces anxiety in primigravid women (Bepari et al., 2025). Cochrane evidence similarly suggests that massage may reduce labor pain and improve women's emotional experience of labor (Smith et al., 2018a). The direction of our results therefore agrees with the wider literature, although not every trial of labor massage has shown statistically significant benefits (Janssen et al., 2012). However, the effect size in this study is larger than is usually reported in controlled trials. This is expected in a single-group design, in which part of the change may be explained by factors other than the massage itself, such as the caregiver's attention, growing familiarity with the birth environment, and regression toward the mean among women with very high baseline scores.

An important consideration when interpreting this finding is the multidimensional nature of anxiety during labor. Anxiety is not determined solely by the presence or absence of a relaxation intervention but may fluctuate according to contraction intensity, cervical dilation, perceived pain, expectations about childbirth, and the availability of emotional support. The relationship between fear and childbirth experiences is therefore dynamic rather than static (Adams et al., 2012; Dencker et al., 2019). Although the substantial reduction observed in this study suggests that endorphin massage may be a promising supportive intervention, the absence of repeated measurements and a comparison group prevents disentangling its potential contribution from concurrent changes. Future studies should therefore examine anxiety trajectories at different stages of labor to determine whether the benefits are sustained as labor progresses.

Several mechanisms may explain how endorphin massage reduces anxiety. Slow, light stroking stimulates low-threshold skin receptors that signal comfort and safety to the brain. This sensory input promotes the release of oxytocin, which has calming and anti-stress effects (Uvnäs-Moberg et al., 2015). Massage has also been associated with lower cortisol and higher serotonin and dopamine levels (Field et al., 2005). Together with endogenous endorphins, these changes may dampen the sympathetic stress response. This matters during labor because high levels of stress hormones can weaken uterine activity and increase the perception of pain, creating a cycle of fear, tension, and pain. By interrupting this cycle, endorphin massage may help women to relax between contractions, conserve energy, and cope more effectively with each contraction. These physiological explanations are plausible, but they were not measured in this study and should be tested directly in future research.

Beyond physiology, endorphin massage is also a form of human presence. Touch communicates attention, empathy, and safety, which are central to respectful maternity care. Continuous support during labor improves outcomes and reduces negative feelings about childbirth (Bohren et al., 2017), and women value companions and caregivers who stay close and offer comforting touch (Bohren et al., 2019). Relaxation techniques have likewise been shown to improve women's sense of control during labor (Smith et al., 2018b). In the present study, the massage session created a dedicated period in which each woman received focused one-to-one attention. This relational element likely contributed to reduced anxiety and aligns with the WHO vision of a positive childbirth experience (Oladapo et al., 2018). Previous Indonesian studies have shown that anxiety is common among patients in health care settings and that it is often not

addressed systematically (Afandi et al., 2024a, 2024b). Routine anxiety assessment, combined with a simple response such as endorphin massage, could help close this gap in intrapartum care.

The findings have practical implications for midwifery practice, particularly in primary care settings with limited resources. Endorphin massage requires no equipment or medication, carries minimal risk (Mueller & Grunwald, 2021), and can be learned quickly. Independent midwifery practices could include it in their standard operating procedures for the first stage of labor. Because massage delivered by partners appears to be effective (Ataş & Özerdoğan, 2025; Nikmah et al., 2022), husbands or other birth companions could be trained during antenatal classes, allowing support to continue even when midwives are busy. Such an approach also strengthens family involvement, which is highly valued in Indonesian culture. Other massage-based methods have improved birth satisfaction and reduced perceived pain (Gönenç & Terzioğlu, 2020; Unalmis Erdogan et al., 2017), suggesting that the benefits of touch may extend beyond anxiety. For policymakers and educators, these results support the inclusion of non-pharmacological comfort measures in midwifery curricula and continuing professional development. Implementation should, however, respect each woman's preferences, because some women prefer not to be touched during certain phases of labor, and massage should always be offered rather than imposed.

Successful implementation also requires attention to intervention consistency and the quality of midwifery support. Differences in massage duration, pressure, technique, provider competence, and the timing of administration may influence women's experiences and the reproducibility of outcomes. Establishing a standardized procedure, providing practical training, and documenting women's responses could help maintain intervention fidelity across midwifery settings. In addition, endorphin massage should be integrated into individualized intrapartum care rather than used as a substitute for comprehensive anxiety assessment, clinical monitoring, or other indicated interventions. This approach would support the use of non-pharmacological comfort measures while maintaining safety, professional accountability, and respect for women's autonomy.

