

Original Article

The effect of continuous midwifery services on the delivery mode, labor progress, and nursing satisfaction of primiparas during natural deliveries

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Abstract: Objective: To analyze the effect of continuous midwifery services on the delivery mode, labor progress, and primiparas' nursing satisfaction levels during natural deliveries. Methods: 340 primiparas admitted to our hospital from January 2017 to June 2020 were recruited as the study cohort and randomized into a continuous midwifery group and a traditional midwifery group, with 170 patients in each group. They underwent traditional midwifery nursing services and continuous midwifery services, respectively. The two groups' delivery modes, labor progress, analgesic methods, perinatal Self-Rating Anxiety Scale (SAS) scores, postpartum hemorrhage amounts, Apgar scores, and nursing satisfaction levels were compared. Results: The natural delivery rate in the continuous midwifery group was higher than it was in the traditional midwifery group ($P < 0.05$). The maternal non-drug analgesia rate in the continuous midwifery group was higher than it was in the traditional midwifery group ($P < 0.05$). The duration of the first stage in the continuous midwifery group was shorter than it was in the traditional midwifery group ($P < 0.05$). The comparisons made during the second and third stages in the two groups showed no statistical differences ($P > 0.05$). The SAS scores in the continuous midwifery group were significantly better than the SAS scores in the traditional midwifery group at the time of waiting for delivery and at one day after delivery ($P < 0.01$). The postpartum hemorrhage amounts in the continuous midwifery group were lower than they were in the traditional midwifery group ($P < 0.01$). The neonatal Apgar scores and maternal nursing satisfaction levels in the continuous midwifery group were better than they were in the traditional midwifery group ($P < 0.01$). Conclusion: Continuous delivery services for primiparas during natural delivery can significantly increase the natural delivery rate, reduce the use of analgesics, shorten the delivery times, alleviate the delivery-related anxiety levels in the primiparas, reduce postpartum hemorrhages, effectively improve the delivery outcomes, improve the quality of the newborns, and improve the primiparas' nursing satisfaction levels, so it is worthy of clinical promotion and application.

Keywords: Primiparas, natural delivery, continuous midwifery services, delivery modes, labor progress, nursing satisfaction

Introduction

Delivery is a necessary physiological process for parturients, during which the fetuses separate from the mothers and become an independent individual. The process is divided into three stages of labor, namely the dilatation of the cervix in the first stage of labor, fetal delivery in the second stage of labor, and placental expulsion in the third stage of labor [1, 2]. For primiparas, the lack of pregnancy experience and related knowledge can easily lead to anxiety, which affects the smooth progression of

the perinatal period and delivery to a certain extent [3]. In China, obstetricians mainly guide pregnant women during the perinatal period, while midwives only provide intrapartum nursing to the parturients, so it is difficult to meet the needs of the parturients through the midwifery care services [4-6]. With the increasing clinical emphasis on nursing quality, continuous midwifery services are becoming more and more popular in obstetrics, as they can provide perinatal care services for parturients, increase the pregnancy-related knowledge of the parturients, improve the maternal physical and

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Table 1. Comparison of the general data between the two groups

Data		Traditional midwifery group (n=170)	Continuous midwifery group (n=170)	χ^2/t	P
Age (years old)		25.46±3.54	25.61±3.43	0.397	0.692
Height (cm)		164.54±5.46	164.76±5.37	0.375	0.708
Weight (kg)		59.53±5.48	59.28±5.39	0.424	0.672
BMI (kg/m ²)		21.57±2.74	21.72±2.63	0.515	0.607
Gestational weeks		38.58±3.42	38.62±3.53	0.106	0.916
Registered residence	City	103 (61.76%)	99 (58.24%)	0.195	0.689
	Country	67 (39.41%)	71 (41.76%)		
Education	Junior high school	124 (72.94%)	122 (71.76%)	0.060	0.971
	Senior high school	26 (15.29%)	27 (15.88%)		
	Bachelor degree or above	20 (11.76%)	21 (12.35%)		
Profession	Farmer	91 (53.53%)	93 (54.71%)	0.174	0.982
	Worker	37 (21.76%)	36 (21.18%)		
	Clerk	24 (14.12%)	25 (14.71%)		
	Owner of individual enterprises	18 (10.59%)	16 (9.41%)		

