MEDISAINS
Jurnal Ilmiah Ilmu - Ilmu Kesehatan

Original Article

A holistic quantum complementary care model for childbirth: effects on maternal physical and psychological outcomes

Dyah Puji Astuti [1], Sumarni [1]✉, Siti Mutoharoh [2]

[1] *Midwifery Study Program, Faculty of Health Sciences, Universitas Muhammadiyah Gombong, Jawa Tengah*
[2] *Midwifery Diploma Study Program, Faculty of Health Sciences, Universitas Muhammadiyah Gombon, Jawa Tengah*

ARTICLE INFORMATION

Received: September 21, 2025
Revised: December 5, 2025
Accepted: December 15, 2025

KEYWORDS

Anxiety; Labor Complications; Labor Duration; Labor Pain; Quantum Childbirth

CORRESPONDENCE

Phone: +6281228855807

E-mail: sumarni2880@gmail.com

A B S T R A C T

Background: The quantum complementary care model is an integrative maternity care approach that combines several non-pharmacological interventions, including the Rebozo technique, murotal therapy (Quran recitation), hypnotherapy, and aromatherapy. Although evidence supporting each modality individually is growing, no previous studies have conceptualized and implemented these interventions within a holistic complementary care framework during labor.

Purpose: This study aimed to determine the effect of the quantum delivery care model on pain and anxiety levels, labor duration, and the risk of delivery complications.

Methods: This research utilized a quasi-experimental design with a posttest-only control group. The study was conducted from June to August 2025 at the Klirong 2 Community Health Center, Kebumen. The population consisted of 334 mothers in labor. Inclusion criteria included pregnant women at term gestation, willingness to participate, and no history of preeclampsia, total placenta previa, or placental abruption. Exclusion criteria were acute complications during labor requiring immediate medical intervention or complete refusal of the intervention. Data analysis was performed used Chi-Square test with a significance level of 0.05.

Results: The findings demonstrated a significant difference in all four maternal outcomes between the groups: pain level (p=0.000), anxiety level (p=0.000), labor duration (p=0.000), and delivery complications (p=0.039).

Conclusion: The quantum complementary care model significantly improved maternal outcomes during labor.

INTRODUCTION

Childbirth is a complex physiological process accompanied by significant physical and psychological challenges, particularly pain and anxiety, which can negatively impact labor progress and the well-being of both mother and fetus.[1] Excessive labor pain and increased anxiety are associated with maternal fatigue, impaired uterine contractions, prolonged labor, and an increased risk of obstetric complications. Globally, an estimated 70–80% of women experience moderate to severe pain during labor, while anxiety remains one of the most common psychological conditions affecting women during the perinatal period.[2] These conditions not only impact the subjective experience of labor but also contribute to poor clinical outcomes, underscoring the importance of a comprehensive and supportive maternity care approach.[3]

In recent years, increasing attention has been directed to non-pharmacological interventions as complementary strategies to improve maternal comfort and promote a physiological labor. Several studies have demonstrated that such approaches can positively impact the physical, psychological, and emotional dimensions of labor. The Rebozo technique, has been shown to facilitate cervical dilation, optimize fetal positioning, and reduce labor pain through rhythmic pelvic movements that support uterine efficiency and maternal relaxation.[4]

Similarly, murottal therapy recitations has been associated with reduced anxiety levels, lower heart rate, and increased emotional calm through spiritual affirmation. Mind-body interventions such as hypnotherapy have also been reported to improve uterine coordination, induce deep relaxation, and shorten labor duration, while lavender aromatherapy has demonstrated efficacy in reducing pain perception, emotional stress, and anxiety in laboring women. Collectively, these findings support the

https://doi.org/10.30595/medisains.v23i3.28264

effectiveness and safety of non-pharmacological interventions as a holistic and culturally sensitive approach to maternity care.[5]

Despite growing evidence supporting individual complementary interventions, existing research remains fragmented. Most previous studies have evaluated these modalities separately, focusing on single outcomes such as pain reduction or anxiety reduction. As a result, the cumulative and potentially synergistic effects of combining various complementary approaches on physical and psychological labor outcomes remain underexplored.[6] Furthermore, the current literature lacks integrative care models that simultaneously address the physical, psychological, emotional, and spiritual dimensions of labor within a unified framework. This gap is particularly relevant in culturally and spiritually oriented environments, where holistic approaches to maternal care are increasingly advocated but remain underrepresented in empirical research.[7]

To address this limitation, the quantum complementary care model was developed as an innovative, culturally grounded framework that integrates rebozo, murottal therapy, hypnotherapy, and aromatherapy into a single, holistic, non-pharmacological intervention. Unlike previous research that examined these techniques independently, this model is designed to harness their synergistic physiological and psychological effects to optimize maternal outcomes. By combining physical support, psychological relaxation, emotional regulation, and spiritual comfort, the quantum complementary care model represents a novel approach to comprehensive maternity care.

