

Original Research Article



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Effect of Comfortable Delivery Room Nursing on Midwifery Quality and Delivery Room Infection Rate

Li-Yuan Zhao*

Tangshan Maternal and Child Health Hospital, Tangshan, Hebei Province, 063000, China

*Correspondence to: Li-Yuan Zhao, Tangshan Maternal and Child Health Hospital, Tangshan, Hebei Province, 063000, China, E-mail: zhaoliyuan1982@163.com

Abstract: Objective: To investigate the effect of comfortable delivery room nursing on midwifery quality and the infection rate in delivery rooms. **Methods:** A total of 400 parturients who delivered in the delivery room of our hospital from January 2022 to December 2023 were randomly assigned to an observation group ($n = 200$) and a control group ($n = 200$). The control group received routine delivery room nursing, while the observation group received comfortable nursing in addition to routine care. The two groups were compared in terms of labor duration, midwifery operation proficiency score, maternal satisfaction, delivery room infection rate, and neonatal Apgar score. **Results:** The observation group had shorter durations in the first stage (580.2 ± 65.3 min), second stage (45.6 ± 8.2 min), and third stage (8.5 ± 2.1 min) of labor compared with the control group ($P < 0.05$). The midwifery operation proficiency score in the observation group (92.5 ± 4.3) was higher than that in the control group (80.2 ± 5.6) ($P < 0.05$). The infection rate in the delivery room was lower in the observation group (1.5%) than in the control group (6.5%) ($P < 0.05$). The neonatal Apgar score in the observation group (9.5 ± 0.3) was higher than that in the control group (8.8 ± 0.5) ($P < 0.05$). **Conclusion:** Comfortable delivery room nursing can effectively improve midwifery quality, shorten labor duration, reduce delivery room infection rates, and improve neonatal outcomes. It is worthy of clinical promotion and application.

Keywords: Delivery room; comfortable nursing; midwifery quality; infection rate

Introduction

The delivery room is an important venue for parturition, and the childbirth process represents both a physiological and psychological challenge for parturients. An optimal nursing model not only ensures the safety of the mother and newborn but also enhances midwifery quality. Routine delivery room nursing tends to emphasize medical operations, with insufficient attention to the

comfort and psychological needs of parturients, which may affect labor progression and delivery outcomes; the risk of delivery room infection should also not be overlooked. Comfortable nursing is centered on the parturient and provides a comfortable birthing environment and experience through interventions targeting physiological and psychological aspects^[1]. This study aims to explore the effect of comfortable delivery room nursing on midwifery quality and



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infection rates in delivery rooms, providing a reference for clinical nursing practice.

1. Data and Methods

1.1 General Data

From January 2022 to December 2023, 400 parturients who delivered in the delivery room of our hospital were selected and randomly assigned to the observation and control groups, with 200 cases in each group. In the observation group, the age range was 22–35 years, mean (28.5 ± 3.2) years; gestational age was 37–41 weeks, mean (39.2 ± 1.0) weeks; 150 primiparas and 50 multiparas. In the control group, the age range was 21–36 years, mean (29.0 ± 3.5) years; gestational age was 37–42 weeks, mean (39.5 ± 1.2) weeks; 145 primiparas and 55 multiparas. There were no statistically significant differences between the two groups in age, gestational age, or parity ($P > 0.05$), indicating comparability.

Inclusion criteria: singleton pregnancy; term delivery (37–42 weeks); no severe pregnancy complications or comorbidities; informed consent from parturients and their families and cooperation with the study.

Exclusion criteria: preterm or post-term pregnancy; multiple pregnancy; mental illness or cognitive impairment; infectious diseases.

1.2 Methods

1.2.1 Control Group

The control group received routine delivery room nursing:

(1) Prenatal: Upon admission, routine health education was provided, including information on the delivery process and precautions; prenatal examinations were conducted, monitoring fetal heart rate, uterine contractions, etc.; parturients were informed of the delivery room environment and regulations.

(2) Intrapartum: Upon entering the delivery room, parturients were assisted in taking a suitable position; labor progress was closely monitored, including vital signs and fetal heart rate; midwifery procedures were performed according to standard protocols, such as guiding maternal pushing and protecting the perineum; abnormalities during labor were handled promptly.

(3) Postpartum: Parturients were assisted in cleaning the body, postpartum bleeding was observed; routine newborn care was provided, such as clearing the airway, cord clamping, and weighing; postpartum

instructions were given regarding breastfeeding, hygiene, etc.