mental health, and effectively improve the maternal delivery outcomes [7]. In this study, 340 primiparas admitted to the obstetrics department of our hospital were recruited as the study cohort, and continuous midwifery services were introduced to analyze the effect of continuous midwifery services on delivery mode, labor progress, and nursing satisfaction levels of the primiparas during natural deliveries.

Materials and methods

General information

340 primiparas admitted to our hospital from January 2017 to June 2020 were recruited as the study cohort. This study was approved by the hospital ethics committee, and all the primiparas were informed of the contents of this study, they volunteered to participate in this study, and they signed the informed consent forms. The primiparas were randomly divided into a continuous midwifery group and a traditional midwifery group, with 170 patients in each group.

Inclusion criteria: All the primiparas capable of natural delivery and expected to deliver singletons were included in this study.

Exclusion criteria: Women with a history of abortion, pregnant women with severe immune

system diseases, women with communication disorders or pregnancy complications, fetuses with congenital diseases or abnormal growth, and malformed fetuses were excluded from the current study. This study was approved by Ethics Committee of Zaozhuang Municipal Hospital (approval No. LCYJ2019122001). There were no significant differences in the general clinical data such as age and height between the two groups of primiparas ($P>0.05$) so they were comparable, as shown in **Table 1**.

Methods

The parturients in the traditional midwifery group underwent traditional midwifery nursing services. After their admission, the women underwent routine obstetric examinations and education on delivery-related knowledge. After entering the delivery room, the women were administered routine midwifery services according to the delivery plan.

In addition to the services administered to the traditional midwifery group, the parturients in the continuous midwifery group were also administered continuous midwifery services, with the specific contents as follows. 1) Before delivery, personalized health cards were established for the primiparas who were specially nursed by the midwives. The parturients were guided to carry out routine prenatal examinations and monitoring, and were provided with

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Table 2. Comparison of the delivery modes in the two groups

Group	Natural Delivery	Midwifery practice	Cesarean section	Natural delivery rate
Continuous midwifery group (n=170)	142	17	11	83.53%
Traditional midwifery group (n=170)	103	39	28	60.59%
χ^2				22.2613
P				<0.001

dietary and health knowledge guidance. Psychological counseling was conducted on the parturients to eliminate their anxiety. At the 36th week of gestation, the parturients and their family members received health education on childbirth knowledge, including delivery methods and skills, and prompt answers to their questions. Delivery plans were developed according to their conditions. They were also showed around the delivery room to get familiar with the environment. 2) During delivery, the midwives were specifically responsible for the midwifery with the corresponding nursing services according to the individual situations of the parturients. One family member could accompany the mother during the delivery. The delivery method was conducted according to the corresponding labor process, and the vital signs of the parturients were closely monitored to promptly deal with any abnormal conditions. 3) After the delivery, health education on postpartum knowledge was carried out for the parturients and their families, mainly including perineal wound treatment, postpartum exercise nursing, neonatal feeding knowledge and nursing, etc. Regular follow-ups were conducted after the discharge to answer maternal questions and inquiries about the recovery process.

Observation indexes

The two groups' delivery modes, analgesic measures, durations of labor, postpartum hemorrhage amounts, perinatal SAS, neonatal Apgar scores, and nursing satisfaction levels were recorded. The SAS scores were used to evaluate the maternal anxiety levels, with a total possible score of 100 points. The higher the score, the higher the degree of anxiety. The Apgar scores were used to evaluate the physical status of the newborns, with a total possible score of 10 points. The higher the score, the better the physical status of newborns. A self-made nursing satisfaction questionnaire was used to

investigate the parturients' nursing satisfaction levels, and the levels were classified into very satisfied, satisfied, relatively satisfied, and dissatisfied. Nursing satisfaction = (very satisfied + satisfied + relatively satisfied)/number of cases \times 100%.

