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ORIGINAL RESEARCH

Combined Psychological Nursing and Midwife-Led Positional Care Reduces Labor Duration in Nulliparous Women: A Retrospective Study

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Objective: To investigate the effects of psychological nursing combined with midwife-led positional care on labor duration and delivery outcomes in nulliparous women undergoing vaginal delivery.

Methods: This retrospective study included 110 nulliparous women who underwent vaginal delivery in our hospital's obstetrics department between August 2023 and January 2025. Participants were divided into an observation group (n = 55, receiving psychological nursing combined with midwife-led positional care) and a control group (n = 55, receiving routine nursing interventions). Labor duration, sense of labor control, anxiety/depression scores, health knowledge mastery, and self-efficacy were compared between the two groups.

Results: No significant differences were observed in baseline clinical characteristics (eg, age) between the groups ($P > 0.05$), indicating comparability. The observation group exhibited significantly shorter labor durations during both the first and second stages of labor compared to the control group (402.65 ± 61.51/39.78 ± 5.91 vs 311.56 ± 50.69/26.58 ± 5.31, $P < 0.05$). Scores on the Labor Control Scale were markedly higher in the observation group (141.56 ± 11.6 1 vs 68.54 ± 12.61, $P < 0.05$). Post-intervention, the observation group reported lower anxiety (HAMA) and depression (HAMD) scores than the control group (13.14 ± 2.11/10.65 ± 1.45 vs 8.25 ± 1.52/7.34 ± 1.28, $P < 0.05$). Health knowledge levels regarding childbirth were significantly superior in the observation group (78.23 ± 5.56 vs 90.11 ± 5.14, $P < 0.05$), as were post-intervention CBSEI-C32 self-efficacy scores (88.23 ± 2.88 vs 98.56 ± 1.17, $P < 0.05$).

Conclusion: The integration of psychological nursing with midwife-led positional care effectively shortens labor duration, enhances health knowledge mastery and sense of labor control, alleviates negative emotions, and improves self-efficacy in nulliparous women. This joint intervention plan has empirical basis for clinical implementation.

Keywords: vaginal delivery, nulliparous women, psychological nursing, midwife-led positional care, labor duration

Introduction

Vaginal delivery, as a childbirth method aligned with human physiological characteristics, is endorsed by the World Health Organization (WHO) as the preferred delivery mode due to its advantages in promoting neonatal respiratory adaptation and reducing risks of maternal-fetal complications.[1–3] However, nulliparous women often experience anxiety, depression, and other negative emotions due to fear of pain, uncertainty about the delivery process, and pressure from role transitions, stemming from their lack of childbirth experience. Studies indicate that 60%–80% of nulliparous women exhibit varying degrees of psychological stress responses during labor. Such stress activates the sympathetic nervous system, increasing catecholamine secretion, which may subsequently inhibit uterine contractions, prolong labor duration, and even elevate the risk of cesarean section.[4,5] The existing childbirth preparation courses mostly focus on single psychological intervention or static position guidance, while this study innovatively integrates midwife led dynamic

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position adjustment and graded psychological nursing, and constructs a "assessment intervention feedback" full cycle education system, filling the gap in systematic research on joint intervention.

Traditional obstetric care models prioritize medical interventions, focusing on labor monitoring and complication management, while neglecting maternal psychological needs and positional comfort. In recent years, the emergence of "mother-centered" care philosophies has highlighted the growing importance of psychological nursing and positional care in obstetric practice.[6–8] Psychological nursing, through cognitive-behavioral interventions, emotional support, and health education, alleviates maternal anxiety and enhances childbirth confidence. The psychological nursing course includes practical training on pain management during childbirth (such as breathing and massage techniques), emergency simulation exercises, and visual feedback on labor progress based on smart wearable devices, significantly improving the coping ability of postpartum women. Concurrently, midwife-led positional care optimizes fetal-pelvic adaptation by adjusting pelvic spatial relationships and fetal gravity alignment, thereby accelerating labor progression.[9,10] Meanwhile, previous studies have suggested that delivery anxiety increases cortisol secretion by activating the hypothalamic pituitary adrenal axis (HPA axis), inhibits uterine contractility, and reduces placental blood flow perfusion, leading to an increased risk of fetal hypoxia. Although independent applications of psychological nursing and positional care have demonstrated positive impacts on delivery outcomes, their synergistic effects in combined interventions remain underexplored.[11] Although prenatal education can reduce anxiety levels in primiparous women (Hatamleh et al), the integrated model of psychological care and positional care still lacks empirical support. This study fills the gap in the cumulative verification of the effectiveness of a single nursing measure through joint intervention.