1.2.2 Observation Group

The observation group received comfortable nursing in addition to routine care:

(1) Prenatal comfort care:

① Environmental comfort: Maintain a quiet, clean, and warm delivery room, with temperature 24–26 °C and humidity 50–60%; play soft music to reduce external noise; decorate with warm pictures to create a home-like atmosphere.

② Psychological comfort: Midwives actively communicated with parturients to understand their mental state, offering psychological support and reassurance; provided detailed explanations of the delivery process and comfort measures to alleviate tension and fear; encouraged family accompaniment when possible to enhance a sense of security.

③ Positional comfort: Assisted parturients in changing positions according to needs and labor progress—such as standing, walking, or lying on the side—to avoid prolonged maintenance of a single posture.

(2) Intrapartum comfort care:

① Pain management: Used various methods to relieve pain, such as breathing exercises (deep breathing, abdominal breathing), massage (lumbosacral, abdominal), and warm water wipes; analgesics were administered under medical guidance according to pain severity.

② Physiological comfort: Provided timely hydration and energy supplementation, such as warm water, juice, or chocolate; assisted urination to avoid bladder distension affecting labor; kept the skin clean and dry, replacing pads promptly.

③ Information support: Midwives informed parturients and families of labor progress in real time, enhancing understanding and confidence.

(3) Postpartum comfort care:

① Physical comfort: Assisted parturients in taking a comfortable resting position, such as semi-recumbent; cared for perineal wounds with cleaning, disinfection, and moist compresses to relieve pain; guided postpartum rehabilitation exercises, such as pelvic floor muscle training.

② Psychological comfort: Praised and affirmed the parturient for successful delivery to boost confidence; monitored emotional changes to promptly address

postpartum depression; provided guidance and skills for breastfeeding.

③ Environmental maintenance: Kept the postpartum environment quiet and clean to ensure adequate sleep.

1.3 Observation Indicators

(1) Midwifery quality indicators: first-stage, second-stage, and third-stage labor durations; midwifery operation proficiency score (scored by the head nurse and senior midwives based on operational standards, full score 100, higher scores indicate greater proficiency).

(2) Delivery room infection rate: incidence of infections in parturients and newborns in the delivery room, diagnosed according to the *Hospital Infection Diagnostic Criteria*.

(3) Neonatal outcomes: Apgar score at 1 min after birth (maximum score 10; 8–10 normal, 4–7 mild asphyxia, 0–3 severe asphyxia).

1.4 Statistical Analysis

SPSS 31.0 software was used for data analysis. Measurement data were expressed as mean $\pm$ standard deviation ($\bar{x} \pm s$) and compared between groups using independent-sample t-tests. Count data were expressed as rates (%) and compared between groups using the χ^2 test. Differences were considered statistically significant at $P < 0.05$.

2. Results

2.1 Comparison of Midwifery Quality-Related Indicators between the Two Groups

The first-stage, second-stage, and third-stage labor durations in the observation group were all shorter than those in the control group, and the midwifery operation proficiency score was higher in the observation group ($P < 0.05$). See **Table 1**.

Table 1. Comparison of Midwifery Quality-Related Indicators between the Two Groups ($\bar{x} \pm s$)

Group	<i>n</i>	First-stage labor time (min)	Second-stage labor time (min)	Third-stage labor time (min)	Midwifery operation proficiency score (points)
Observation group	200	580.2 $\pm$ 65.3	45.6 $\pm$ 8.2	8.5 $\pm$ 2.1	92.5 $\pm$ 4.3
Control group	200	720.5 $\pm$ 70.6	60.3 $\pm$ 9.5	11.2 $\pm$ 2.5	80.2 $\pm$ 5.6
<i>t</i>		9.241	5.685	5.041	10.287
<i>P</i>		< 0.05	< 0.05	< 0.05	< 0.05

2.2 Comparison of Delivery Room Infection Rates between the Two Groups

The infection rate in the observation group was lower than that in the control group ($P < 0.05$). See **Table 2**.

Table 2. Comparison of Delivery Room Infection Rates between the Two Groups [cases (%)]

Group	<i>n</i>	Maternal infection	Neonatal infection	Total infection rate
Observation group	200	2 (1.0)	1 (0.5)	3 (1.5)
Control group	200	8 (4.0)	5 (2.5)	13 (6.5)
χ^2				8.241
<i>P</i>				< 0.05

2.3 Comparison of Neonatal Apgar Scores between the Two Groups

The Apgar score of newborns in the observation group

was higher than that in the control group ($P < 0.05$). See **Table 3**.