Statistical methods

The data were statistically analyzed and processed using SPSS 19.0, and the figures were drawn using GraphPad 8.0. The differences in the measurement data were investigated using t tests, and expressed as ($\bar{x} \pm s$), and the count data were tested using χ^2 tests, and expressed as (%). A difference was statistically significant when $P < 0.05$.

Results

Comparison of delivery modes in the two groups

The natural delivery rate in the continuous midwifery group (83.53%) was significantly higher than the natural delivery rate in the traditional midwifery group (60.59%) ($P < 0.05$), as shown in **Table 2**.

Comparison of the analgesic measures in two groups

The analgesic measures administered in the delivery room mainly included non-drug analgesia (the breathing pain-relief method, bean bag delivery, and the birthing ball and Doula delivery) and drug analgesia. The maternal non-drug analgesia rate in the continuous midwifery group (88.82%) was significantly higher than it was in the traditional midwifery group (66.47%) ($P < 0.05$), as shown in **Table 3**.

Comparison of labor progress between the two groups

The duration of the first stage in the continuous midwifery group was significantly shorter than

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Table 3. Comparison of the analgesic measures in the two groups

Group	Breathing pain-relief method	Bean bag delivery	Birthing ball	Doula delivery	Drug analgesia	Non-drug analgesia rate
Continuous midwifery group (n=170)	43	37	39	32	19	88.82%
Traditional midwifery group (n=170)	33	24	31	25	57	66.47%
χ^2						24.8579
P						<0.001

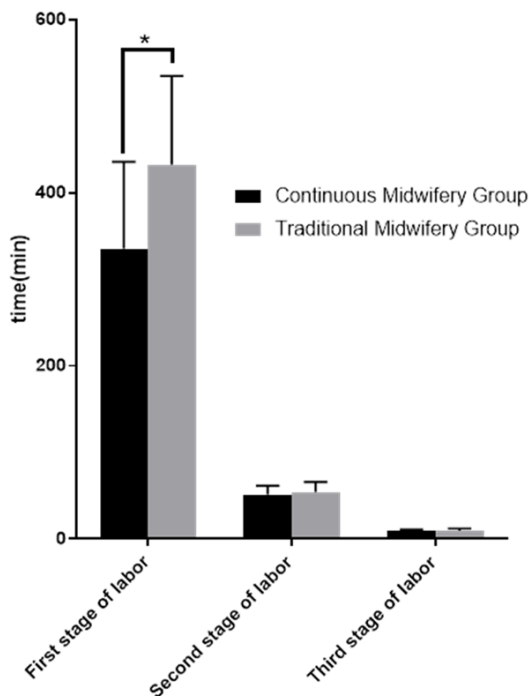


Figure 1. Comparison of the Labor Progress between the Two Groups. The abscissa represents the first stage of labor, the second stage of labor, and the third stage of labor respectively, and the ordinate represented the time of labor (min). * $P < 0.05$. As shown in this figure, the duration of the first stage in the continuous midwifery group was significantly shorter than it was in the traditional midwifery group, with a significant difference. There was no significant difference between the second and third stages of labor between the two groups.

it was in the traditional midwifery group ($P < 0.05$). The comparison of the second and third stages in the two groups showed no significant difference ($P > 0.05$), as shown in **Figure 1**.

Comparison of the SAS scores, the postpartum hemorrhage amounts and the Apgar scores between the two groups

There were no significant differences in the SAS scores between the two groups at admission

($P > 0.05$), and the SAS scores of the continuous midwifery group were significantly better than the SAS scores in the traditional midwifery group at the time of waiting for delivery and at one day after delivery ($P < 0.01$). The postpartum hemorrhage amounts in the continuous midwifery group were significantly lower than they were in the traditional midwifery group ($P < 0.01$). The neonatal Apgar scores of the continuous midwifery group were significantly better than they were in the traditional midwifery group ($P < 0.01$), as shown in **Table 4**.