This study retrospectively investigates the effects of psychological nursing combined with midwife-led positional care on labor duration, sense of labor control, anxiety/depression levels, health knowledge mastery, and self-efficacy among nulliparous women undergoing vaginal delivery. The findings aim to provide evidence-based insights for optimizing nulliparous care models and establishing a foundation for clinical promotion of integrated "psychological-physiological" intervention strategies.

Materials and Methods

Participants

This study was conducted in the obstetrics department of our hospital, involving 110 nulliparous women who underwent vaginal delivery between August 2023 and January 2025, after excluding individuals who did not meet the full inclusion criteria. A retrospective approach was adopted to categorize the participants into an observation group (n = 55, receiving psychological nursing combined with midwife-led positional care) and a control group (n = 55, receiving routine nursing interventions). The sample size was calculated using G*Power 3.1 software, with $\alpha = 0.05$, $\beta = 0.2$, and effect size $d = 0.8$ (based on pre experimental data). Ultimately, it was determined that 55 cases were required for each group (total sample size of 110 cases). The grouping criteria are based on the "Psychological Positional Joint Intervention" standard in the "Clinical Practice Guidelines for Midwifery led Nursing" (2023 edition), combined with the nursing operation norms of our hospital. To avoid selection bias, PSM was used to balance the two groups of patients and data, ensuring baseline comparability between the two groups ($P > 0.05$). In the research design section, it is stated that this study is a retrospective analysis, and participants were not blinded. However, data extraction was completed by two independent researchers in a blinded manner, with a kappa coefficient of 0.87 ($p < 0.001$). Ethical approval was granted by Tangdu Hospital, Air Force Military Medical University Review Board (IRB), adhering to the Declaration of Helsinki and China's Ethical Review Guidelines for Biomedical Research Involving Human Subjects. Given the study's classification as a Quality Improvement Project (QIP) without additional interventions, the IRB waived informed consent requirements per CIOMS Guideline 3.2. All data were anonymized, and data protection protocols were strictly observed throughout the study.

Inclusion and Exclusion Criteria

Inclusion Criteria

Primigravida with singleton cephalic presentation; Age ≥ 22 years (The lower age limit shall refer to Article 13 of the Implementation Measures of the Maternal and Child Health Care Law of the People's Republic of China to ensure that the research complies with ethical review requirements); Conscious with normal communication ability; Gestational age ≥ 36 weeks; Compliance with full intervention and data collection; Complete clinical records.

Exclusion Criteria

Premature rupture of membranes (≥18 hours) or fetal distress (abnormal cardiotocography, meconium-stained amniotic fluid ≥ Grade II); Pelvic deformities (eg, stenosis, malformation, or history of fracture); Psychiatric disorders or cognitive dysfunction; Malignancy, immune/hematologic diseases, or severe cardiorenal/hepatic dysfunction; Use of sedatives or central nervous system-affecting medications during pregnancy.

Interventions

Control Group: Routine care includes prenatal health education (twice a week, 30 minutes each time, covering recognition of delivery signs and basic breathing techniques), electronic fetal heart monitoring during labor (recorded every 15 minutes), and routine delivery guidance (such as timing reminders for exertion).

Observation Group: Received enhanced interventions combining psychological nursing with midwife-led positional care, as detailed below:

Psychological Nursing

① Initial Engagement and Holistic Support: A dedicated midwife established a one-to-one relationship upon admission, providing continuous psychological care throughout labor. Sustained emotional support fostered trust and a secure attachment, reducing delivery-related anxiety.