METHOD

Study Design

This quasi-experimental study used a posttest-only control group design.[8]

Setting and Respondent

This study was conducted at Klirong 2 Community Health Center between June and July 2025. The target population comprised all women who delivered at term within the health center's service area. A total of 30 respondents met the study eligibility criteria. The inclusion criteria were women who delivered at term, consented to participate, and had no history of preeclampsia, total placenta previa, or placental abruption. The exclusion criteria were women who experienced acute intrapartum complications requiring immediate medical intervention or who declined participation. Simple random sampling was employed to select the study participants.

Experimental Procedure

The interventions were administered from the active phase of labor until childbirth. Preparation included soft lighting, comfortable maternal positioning, and the use of a portable speaker and aromatherapy lavender. Hypnobirthing was delivered by a trained midwife using a standardized guided relaxation script for 5–10 minutes per session, in accordance with the standard operating procedure (SOP). Spiritual music therapy was provided through Quran recitation at a comfortable volume to reduce maternal anxiety, while aromatherapy was administered via a diffuser using essential oils at concentrations safe for labor, with continuous monitoring for potential adverse reactions. The Rebozo touch technique was applied during the active phase of labor as permitted, following the established Rebozo SOP.

Participants in the intervention group received the full quantum complementary care model in addition to routine intrapartum care. In contrast, participants in the control group received standard intrapartum care only, in accordance with institutional clinical guidelines, without the application of complementary interventions.

The Variable, Instrument, and Measurement

The study implemented the quantum complementary care model, comprising the Rebozo technique, hypnobirthing, spiritual music therapy, and lavender aromatherapy, administered during the active phase of labor in accordance with standard operating procedures. The study outcomes included labor pain intensity, maternal anxiety level, labor duration, and labor complications. Labor pain intensity was measured using the visual analog scale, while maternal anxiety was assessed using the hamilton anxiety rating scale. Labor duration was recorded in hours using the partograph, calculated from the onset of the active phase until delivery. Labor complications were identified based on clinical records and partograph documentation. All outcome measurements were conducted after the intervention and documented by trained midwives.

Data analysis

The Chi-Square test was used to analyze the relationship or difference in proportion between two statistically significant categorical variables (nominal/ordinal) between the quantum complementary care model and maternal outcomes.

Ethical Consideration

Ethical approval for this study was obtained from the Health Research Ethics Committee Muhammadiyah University of Gombong, with approval number 947/EC-KEPK-SB/VIII/2024.

RESULTS

Table 1 shows that most participants were aged 20–35 years and were predominantly multiparous, with comparable age and parity distributions between the intervention and control groups. As presented in Table 2, significant differences were observed between the intervention and control groups in labor pain intensity, maternal anxiety level, labor duration, and labor complications ($p<0.05$). The intervention group demonstrated lower proportions of severe labor pain and

anxiety, shorter labor duration, and fewer labor complications compared to the control group.

Table 1. Characteristic of Respondent (n=30)

Characteristic	Intervention	Control
Age, yr		
< 20	0 (0%)	2(6,7%)
20-35	20(66,7%)	26(86,7%)
>35	10(33,3%)	2(6,7%)
Parity		
Primipara	8(26,7%)	14(46,7%)
Multipara	21(70%)	16(53,3%)
Grandemultipara	1(3,3%)	0(0%)

Table 2. Comparison of Maternal Labor Outcomes Between the Intervention and Control Groups

Variable	Intervention	Control	p-value
Labor Pain			
Mild	16 (53.3%)	2 (6.7%)	
Moderate	14 (46.7%)	10 (33.3%)	0.000
Severe	0 (0%)	18 (60.0%)	
Anxiety			
Mild	16 (53.3%)	0 (0%)	
Moderate	14 (46.7%)	15 (50.0%)	0.000
Severe	0 (0%)	15 (50.0%)	
Labor Duration			
<6 Hours	29 (96.7%)	11(36.7%)	0.000
> 6 Hours	1 (3.3%)	19 (63.3%)	
Labor Complications			
No	29 (96.7%)	11 (36.7%)	0.000
Yes	1 (3.3%)	19 (63.3%)	

