

# Examining the Impact of the Whole-Process Companionship and Responsible Midwifery Model on Delivery Outcomes

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**Abstract:** *Objective:* To explore and analyze the impact of the whole-process companionship and responsible midwifery model on delivery outcomes. *Methods:* 200 women who were about to give birth admitted to Lianyungang Maternal and Child Health Hospital's Obstetrics and Gynecology Department from May 2021 to May 2023 were recruited and divided into whole process and ordinary groups by flipping a coin, with 100 cases in each group. The whole process group implemented the whole process companionship and responsible midwifery model, while the ordinary group implemented the conventional midwifery model. The duration of labor, delivery outcomes, psychological status, postpartum bleeding volume, and incidence of adverse neonatal outcomes were compared between groups. *Results:* All three stages of labor in the whole process group were significantly shorter than those in the ordinary group ( $P < 0.05$ ). The natural delivery rate and cesarean section rate in the whole process group were significantly better than those in the ordinary group ( $P < 0.05$ ). The difference was not statistically significant after comparing the lateral incision rate between the whole process group and the ordinary group ( $P > 0.05$ ). Before the intervention, the anxiety and depression scores between the groups were similar ( $P > 0.05$ ); after the intervention, the anxiety and depression scores in the whole process group were significantly lower than in the ordinary group ( $P < 0.05$ ). The amount of postpartum hemorrhage and the incidence of adverse neonatal outcomes in the whole process group were significantly better than those in the ordinary group ( $P < 0.05$ ). *Conclusion:* The whole-process companionship and responsible midwifery model has specific positive significance for delivery outcomes, and this midwifery model deserves to be widely used and promoted in clinical practice.

**Keywords:** Whole-process companionship and responsible midwifery model; Delivery outcome; Maternal

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## 1. Introduction

Childbirth is a physiological process for women that defines the separation of the fetus from the mother's body. Childbirth is divided into three stages that are commonly known as the three stages of labor. The labor progress will be accompanied by uterine contractions, which will bring a certain amount of pain to the mother. The mother is prone to anxiety, fear, and other negative emotions, which will affect the outcome of the birth<sup>[1]</sup>. Natural delivery is very beneficial to both the mother and the fetus, but many mothers choose cesarean section

for delivery. The recovery period of cesarean section is long, there is a risk of infection after surgery, and it also increases the incidence of postpartum complications. Therefore, intervention measures must be provided to ensure the safety of mothers and infants<sup>[2]</sup>. The conventional midwifery model can meet the basic needs of parturients but has a small intervention effect on delivery outcomes<sup>[3]</sup>. The whole-process companionship and responsible midwifery model is a new midwifery model that provides mothers with basic delivery needs, meets physical, physiological, and emotional needs, and has a particular influence on the delivery outcome<sup>[4]</sup>. This article aims to study and analyze the impact of the whole-process companionship and responsible midwifery model on birth outcomes.

## **2. General information and methods**

### **2.1. General information**

Two hundred women who were about to give birth admitted to Lianyungang Maternal and Child Health Hospital's Obstetrics and Gynecology Department from May 2021 to May 2023 were recruited and divided into whole process and ordinary groups by flipping a coin, with 100 cases in each group. In the whole process group, the youngest was 23 years old, and the oldest was 36 years old, with an average age of  $29.64 \pm 1.58$  years; there were 39 primiparous women and 11 multiparous women; the shortest gestational age was 37 weeks, and the most extended gestational age was 42 weeks, with an average gestational age of  $39.56 \pm 1.52$  weeks. In the ordinary group, the youngest was 24 years old, and the oldest was 37 years old, with an average age of  $29.32 \pm 1.63$  years; there were 40 primiparous women and 10 multiparous women; the shortest gestational age was 38 weeks, and the most extended gestational age was 41 weeks, with an average gestational age of  $39.35 \pm 1.52$  weeks. The general information such as age, maternal type, and gestational age between the groups was comparable ( $P > 0.05$ ).

### **2.2. Methods**

The ordinary group implemented the conventional midwifery model: informing mothers of the issues they need to pay attention to during delivery, observing the progress of their labor, and providing them with fetal heart rate monitoring.