② Multidimensional Cognitive Restructuring: Structured antenatal education programs covered pregnancy management, labor cooperation, and pain management strategies. Motivational interviewing techniques were employed to enhance maternal agency, establish realistic birth expectations, and resolve emotional distress arising from cognitive biases.

③ Dynamic Emotional Monitoring: Standardized psychological assessments (eg, EPDS) were used for risk screening. An early-warning system for emotional fluctuations was implemented, with validational listening and empathetic communication employed to address psychological crises. Mindfulness-based stress reduction techniques maintained emotional stability.

④ Labor Coping Skills Training: Tiered psychological adjustment protocols were applied during labor stages, including diaphragmatic breathing, progressive muscle relaxation, and positive affirmations. Birth rehearsal techniques improved psychological resilience, while attentional allocation strategies minimized unnecessary cognitive load.

⑤ Postpartum Resilience Building: Supportive care extended to the puerperium, incorporating breastfeeding biofeedback training and pelvic floor rehabilitation guidance. Affective reflection therapy promoted mother-infant bonding, while cognitive behavioral therapy prevented postpartum mood disorders. A family-social support network was established to facilitate comprehensive recovery.[12,13]

Midwife-Led Positional Care Protocol

Perinatal Health Management Program

① Cognitive Intervention Module: Implemented a structured health education program utilizing multimedia presentations, 3D anatomical models, and interactive Q&A sessions to systematically educate pregnant women and their companions on pregnancy physiology, labor mechanisms, and perinatal precautions. Concurrent environmental adaptation training employed graded exposure therapy to alleviate spatial disorientation and foster psychological security.

② Labor Preparation Training: Senior midwives conducted simulation-based labor courses featuring VR-based dynamic labor progression demonstrations and standardized patient (SP) role-play. Training emphasized abnormal labor recognition, free-position application, and non-pharmacological analgesia techniques, supplemented by mnemonic-based skill reinforcement.

Intrapartum Dynamic Care Pathway

① Physical Environment Optimization: Labor units were ergonomically designed with adjustable LED lighting, negative ion air purifiers, and multisensory modulation devices. Positive sensory stimulation was achieved through environmental musicotherapy and aromatherapy, maintaining optimal room conditions at maintaining optimal room conditions at 24 ± 1°C (75.2 ± 1.8°F) and 55 ± 5% relative humidity (RH).

② Risk Early Warning System: A dynamic maternal assessment matrix integrated electronic fetal monitoring data, labor progress charts, and maternal subjective experience scales. The Modified Early Warning Score (MEWS) system enabled tiered labor risk management, with decision-support algorithms assisting midwives in developing personalized pushing strategies. Hydration-nutrition protocols were concurrently established.

Evidence-Based Positional Management Strategies

Implemented fetal-pelvic adaptation positioning protocols using ultrasonic volumetric navigation for real-time fetal head position monitoring:

① Pelvic Rotation Promotion Positions: When fetal head engagement reached S-1 level, open knee-chest positions combined with birth ball vibration therapy were instructed. Biofeedback monitoring of pelvic floor electromyographic activity optimized fetal head rotation trajectories.

② Occiput Posterior Position Correction: For confirmed occiput posterior positions, asymmetric upright positioning with 30° lateral inclination using specialized wedge cushions was applied. Midwives performed sacroiliac joint mobilization via fascial release techniques, coordinating symmetric abdominal pressure application with respiratory mechanics guidance. Closed-loop management included 30-minute triadic assessments of position, symptoms, and fetal heart rate.[14–16]

Outcome Measures

Labor Progress Monitoring: Adopted a three-stage chronometric method to record labor durations:

Cervical Effacement Phase (latent phase to full cervical dilation)

Fetal Expulsion Phase (full dilation to placental separation)

Placental Delivery Phase (fetal expulsion to complete placental delivery)

Labor Agency Perception Assessment: Utilized the Labor Agency Scale (29-item, 7-point Likert scale; total score 29–203) for quantitative evaluation, with higher scores indicating greater perceived control over the birth process.

Emotional State Quantification: Employed the Hamilton Anxiety/Depression Scales (HAMA/HAMD) for dual-dimension psychological assessment. HAMA (14 items, 0–56 total score) and HAMD (17 items, 0–68 total score) used 4-point scoring systems, with scores directly correlating to symptom severity. Assessments were conducted pre- and post-intervention.