DISCUSSIO

This study found that most participants were within the productive reproductive age range (20–35 years), which is considered optimal for physiological labor outcomes. This finding supports global evidence indicating that women within this age group tend to experience smoother labor processes and fewer obstetric complications compared with younger or older mothers.[9,10] Although a small proportion of participants were above 35 years of age, the overall age distribution remained within the range recommended for healthy pregnancy and childbirth.[11]

Regarding parity, this study identified parity as an important contextual factor influencing labor outcomes. High parity (≥5 deliveries) is known to increase the risk of uterine fatigue and postpartum hemorrhage due to decreased uterine muscle elasticity.[12] Conversely, primiparous women are more likely to experience increased anxiety and prolonged labor due to lack of childbirth experience, which has been associated with a substantially higher risk of abnormal labor duration.[13] These findings are consistent with previous studies reporting that both extreme parity conditions primiparity and grand multiparity are associated with adverse maternal experiences and reduced quality of life when exposed to multiple stressors.[14]

The main finding of this study demonstrates that the quantum complementary care model significantly reduced labor pain compared with standard care. This result suggests that integrating multiple non-pharmacological interventions into a single, structured model provides greater analgesic benefits than applying each modality separately.[15] Previous studies have shown that deep breathing relaxation combined with lavender aromatherapy effectively reduces labor pain intensity, while the use of murottal therapy and lavender aromatherapy has also been associated with significant pain reduction during labor.[16] In addition, the Rebozo and effleurage techniques have been shown to reduce contraction pain by promoting muscular relaxation and improving maternal comfort.[17]

From a physiological perspective, the Rebozo technique reduces pain intensity by facilitating neuromuscular relaxation and optimizing fetal positioning, thereby decreasing mechanical strain during uterine contractions. Hypnosis further modulates pain perception by altering activity in brain regions involved in attention and affective pain processing, including the prefrontal cortex, anterior cingulate cortex, and insula, providing a neurophysiological basis for pain modulation through top-down control mechanism.[18-20] Aromatherapy contributes to pain reduction by stimulating the limbic system and promoting endorphin release, leading to enhanced relaxation and reduced pain perception. Meanwhile, murottal therapy induces physiological calm by reducing sympathetic nervous system activity and increasing endorphin secretion, while also providing spiritual reassurance that strengthens emotional resilience during labor.[21,22]

This study also found that the quantum complementary care model significantly reduced maternal anxiety during labor. These findings indicate that a holistic approach addressing psychological, emotional, and spiritual dimensions is more effective than single-modality interventions.[23] Previous evidence supports the effectiveness of combined aromatherapy and hypnotherapy in reducing anxiety among pregnant and laboring women.[24] Systematic reviews have further demonstrated that aromatherapy administered through various modalities including inhalation and massage has a positive effect on reducing both labor pain and anxiety.[25] Murottal therapy has also been shown to significantly decrease maternal anxiety during childbirth. In addition, application of the Rebozo technique during the active phase of labor has been associated with a marked reduction in anxiety levels over time.[26]

The reduction in anxiety observed in this study can be explained by the synergistic effects of controlled breathing, hypnotic suggestion, spiritual auditory stimulation, muscular relaxation, and sedative aromatherapeutic effects. These interventions collectively reduce sympathetic nervous system activity and stress hormone levels, while enhancing oxytocin and endorphin release, enabling mothers to experience labor with reduced fear and improved emotional regulation.

The findings of this study indicate that the quantum complementary care model significantly shortened labor

duration. This outcome is clinically important, as prolonged labor is associated with increased maternal and neonatal risks. The partograph warning line serves as a key indicator for identifying prolonged labor and guiding timely interventions. The observed reduction in labor duration may be attributed to improved autonomic balance achieved through deep relaxation, guided breathing, and mindfulness-based interventions. These mechanisms reduce sympathetic dominance and enhance parasympathetic activity, resulting in more effective uterine contractions mediated by increased oxytocin release. Consistent with previous research, the Rebozo technique has been shown to accelerate cervical dilation by improving fetal positioning and relaxing pelvic floor muscles. Hypnotherapy further contributes to shorter labor duration by reducing anxiety and enhancing maternal self-control, which supports the endogenous release of endorphins and oxytocinkey hormones involved in labor progression.[27,28]

This study demonstrates that the quantum complementary care model significantly reduced the incidence of labor complications. This finding is particularly relevant in contexts where delays in recognizing danger signs and limited access to healthcare facilities contribute to increased maternal morbidity and mortality.[29] Non-pharmacological interventions such as the Rebozo technique have been shown to reduce dystocia-related complications by accelerating labor and improving comfort. Hypnotherapy reduces anxiety and the need for pharmacological analgesia, thereby lowering intervention-related risks.[30,31] Aromatherapy enhances uterine efficiency through relaxation and pain reduction, while murottal therapy stabilizes maternal physiological responses by reducing stress hormones and promoting emotional calm.