The whole process group implemented the whole-process companionship and responsible midwifery model:

- (1) Established a whole-process companionship and responsible midwifery team, formulated a training plan, and conducted training and assessment for team members. Team members needed to master the core concepts of this midwifery model, flexibly implement the midwifery measures in this model, and emphasize the concept of humanized service.
- (2) When the mother was expecting to give birth, the midwife took note of the mother's situation through communication, took appropriate educational measures according to the mother's situation, and provided the mother with childbirth education. The mother was given the pros and cons of natural delivery and cesarean section, and mastering the characteristics of each stage of labor. Some ways were taught to the mother to reduce pain and guided her to adjust her breathing rhythm so that the mother could form a correct understanding of childbirth. Psychological care was provided to pregnant women, relieving negative emotions, cheering them up, and increasing their self-confidence.
- (3) When the mother had frequent uterine contractions, the midwife accompanied her throughout the labor process and explained some of the delivery procedures to eliminate the mother's sense of urgency and restraint. The environment was ensured to be comfortable and quiet, guidance on some delivery techniques was provided, and the mother was taught to exert the correct force, which could promote

the smooth progress of labor. The nurse could massage the mother's waist during uterine contractions, effectively reducing pain. The mother is encouraged to eat sufficient food to preserve her strength and energy for childbirth.

- (4) Fetal heart rate monitoring was provided to the mother for close observation of the fetus's condition. In addition, the mother's vital signs and specific conditions were monitored. The mother may request her spouse or family members to accompany her in the delivery room for comfort and encouragement.
- (5) During the delivery process, midwives recorded the maternal indicators in detail and made handovers with the ward nurses after delivery. While the mother was hospitalized, midwives visited her regularly to observe her postpartum recovery.

### 2.3. Observation indicators

The observation indicators of this study included:

- (1) The labor time between groups was compared, including the first stage, the second stage, and the third stage of labor.
- (2) Delivery outcomes, including natural delivery, cesarean section, and lateral incision, were compared between groups.
- (3) The mental state was compared between the groups. The Anxiety Self-Rating Scale assessed anxiety, and the Depression Self-Rating Scale assessed depression. The lower the score, the better the mental state.
- (4) The amount of postpartum hemorrhage and the incidence of adverse neonatal outcomes were compared between groups.

### 2.4. Statistical analysis

SPSS 21.0 statistical software was selected to process and analyze the data. The count data were expressed by the number of cases (*n*) and percentage (%), and the  $\chi^2$  test was implemented. The measurement data were expressed by mean  $\pm$  standard deviation (SD), and the *t*-test was implemented.  $P < 0.05$  was considered as a statistically significant difference.

## 3. Results

### 3.1. Comparison of labor time between the whole process group and the ordinary group

**Table 1** shows the duration of the first, second, and third stages of labor in the whole process group was significantly shorter than that of the ordinary group ( $P < 0.05$ ).

**Table 1.** The comparison of labor time between groups (mean  $\pm$  SD)

Group	Number of cases	The first stage of labor	The second stage of labor	The third stage of labor
Whole process group	100	246.25 $\pm$ 50.65	47.25 $\pm$ 23.66	7.63 $\pm$ 5.33
Ordinary group	100	325.54 $\pm$ 55.96	59.54 $\pm$ 26.31	9.86 $\pm$ 5.31
<i>t</i> value	-	10.5050	3.4733	2.9639
<i>P</i> value	-	0.0000	0.0006	0.0034

### 3.2. Comparison of delivery outcomes between the whole process course group and the ordinary group

The rates of natural childbirth and cesarean section in the whole process group were significantly better than

those in the ordinary group ( $P < 0.05$ ). However, the difference was not statistically significant when comparing the lateral incision rate between the whole process group and the ordinary group ( $P > 0.05$ ). See **Table 2** for details.

**Table 2.** The comparison of delivery outcomes between groups [ $n$  (%)]

Group	Number of cases	Natural childbirth	Cesarean section	Lateral incision
Whole process group	100	74 (74.00)	11 (11.00)	15 (15.00)
Ordinary group	100	61 (61.00)	27 (27.00)	12 (12.00)
$\chi^2$ value	-	3.8519	8.3171	0.3854
$P$ value	-	0.0496	0.0039	0.5347

### 3.3. Compare the psychological status of the whole process group and the ordinary group before and after the intervention

**Table 3** shows that there were insignificant differences in the anxiety and depression scores between the groups before the intervention ( $P > 0.05$ ); after the intervention, the anxiety and depression scores in the whole group were significantly lower than those in the ordinary group ( $P < 0.05$ ).