Maternal Knowledge Evaluation: Developed a structured maternity knowledge questionnaire covering 10 core modules (eg, cesarean indications, labor complication prevention, vaginal delivery advantages). Total score (100 points) linearly correlated with knowledge mastery depth. The questionnaire was evaluated for content validity (CVI = 0.92) by 5 obstetric nursing experts (including 2 doctoral supervisors), with a test-retest reliability of $r = 0.86$ ($p < 0.01$). Its discrimination was validated through a pilot experiment ($n = 30$), with a score difference of 12.7 ± 3.2 points between the observation group and the control group, $p < 0.001$).

Coping Efficacy Evaluation: Administered the Chinese version of the Childbirth Self-Efficacy Inventory (CBSEI-C32) for dynamic assessment. The 32-item inventory (4-point Likert scale, total score 32–128) included outcome expectancy and self-efficacy expectation dimensions. Scores reflected confidence in managing labor challenges, with assessments at baseline and post-delivery.

Table 1 Comparison of Baseline Characteristics Between Groups (mean ± SD)

		Control Group	Observers Group	*t*	*P*
Number of Cases	–	55	55	–	–
Age (years)	–	25-38	25-38	–	–
	Mean	29.45 ± 3.54	29.87 ± 3.18	0.655	0.514
Gestational age (week)	–	36-42	36-42	–	–
	Mean	40.01 ± 1.25	40.08 ± 1.31	0.287	0.775
BMI (kg/m²)	Mean	23.12 ± 2.43	22.81 ± 2.47	0.313	0.737
0 Total Social Support Score (SSRS)	Mean	38.25 ± 5.11	37.99 ± 5.46	0.489	0.512

Statistical Analysis

GraphPad Prism 8 was used for graphical processing. SPSS 23.0 performed data compilation and statistical analysis. Continuous variables were expressed as mean ± standard deviation (±s) and compared via t-tests. Categorical variables were presented as percentages (%) and analyzed using chi-square (χ^2) tests. Statistical significance was set at $P < 0.05$.

Results

Clinical Data

The control group comprised 55 participants aged 25–38 years (mean 29.45 ± 3.54 years) with gestational ages of 36–42 weeks (mean 40.01 ± 1.25 weeks). The observation group included 55 participants aged 25–38 years (mean 29.87 ± 3.18 years) with gestational ages of 36–42 weeks (mean 40.08 ± 1.31 weeks). No significant differences were observed in baseline characteristics between groups ($P > 0.05$), indicating good comparability (Table 1).

Labor Duration

The observation group demonstrated significantly shorter durations in both the first and second stages of labor compared to the control group ($P < 0.05$), suggesting accelerated labor progression with the intervention (Figure 1).

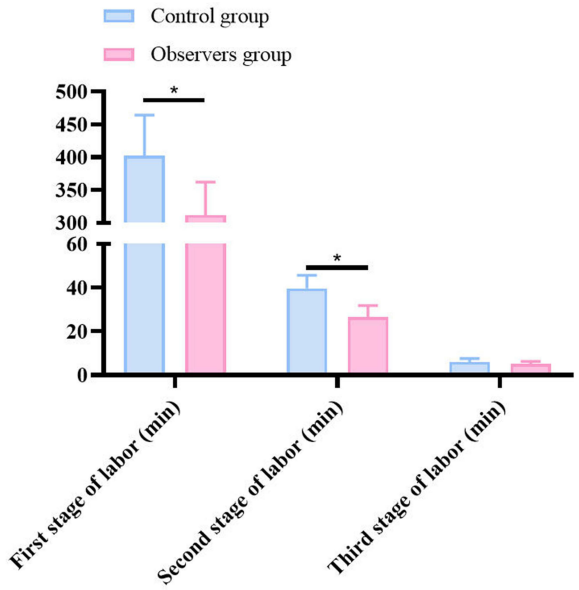

Figure 1 Comparison of Labor Durations Between Groups.
Note: *Indicates statistical significance at $P < 0.05$.