CONCLUSIONS AND RECOMMENDATION

The implementation of quantum complementary care model intervention has significant implications for midwifery care. These methods, which help reduce pain, anxiety, and labor duration while reducing the risk of complications, serve as a holistic, evidence-based, non-pharmacological option for improving maternal care. Incorporating them into standard labor practices can improve the quality and safety of maternity care by enhancing the overall physical, emotional, and spiritual well-being of mothers and babies. Future studies are needed to validate the model in larger populations and clinical settings.

REFERENCES

1. Sanni KR, Eeva E, Noora SM, Laura KS, Linnea K, Hasse K. The influence of maternal psychological distress on the mode of birth and duration of labor: findings from the FinnBrain Birth Cohort Study. *Arch Womens Ment Health.* 2022;25:463-472. https://doi.org/10.1007/s00737-022-01212-0
2. World Health Organization. *Intrapartum Care for a Positive Childbirth Experience: Evidence-Based Recommendations.* WHO; 2018. https://www.who.int/publications/i/item/9789241550215
3. Setiawan SA, Nurfaiza L. Hubungan paritas dengan tingkat kecemasan ibu menghadapi persalinan normal. *Oksitosin J Ilm Kebidanan.* 2021;8:128-135. https://doi.org/10.35316/oksitosin.v8i2.908
4. Tandoğan Ö, Oskay Ü. The effect of Rebozo technique on perceived labour pain and childbirth experience: a randomized controlled trial. *Medicine (Baltimore).* 2024;103. https://doi.org/10.1097/MD.0000000000039346
5. Irmawati, Hadju V, Syamsuddin S, Arundhana AI. The effect of listening to the recitation of Qur'an (Murottal Ar-Rahman surah) on the level of anxiety of pregnant women in Siti Fatimah maternal and child hospital. *Enferm Clin.* 2020;30:238-242. https://doi.org/10.1016/j.enfcli.2019.07.097
6. Mahmoud NM, Gohar IE, Elkhatib HMA. Effect of hypnobirthing preparation on pain intensity, anxiety, and satisfaction among parturient women. *Egypt J Health Care.* 2024;15:391-406. https://doi.org/10.21608/ejhc.2024.376205
7. Hatami Rad R. Effect of aromatherapy with lavender on labor pain: a literature review. *Dis Diagnosis.* 2021;10(3):123-128. https://doi.org/10.34172/ddj.2021.23
8. Sugiyono. *Metode Penelitian Kuantitatif, Kualitatif, dan R&D.* Alfabeta; 2022.
9. Firdhauzy AR, Sulistyowati DWW, Khasanah U, Ginarsih Y. Hubungan usia dan paritas dengan kejadian partus lama pada ibu bersalin di Puskesmas Galis Bangkalan. *Gema Bidan Indones.* 2024;13:52-58. https://doi.org/10.36568/gebindo.v13i2.207
10. Yenti R, Jumiati, Khiriyani K. Karakteristik ibu bersalin yang mengalami kala II memanjang di RSUD Kecamatan Mandau Kabupaten Bengkalis. *JUBIDA.* 2023;2:38-46. https://doi.org/10.58794/jubida.v2i1.470
11. World Health Organization. *Trends in Maternal Age and Health Outcomes: Global and Regional Estimates.* WHO; 2021. https://www.who.int/publications/i/item/9789240068759
12. Dasa TT, Okunlola MA, Dessie Y. Effect of grand multiparity on adverse maternal outcomes: a prospective cohort study. *Front Public Health.* 2022;10. https://doi.org/10.3389/fpubh.2022.959633
13. Perangin Angin SY. Pengaruh tingkat kecemasan dan mekanisme koping ibu primigravida terhadap lamanya kala I persalinan spontan. *EMBRIO.* 2021;12:119-128. https://doi.org/10.36456/embrio.v12i2.2877
14. Alzboon G, Vural G. The experience of healthy pregnancy in high parity women: a phenomenological study in North Jordan. *Medicina (Kaunas).* 2021;57. https://doi.org/10.3390/medicina57080853
15. Siregar DA, Aritonang J, Haslin S. Pengaruh kombinasi relaksasi napas dalam dengan aromaterapi lavender terhadap nyeri persalinan kala I. *J Health Reprod.* 2025;9:60-69. https://doi.org/10.51544/jrh.v9i2.5672
16. Nurhasanah C, Yushida Y, Yuniwati C. Application of audio murotal Al-Qur'an and lavender aromatherapy for first-stage labor pain. *Path Sci.* 2024;10:2022-2026. https://doi.org/10.22178/pos.103-7
17. Maryati L, Nursitiyaroh N. The effect of the Rebozo and