This study has several limitations. First, the one-group pretest–posttest design without a control group does not allow causal conclusions, because changes in anxiety may also reflect the natural course of labor, caregiver attention, or expectation effects. Second, the sample was small and drawn from a single independent midwifery practice through total sampling, which limits generalizability. Third, the HARS is a clinician-rated scale developed for general anxiety rather than for labor, and the assessor was aware of the timing of the intervention, which may have introduced measurement bias. Fourth, anxiety was measured only once after the session, so the duration of the effect is unknown. Finally, potential confounders such as parity, cervical dilation, companion presence, and other comfort measures were not controlled, and labor outcomes and physiological markers were not assessed. Future studies should use randomized controlled designs with adequate sample sizes across multiple settings, labor-specific anxiety measures, repeated assessments throughout labor, and outcomes such as labor duration, birth experience, and stress biomarkers.

CONCLUSION

Endorphin massage was associated with a significant and substantial reduction in anxiety among women in the first stage of labor at TPMB Diah Ulul, Probolinggo City, with the mean

HARS score falling from the severe range to the mild range and severe anxiety becoming rare after the intervention. This answers the study aims by showing that endorphin massage is a simple, low-cost, and acceptable complement to routine intrapartum midwifery care, although controlled trials are needed to confirm its effect.

ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to the midwives and staff at TPMB Diah Ulul in Probolinggo City for their support and assistance throughout the study. The authors also thank all participants for their time and willingness to take part in this research.

CONFLICT OF INTEREST

The authors declare no conflict of interest related to the conduct, authorship, or publication of this study.

REFERENCES

Adams, S. S., Eberhard-Gran, M., & Eskild, A. (2012). Fear of childbirth and duration of labour: A study of 2206 women with intended vaginal delivery. *BJOG: An International Journal of Obstetrics & Gynaecology*, *119*(10), 1238–1246. https://doi.org/10.1111/j.1471-0528.2012.03433.x

Afandi, A. T., Putri, P., Djuanda, R. O., & Rifai, A. (2024b). Level of anxiety with COVID-19 vaccine screening results in Jember Regency. *Jurnal Kesehatan Komunitas Indonesia*, *4*(2), 218–230. https://doi.org/10.58545/jkki.v4i2.392

Afandi, A. T., Putri, P., Rifai, A., & Susanti, I. A. (2024a). Description of patient anxiety when receiving treatment in hospital. *D'Nursing and Health Journal*, *5*(2), 90–100. https://doi.org/10.61595/dnursing.v5i2.929

Ataş, A. N., & Özerdoğan, N. (2025). The effect of partner massage on pain, anxiety, and the birth process in labor. *Advances in Integrative Medicine*, *12*(2). https://doi.org/10.1016/j.aimed.2025.01.008

Bepari, S., Subramanian, N. S., & Mahalakshmi, B. (2025). Back massage as an approach to reduce labor anxiety in primigravida mothers. *Bioinformation*, *21*(10), 3502–3505. https://doi.org/10.6026/973206300213502

Bohren, M. A., Berger, B. O., Munthe-Kaas, H., & Tunçalp, Ö. (2019). Perceptions and experiences of labour companionship: A qualitative evidence synthesis. *Cochrane Database of Systematic Reviews*, *2019*(3), CD012449. https://doi.org/10.1002/14651858.CD012449.pub2

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

Dencker, A., Nilsson, C., Begley, C., Jangsten, E., Mollberg, M., Patel, H., Wigert, H., Hessman, E., Sjöblom, H., & Sparud-Lundin, C. (2019). Causes and outcomes in studies of fear of childbirth: A systematic review. *Women and Birth*, *32*(2), 99–111. https://doi.org/10.1016/j.wombi.2018.07.004

Des Jarlais, D. C., Lyles, C., Crepaz, N., & the TREND Group. (2004). Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: The TREND statement. *American Journal of Public Health*, *94*(3), 361–366. https://doi.org/10.2105/AJPH.94.3.361