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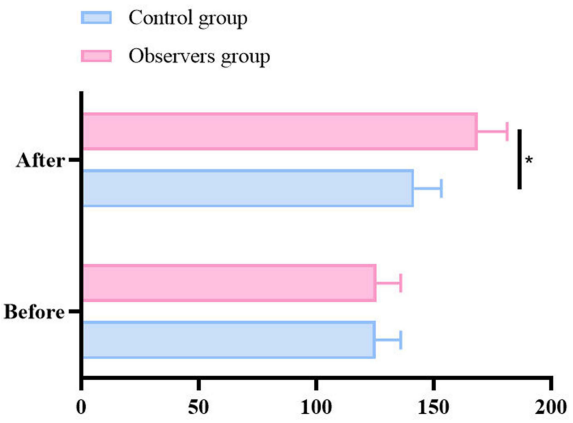

Figure 2 Labor Control Scale Scores Between Groups.
Note: *Indicates statistical significance at P < 0.05.

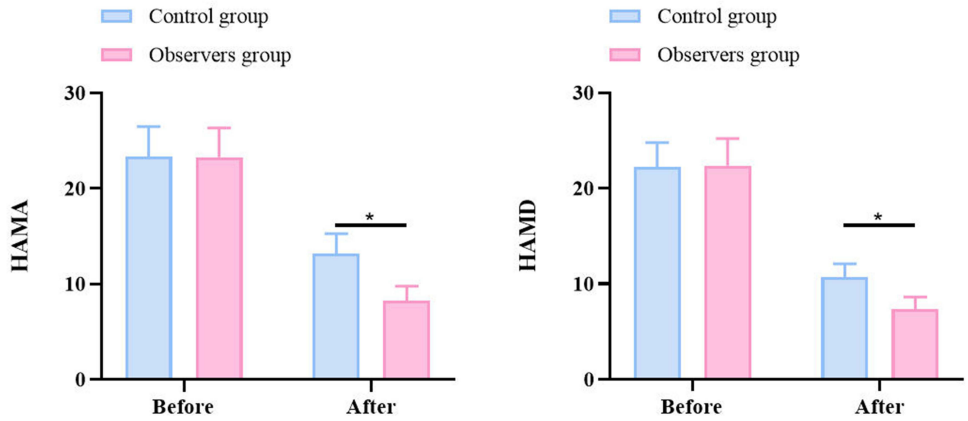

Figure 3 HAMA/HAMD Scores Between Groups.
Note: *Indicates statistical significance at P < 0.05.

Sense of Labor Control

The observation group scored significantly higher on the Labor Control Scale compared to the control group (P < 0.05), indicating enhanced perceived control over the delivery process (Figure 2).

Emotional State

Post-intervention HAMA and HAMD scores were significantly lower in the observation group compared to the control group (P < 0.05), reflecting reduced anxiety and depression severity (Figure 3).

Maternal Knowledge Mastery

The observation group achieved significantly higher scores on the maternity knowledge questionnaire compared to the control group (P < 0.001), demonstrating superior knowledge retention (Table 2).

Table 2 Maternity Knowledge Questionnaire Scores (mean ± SD)

	Control Group	Observers Group	*t*	*P*
Number of Cases	55	55	–	–
Score	78.23 ± 5.56	90.11 ± 5.14	11.636	<0.001

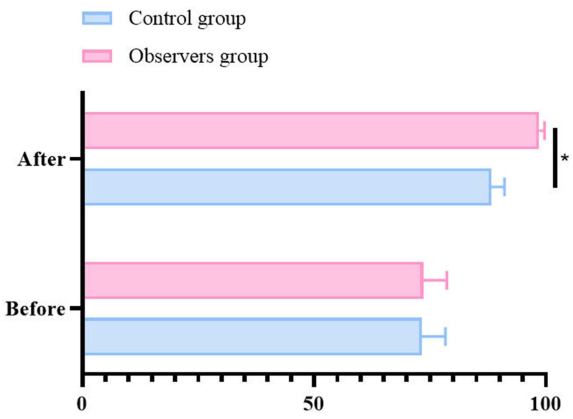

Figure 4 CBSEI-C32 Self-Efficacy Scores Between Groups.
Note: *Indicates statistical significance at P < 0.05.