effleurage techniques on reducing contraction pain during labor. *Int J Health Pharm.* 2023;3:717-722. https://doi.org/10.51601/ijhp.v3i4.233
18. Uludağ DS, Ayar Kocatürk A. The effect of using Rebozo technique during labor on the sensation of labor pain and labor duration. *Razi Int Med J.* 2024;4(1):45-54. https://doi.org/10.56101/rimj.v4i1.152
19. Wolf TG, Faerber KA, Rummel C, Halsband U, Campus G. Functional changes in brain activity using hypnosis: a systematic review. *Brain Sci.* 2022;12. https://doi.org/10.3390/brainsci12010108
20. Yaqoob H, Ju XD, Jamshaid S. Hypnobirthing training for first-time mothers: pain, anxiety, and postpartum wellbeing. *Psychol Res Behav Manag.* 2024;17:3033-3048. https://doi.org/10.2147/PRBM.S465361
21. Sattayakhom A, Wichit S, Koomhin P. The effects of essential oils on the nervous system: a scoping review. *Molecules.* 2023;28. https://doi.org/10.3390/molecules28093771
22. Ardela M, Puspita NLM, Sustamy RP, Isnaini F. Inhalation aromatherapy using lavender essential oil to decrease labor pain intensity. *J Qual Public Health.* 2022;5:545-549. https://doi.org/10.30994/jqph.v5i2.356
23. Fikriya, Widiawati I, Fatimah YU. The effect of murottal Al-Qur'an on anxiety of pregnant women in the third trimester. *J Kebidanan Kestra.* 2022;7(1):33-40. https://doi.org/10.35451/jkk.v7i1.2268
24. Tiara GR, Ulfah Y. Pengaruh murottal Al-Qur'an terhadap penurunan nyeri persalinan kala I fase aktif. *J Kesehat Siliwangi.* 2022;3(2):287-296. https://doi.org/10.34011/jks.v3i2.1226
25. Phaskani S. Pengaruh kombinasi aromaterapi mawar dan hipnoterapi terhadap kecemasan ibu hamil. *J Med Usada.* 2023;6:73-78. https://doi.org/10.54107/medikausada.v6i2.193
26. Darwanti D, Kusumadewi RR. Pengaruh kombinasi hipnobirthing dan essential oil bergamot terhadap kecemasan ibu bersalin kala I. *J Ilm Bidan.* 2024;8(2):46-52. https://doi.org/10.61720/JIB.V8I2.499
27. Tabatabaeichehr M, Mortazavi H. The effectiveness of aromatherapy in the management of labor pain and anxiety: a systematic review. *Ethiop J Health Sci.* 2020;30:449-458. https://doi.org/10.4314/ejhs.v30i3.16
28. Uvnäs-Moberg K, Ekström-Bergström A, Berg M, et al. Maternal plasma levels of oxytocin during physiological childbirth. *BMC Pregnancy Childbirth.* 2019;19(1):285. https://doi.org/10.1186/s12884-019-2365-9
29. Buckley SJ. *Hormonal Physiology of Childbearing: Evidence and Implications for Women, Babies, and Maternity Care.* Childbirth Connection Programs; 2015. https://www.nationalpartnership.org/our-work/resources/health-care/maternity/hormonal-physiology-of-childbearing.pdf
30. Kuswandi L. *Gentle Birth: Melahirkan Alami, Lembut, dan Sadar.* Gramedia Pustaka Utama; 2019.
31. Kementerian Kesehatan RI. *Profil Kesehatan Republik Indonesia 2023.* Kemenkes RI; 2023.