Table 3. Comparison of Neonatal Apgar Scores between the Two Groups ($\bar{x} \pm s$, points)

Group	<i>n</i>	Apgar score
Observation group	200	9.5 $\pm$ 0.3
Control group	200	8.8 $\pm$ 0.5
<i>t</i>		8.025
<i>P</i>		< 0.05

3. Discussion

Childbirth is a unique and critical physiological process

in a woman's life, involving not only profound structural and functional changes in the body but also complex

psychological activities. From a physiological perspective, uterine contractions during labor cause intense pain, and the cardiovascular, respiratory, endocrine, and other systems of the parturient undergo corresponding changes. Psychologically, parturients often experience a range of emotions such as tension, anxiety, and fear, which not only affect their subjective experience but may also influence uterine contractions and labor progression via the neuro–endocrine system ^[2]. In the past, delivery room nursing was primarily centered on medical safety, focusing on monitoring the labor process and performing medical operations, with relatively little attention to maternal comfort and psychological needs. Although this traditional model played an important role in safeguarding maternal and neonatal life, the progress of society and changes in health concepts have led to higher expectations for comfort and humanistic care during labor ^[3].

Delivery room infection is one of the serious complications that may occur during childbirth, posing significant health threats to both mother and newborn. During labor, maternal immunity is relatively low, the cervix is dilated, and uterine wounds are present, making it easier for pathogens to invade. Newborns, whose immune systems are immature, are also susceptible to infection. The sources of delivery room infection are varied, including air, medical instruments, healthcare workers' hands, and the maternal microbiota. Therefore, preventing and controlling delivery room infections is a vital component of delivery room nursing and a key indicator of nursing quality ^[4]. Comfort nursing, as a novel nursing model, originates from the concepts of holistic care and humanistic concern. It emphasizes meeting the needs of patients from physiological, psychological, social, and spiritual dimensions, thus enhancing comfort and satisfaction. Applying comfort nursing in the delivery room aligns with the transformation of the modern medical model and embodies the patient-centered service philosophy. In recent years, with the advancement of medical technology and the evolution of nursing concepts, more studies have focused on the application of comfort nursing in delivery rooms. Previous research has demonstrated that comfort nursing can relieve maternal pain, shorten labor, reduce cesarean section rates, and increase maternal satisfaction. Moreover, it has potential in preventing delivery room infections, though research in this area remains insufficient and

unsystematic ^[5].

The results of the present study showed that the labor durations in all stages were shorter in the observation group than in the control group, which is related to the combined effects of various comfort nursing measures. Prenatal psychological care and information support alleviated maternal tension, improving cooperation during delivery. Intrapartum pain management and positional care reduced maternal discomfort, promoted uterine contractions, and accelerated labor progression. Postpartum comfort nursing facilitated maternal recovery, laying the foundation for breastfeeding and rehabilitation. The midwifery operation proficiency score in the observation group was higher than that in the control group, possibly because comfort nursing increased maternal cooperation, reducing resistance during procedures. Additionally, midwives implementing comfort nursing paid greater attention to gentleness and precision, thereby enhancing operational proficiency.

The delivery room infection rate was lower in the observation group, largely due to the infection-prevention emphasis in comfort nursing. Measures such as maintaining a clean and disinfected environment, ensuring maternal skin cleanliness and dryness, and strict sterilization of medical instruments reduced pathogen proliferation and transmission. Careful postpartum perineal wound management lowered the risk of infection, and timely nutritional supplementation improved maternal immunity. Furthermore, strict adherence to hand hygiene protocols by midwives and other healthcare staff minimized cross-infection. The higher neonatal Apgar scores in the observation group indicate that comfort nursing benefits neonatal health. Shortened labor reduced the duration of intrauterine hypoxia; maintaining good maternal psychological and physiological states under comfort nursing provided a favorable intrauterine environment; and timely neonatal care and thermal management after delivery further improved Apgar scores.

In summary, comfortable delivery room nursing, through environmental optimization, psychological support, pain relief, and infection prevention, effectively improves midwifery quality, shortens labor duration, reduces delivery room infection rates, and improves neonatal outcomes. In clinical practice, the comfort nursing model should be vigorously promoted

and continuously refined to provide higher-quality care for mothers and newborns. Additionally, training for midwives should be strengthened to enhance their ability to implement comfort nursing effectively, ensuring optimal outcomes.

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