Self-Efficacy

Post-intervention CBSEI-C32 scores were significantly higher in the observation group compared to the control group (P < 0.05), indicating improved confidence in managing labor challenges (Figure 4).

Discussion

This study demonstrates that the observation group exhibited a 64.3-minute reduction in total labor duration compared to the control group, with significant reductions in both the first and second stages of labor (P < 0.05). This outcome may be attributed to dual psychophysiological mechanisms:

Psychological Mechanism: Anxiety in nulliparous women activates the hypothalamic–pituitary–adrenal (HPA) axis, increasing cortisol secretion and inhibiting uterine contractions. Psychological nursing, through cognitive-behavioral interventions and emotional support, reduces anxiety levels and stress hormone secretion, thereby restoring normal uterine contractility.

Physiological Mechanism: Midwife-led positional care optimizes fetal-pelvic adaptation by adjusting pelvic dimensions and fetal gravity alignment. For example, the sitting position expands the pelvic outlet plane, upright positions utilize gravity to accelerate fetal head rotation, and the hands-knees position alleviates lumbosacral pressure, reducing resistance to fetal descent.[17–19]

The observation group also scored significantly higher on the Labor Control Scale (P < 0.05), indicating enhanced perceived control over the delivery process. This sense of agency, a critical psychological determinant of labor progression, was fostered through health education and respiratory guidance in psychological nursing, while positional care empowered maternal autonomy via comfort-based position selection. Together, these interventions disrupted the traditional "passive recipient" care model, fostering an "active participant" birth experience.[20,21]

Furthermore, the observation group demonstrated significantly lower post-intervention HAMA and HAMD scores (P < 0.05), suggesting effective mitigation of anxiety and depression. These emotions not only impede labor progress but also correlate with postpartum depression risk. Psychological nursing addressed negative birth cognitions through cognitive restructuring and relaxation training, while positional care reduced psychological burden by diverting attention and alleviating physical discomfort. Continuous midwifery presence further diminished maternal isolation.[22–24]

The observation group also achieved superior maternity knowledge mastery (P < 0.05) and CBSEI-C32 self-efficacy scores (P < 0.05). Knowledge acquisition forms the foundation of self-efficacy, with psychological nursing providing systematic education on labor processes and coping strategies, and positional care reinforcing understanding of position-labor progress relationships. This integrated "theory-practice" model enhanced confidence, while successful experience training (eg, simulated labor breathing) and positional autonomy disrupted the "helplessness-anxiety" cycle, fostering a "confidence-resilience" feedback loop.[25,26]

From a nursing practice perspective, midwife-led positional management achieves clinical optimization through multidimensional interventions. In the prenatal phase, trust-building and evidence-based education alleviate cognitive-deficit anxiety, establishing psychological readiness. Systematic health literacy programs empower maternal agency through enhanced labor process anticipation. During labor, biomechanically optimized positioning leverages gravity to improve pelvic spatial relationships, facilitating fetal head rotation and uterine contractility while optimizing uteroplacental perfusion. Concurrently, psychological support through empathetic communication and mindfulness techniques buffers stress, reducing medical intervention dependency and fostering positive coping schemas. The synergistic interaction of physiological positional optimization and psychological stress modulation creates a reinforcing cycle, enhancing pain tolerance and self-efficacy to redefine the childbirth experience.[27–31]

This study innovatively combines psychological nursing with midwife-led positional care, demonstrating their complementary benefits in shortening labor duration and improving psychological outcomes. Future research should explore this model's applicability in high-risk pregnancies to validate its broader clinical utility.

This study is a single center retrospective analysis with a small sample size (n = 110), which may result in selection bias. Although baseline data was balanced through PMS, no multivariate adjustments were made for confounding factors such as social support levels, so extrapolation of results should be cautious. In addition, retrospective design cannot establish causal relationships and can only reveal correlations. In the future, it is recommended to conduct multicenter prospective RCTs, including larger samples ($n \geq 300$) and extending follow-up to 6 months postpartum to verify the long-term effects of the combined intervention. At the same time, it can be combined with intelligent wearable devices to monitor labor signs in real time, build AI driven dynamic posture adjustment algorithms, and achieve personalized care.