**Table 3.** Comparison of psychological status between groups before and after intervention (mean  $\pm$  SD, points)

Group	Number of cases	Anxiety		Depression	
		Before intervention	After intervention	Before intervention	After intervention
Whole process group	100	40.21 $\pm$ 2.54	27.61 $\pm$ 2.86	36.59 $\pm$ 2.31	25.49 $\pm$ 2.67
Ordinary group	100	40.36 $\pm$ 2.61	33.94 $\pm$ 2.54	36.57 $\pm$ 2.63	29.63 $\pm$ 2.86
$t$ value	-	0.4118	16.5486	0.0571	10.5811
$P$ value	-	0.6809	0.0000	0.9545	0.0000

### 3.4. Compare the amount of postpartum hemorrhage and the incidence of adverse neonatal outcomes between the whole process group and the ordinary group

The amount of postpartum hemorrhage and the incidence of adverse neonatal outcomes in the whole process group were significantly better than those in the ordinary group ( $P < 0.05$ ), as shown in **Table 4**.

**Table 4.** Comparison of postpartum hemorrhage volume and incidence of adverse neonatal outcomes between groups (mean  $\pm$  SD) / [ $n$  (%)]

Group	Number of cases	Amount of postpartum bleeding (mL)	Incidence of adverse neonatal outcomes
Whole process group	100	331.52 $\pm$ 65.24	1 (1.00)
Ordinary group	100	375.23 $\pm$ 70.52	7 (7.00)
$t / \chi^2$ value	-	4.5498	4.6875
$P$ value	-	0.0000	0.0303

## 4. Discussion

Childbirth is a relatively long process, and the duration of the labor process varies from person to person. Many pregnant women will experience negative emotions when facing childbirth, and the uterine contraction

has a strong sense of pain. Maternity bears both physical and psychological pressure<sup>[5]</sup>. Midwifery is a series of measures implemented to help the fetus deliver to the mother. The conventional model of midwifery can provide primary medical and physiological intervention for the parturient, and the specific implementation measures are relatively limited<sup>[6,7]</sup>. The whole-process companionship and responsible midwifery model is a new type of assisted delivery mode. In this midwifery mode, one-on-one services can be provided to the parturients, and the parturients can be accompanied all the way<sup>[8]</sup>. Before implementing this midwifery model, team members were given standardized training to use this measure to promote the delivery of parturients<sup>[9]</sup>. The whole-process companionship and responsible midwifery model provides two-way support for the puerpera both physically and psychologically, and through the implementation of the midwifery model from multiple angles, the initiative of midwifery is realized<sup>[10]</sup>. This midwifery model can improve maternal delivery outcomes and reduce the occurrence of cesarean section<sup>[11,12]</sup>.

The experimental results are as follows: all three stages of labor times in the whole process group were significantly shorter than those in the ordinary group ( $P < 0.05$ ). The natural delivery rate and cesarean section rate in the whole process group were significantly better than those in the ordinary group ( $P < 0.05$ ). The difference was not statistically significant after comparing the lateral incision rate between the whole process group and the ordinary group ( $P > 0.05$ ). Before the intervention, the anxiety and depression scores between the groups were comparable ( $P > 0.05$ ); after the intervention, the anxiety and depression scores in the whole process group were significantly lower than in the ordinary group ( $P < 0.05$ ). The amount of postpartum hemorrhage and the incidence of adverse neonatal outcomes in the whole process group were significantly better than those in the ordinary group ( $P < 0.05$ ). The whole-process companionship and responsible midwifery model shortens labor time through practical guidance, and the labor proceeds smoothly. It not only shortens the time consumed by the labor process but also improves the outcome of labor<sup>[13,14]</sup>. This midwifery model provides psychological guidance to the mother, and the mother's mood change has a specific positive effect on the delivery. The whole-process companionship and responsible midwifery model improves the natural delivery rate, controls postpartum hemorrhage, and ensures the safety of newborns<sup>[15]</sup>.

In summary, the whole-process companionship and responsible midwifery model has a good application effect in maternal delivery which improves delivery outcomes and is worthy of widespread clinical promotion and application.

## Disclosure statement

The author declares no conflict of interest.

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