Domínguez-Solís, E., Lima-Serrano, M., & Lima-Rodríguez, J. S. (2021). Non-pharmacological interventions to reduce anxiety in pregnancy, labour and postpartum: A systematic review. *Midwifery*, *102*, 103126. https://doi.org/10.1016/j.midw.2021.103126

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175–191. https://doi.org/10.3758/BF03193146

Field, T., Hernandez-Reif, M., Diego, M., Schanberg, S., & Kuhn, C. (2005). Cortisol decreases and serotonin and dopamine increase following massage therapy. *International Journal of Neuroscience*, *115*(10), 1397–1413. https://doi.org/10.1080/00207450590956459

Gönenç, İ. M., & Terzioğlu, F. (2020). Effects of massage and acupressure on relieving labor pain, reducing labor time, and increasing delivery satisfaction. *Journal of Nursing Research*, *28*(1), e68. https://doi.org/10.1097/jnr.0000000000000344

Hamilton, M. (1959). The assessment of anxiety states by rating. *British Journal of Medical Psychology*, *32*(1), 50–55. https://doi.org/10.1111/j.2044-8341.1959.tb00467.x

Janssen, P., Shroff, F., & Jaspar, P. (2012). Massage therapy and labor outcomes: A randomized controlled trial. *International Journal of Therapeutic Massage & Bodywork*, *5*(4), 15–20. https://doi.org/10.3822/ijtmb.v5i4.164

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology*, *4*, 863. https://doi.org/10.3389/fpsyg.2013.00863

Maier, W., Buller, R., Philipp, M., & Heuser, I. (1988). The Hamilton Anxiety Scale: Reliability, validity and sensitivity to change in anxiety and depressive disorders. *Journal of Affective Disorders*, *14*(1), 61–68. https://doi.org/10.1016/0165-0327(88)90072-9

Mueller, S. M., & Grunwald, M. (2021). Effects, side effects and contraindications of relaxation massage during pregnancy: A systematic review of randomized controlled trials. *Journal of Clinical Medicine*, *10*(16), 3485. https://doi.org/10.3390/jcm10163485

Nikmah, A. N., Prasetiyanti, D. K., Winarti, E., Meireza, K., & Ogasawara, H. (2022). Effect endorphin massage on anxiety labor levels of first stage. *Journal of Nursing Practice*, *5*(2), 261–265. https://doi.org/10.30994/jnp.v5i2.219

Oladapo, O. T., Tunçalp, Ö., Bonet, M., Lawrie, T. A., Portela, A., Downe, S., & Gülmezoglu, A. M. (2018). WHO model of intrapartum care for a positive childbirth experience: Transforming care of women and babies for improved health and wellbeing. *BJOG: An International Journal of Obstetrics & Gynaecology*, *125*(8), 918–922. https://doi.org/10.1111/1471-0528.15237

Pinar, S. E., & Demirel, G. (2021). The effect of therapeutic touch on labour pain, anxiety and childbirth attitude: A randomized controlled trial. *European Journal of Integrative Medicine*, *41*, 101255. https://doi.org/10.1016/j.eujim.2020.101255

Smith, C. A., Levett, K. M., Collins, C. T., Dahlen, H. G., Ee, C. C., & Suganuma, M. (2018a). Massage, reflexology and other manual methods for pain management in labour. *Cochrane Database of Systematic Reviews*, *2018*(3), CD009290. https://doi.org/10.1002/14651858.CD009290.pub3

Smith, C. A., Levett, K. M., Collins, C. T., Armour, M., Dahlen, H. G., & Suganuma, M. (2018b). Relaxation techniques for pain management in labour. *Cochrane Database of Systematic Reviews*, *2018*(3), CD009514. https://doi.org/10.1002/14651858.CD009514.pub2

Unalmis Erdogan, S., Yanikkerem, E., & Goker, A. (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.2017.05.016

Volume 02 Number 01 (May 2026)
e-ISSN: 3164-8835; p-ISSN: 3164-8827

Uvnäs-Moberg, K., Handlin, L., & Petersson, M. (2015). Self-soothing behaviors with particular reference to oxytocin release induced by non-noxious sensory stimulation. *Frontiers in Psychology*, *5*, 1529. https://doi.org/10.3389/fpsyg.2014.01529