Limitations

Small Sample Size: This study included only 110 nulliparous women. Future research requires larger sample sizes to enhance generalizability.

Single-Center Design: Conducted solely in our institution, the study may reflect regional and clinical practice biases. Multicenter trials are warranted.

Retrospective Methodology: Retrospective analysis introduces potential information bias. Prospective randomized controlled trials are recommended for future validation.

Lack of Long-Term Follow-Up: Postpartum recovery and neonatal long-term outcomes were not assessed. Extended follow-up periods are needed in subsequent studies.

Conclusion

The integration of psychological nursing with midwife-led positional care significantly reduces labor duration, enhances health knowledge retention and perceived labor control, mitigates negative emotions, and improves self-efficacy among nulliparous women. By combining psychological and physiological interventions, this model establishes a mother-centered care framework, providing evidence-based support for optimizing nulliparous care protocols. Future research should prioritize larger cohorts, multicenter implementation, and prolonged follow-up to comprehensively evaluate the clinical value of this integrated approach.

Disclosure

The authors report no conflicts of interest in this work.

References

1. Sharma S, Dhakal I. Cesarean vs vaginal delivery: an institutional experience. *JNMA J Nepal Med Assoc*. 2018;56(209):535–539. doi:10.31729/jnma.3467
2. Ros Mora J. [Return to natural childbirth: what are the practical implications for the anesthetist? *Rev Esp Anestesiol Reanim*. 2010;57(6):331–332. doi:10.1016/S0034-9356(10)70244-9
3. Sandiford R. Keeping it natural. *Nurs Times*. 2006;102(3):22–23.
4. Wu C, Ge Y, Zhang X, et al. The combined effects of Lamaze breathing training and nursing intervention on the delivery in primipara: a PRISMA systematic review meta-analysis. *Medicine*. 2021;100(4):e23920. doi:10.1097/MD.0000000000023920

5. Sirli B, Altuntuğ K. Assessment of postnatal sense of security of primipara mothers and associated factors in Turkey. *Afr J Reprod Health*. 2023;27(5):41–49. doi:10.29063/ajrh2023/v27i5.4
6. Jenabi E, Khazaei S, Bashirian S, Aghababaei S, Matinnia N. Reasons for elective cesarean section on maternal request: a systematic review. *J Matern Fetal Neonatal Med*. 2020;33(22):3867–3872. doi:10.1080/14767058.2019.1587407
7. Lowe NK. Parity and pain during parturition. *J Obstet Gynecol Neonatal Nurs*. 1987;16(5):340–346. doi:10.1111/j.1552-6909.1987.tb01593.x
8. Grylka-Baeschlin S, Devane D. Zhang's guideline to assess labour progression. *Lancet*. 2019;393(10169):300–301. doi:10.1016/S0140-6736(18)32274-8
9. The Lancet. The status of nursing and midwifery in the world. *Lancet*. 2020;395(10231):1167. doi:10.1016/S0140-6736(20)30821-7
10. Sun C, Larson E. Clinical nursing and midwifery research in African countries: a scoping review. *Int J Nurs Stud*. 2015;52(5):1011–1016. doi:10.1016/j.ijnurstu.2015.01.012
11. McMillan AJ. Realising the value of nursing and midwifery. *Aust Health Rev*. 2020;44(2):169. doi:10.1071/AHv44n2_ED1
12. Liao CC, Lan S-H, Yen -Y-Y, et al. Aromatherapy intervention on anxiety and pain during first stage labour in nulliparous women: a systematic review and meta-analysis. *J Obstet Gynaecol*. 2021;41(1):21–31. doi:10.1080/01443615.2019.1673707
13. Fenwick J, Toohill J, Gamble J, et al. Effects of a midwife psycho-education intervention to reduce childbirth fear on women's birth outcomes and postpartum psychological wellbeing. *BMC Pregnancy Childbirth*. 2015;15:284. doi:10.1186/s12884-015-0721-y
14. Gao P, Guo CQ, Chen MY, Zhuang HP. Nursing model of midwifery and postural and psychological interventions: impact on maternal and fetal outcomes and negative emotions of primiparas. *World J Psychiatry*. 2023;13(8):543–550. doi:10.5498/wjp.v13.i8.543
15. Zhang Y, Xu K, Gong L, et al. The effect of continuous midwifery services on the delivery mode, labor progress, and nursing satisfaction of primiparas during natural deliveries. *Am J Transl Res*. 2021;13(6):7249–7255.
16. Zhou Y, Yang C. Effects of midwifery care on mode of delivery, duration of labor and postpartum hemorrhage of elderly parturients. *Iran J Public Health*. 2021;50(1):93–100. doi:10.18502/ijph.v50i1.5075
17. Li X, Wu C, Zhou X, et al. Influence of painless delivery on the maternal and neonatal outcomes under the guidance of new concept of labor. *Am J Transl Res*. 2021;13(11):12973–12979.
18. Wu SW, He D, Zhang WY. [The influence of the intrapartum inventions on the maternal and neonatal outcomes of vaginal birth after cesarean]. *Zhonghua Yi Xue Za Zhi*. 2017;97(7):512–516. doi:10.3760/cma.j.issn.0376-2491.2017.07.008
19. Benjamin Y, Walsh D, Taub N. A comparison of partnership caseload midwifery care with conventional team midwifery care: labour and birth outcomes. *Midwifery*. 2001;17(3):234–240. doi:10.1054/midw.2001.0257
20. Tesfaye G, Madoro D, Tsegay L. Maternal psychological distress and associated factors among pregnant women attending antenatal care at public hospitals. *Ethiopia PLoS One*. 2023;18(1):e0280470. doi:10.1371/journal.pone.0280470
21. Liu Y, Xu X. Effect of psychological care on the prenatal mental state and vaginal delivery in pregnant women during the early stages of the COVID-19 epidemic. *Medicine*. 2023;102(52):e36635. doi:10.1097/MD.0000000000036635
22. Rumsey M, Homer CS. Global health and nursing and midwifery leadership. *J Nurs Manag*. 2015;23(8):963–964. doi:10.1111/jonm.12344
23. Cannon F, McCutcheon K. Nursing and midwifery revalidation. *J Perioper Pract*. 2016;26(4):72–77. doi:10.1177/175045891602600403
24. Likis FE. The future of nursing: a midwifery perspective. *J Midwifery Womens Health*. 2012;57(2):109–110. doi:10.1111/j.1542-2011.2012.00170.x
25. Răchită A, Strete GE, Suciu LM, et al. Psychological stress perceived by pregnant women in the last trimester of pregnancy. *Int J Environ Res Public Health*. 2022;19(14):8315. doi:10.3390/ijerph19148315
26. Sudaryanti L, Mardhika A, Qona'ah R, et al. Antenatal care of pregnant women during pandemic: a phenomenology study. *J Pak Med Assoc*. 2023;73(Suppl 2):S71–s75. doi:10.47391/JPMA.Ind-S2-17
27. Pairman DS. Midwifery services framework. *Midwifery*. 2018;62:107–108. doi:10.1016/j.midw.2018.03.017
28. Klopper HC, Madigan E, Vlasich C, et al. Advancement of global health: recommendations from the Global Advisory Panel on the Future of Nursing & Midwifery (GAPFON®). *J Adv Nurs*. 2020;76(2):741–748. doi:10.1111/jan.14254
29. Ventura CA, Mendes IAC, Fumincelli L, et al. The evolution of world health organization's initiatives for the strengthening of nursing and midwifery. *J Nurs Scholarsh*. 2015;47(5):435–445. doi:10.1111/jnu.12150
30. Papapetrou C, Panoulis K, Mourouzis I, et al. Pregnancy and the perinatal period: the impact of attachment theory. *Psychiatriki*. 2020;31(3):257–270. doi:10.22365/jpsych.2020.313.257
31. Biesecker BB. The psychological well-being of pregnant women undergoing prenatal testing and screening: a narrative literature review. *Hastings Cent Rep*. 2019;49(1):S53–s60. doi:10.1002/hast.1017