Comparison of the nursing satisfaction levels between the two groups

The maternal nursing satisfaction rate of the continuous midwifery group (95.88%) was significantly better than it was in the traditional midwifery group (74.71%) ($P < 0.01$), as shown in **Table 5**.

Discussion

A lack of labor experience and knowledge, as well as the aggravation of anxiety in primiparas affect the smooth natural delivery to a certain extent. Clinically, obstetric nurses often perform routine nursing care for parturients, and the midwives provide midwifery care when the parturients enter the delivery room, which often leads to a lack of nursing continuity, severe maternal anxiety, and an increase in the cesarean section rate to some extent [8]. According to earlier research, the cesarean section rate in China has been higher than 50%, far exceeding the ideal rate of 10% and 15%, due to factors such as unsuccessful deliveries, an insufficient understanding on the part of the mother and the family members, and a blind expansion of the cesarean section indications [9-11]. In order to reduce the clinical cesarean section rate and to improve the quality of the newborns, it is necessary to carry out effective perinatal nursing interventions for the parturients, and

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Table 4. Comparison of SAS scores, postpartum hemorrhage amounts, and Apgar scores in the two groups

Group	SAS score			Postpartum hemorrhage amount	Apgar score
	At admission	Waiting for delivery	1 day after delivery		
Continuous midwifery group (n=170)	47.8±6.4	43.5±6.7	41.2±6.4	128.8±32.2	9.61±0.27
Traditional midwifery group (n=170)	48.0±6.3	46.3±7.1	44.9±7.6	151.4±34.8	9.02±0.35
t	0.290	3.740	4.855	6.215	17.403
p	0.772	<0.001	<0.001	<0.001	<0.001

Table 5. Comparison of the nursing satisfaction levels in the two groups

Group	Very satisfied	Relatively satisfied	Satisfied	Dissatisfied	Satisfaction
Continuous midwifery group (n=170)	55	67	41	7	95.88%
Traditional midwifery group (n=170)	32	59	36	43	74.71%
χ^2					32.8331
P					<0.001

to teach them and their families about delivery, which can clarify the hazards of cesarean sections, alleviate their anxiety, and ensure a smooth natural delivery [12, 13]. It has been reported in the literature that continuous midwifery services during the perinatal period can improve maternal anxiety, enhance the mothers' physical fitness, and improve their coordination and tolerance of delivery, so it has a positive significance on reducing the cesarean section rate, improving the delivery outcomes, and improving the quality of the newborns [14, 15].

In this study, 340 primiparas admitted to the obstetrics department of our hospital were recruited as the study cohort, and continuous midwifery services were introduced to analyze the effect of continuous midwifery services on the delivery mode, the labor progress, and the nursing satisfaction of the primiparas during natural deliveries. During the perinatal period, specialized midwives provided targeted nursing to the parturients before, during, and after the deliveries. Necessary health education on delivery knowledge and psychological counseling were provided to the parturients and their family members, and training in delivery skills was carried out, which improved their cooperation during the deliveries and helped them make preparations for successful deliveries. Studies have reported that continuous midwifery services have the effect of reducing the clinical cesarean section rate [16, 17]. In this study,

the results showed that the natural delivery rate in the continuous midwifery group (83.53%) was significantly higher than the rate in the traditional midwifery group (60.59%), indicating that the implementation of continuous midwifery services for primiparas can effectively increase the natural delivery rate and reduce the cesarean section rate. The non-drug analgesia mainly included the breathing pain-relief method, bean bag deliveries, birthing balls, and Doula deliveries. The results showed that the maternal non-drug analgesia rate of the continuous midwifery group (88.82%) was significantly higher than it was in the traditional midwifery group (66.47%), which was consistent with "The promoting effect of unprotected midwifery nursing on natural childbirth of primipara" written by Tang Zhonglan et al. [18] who mentioned in the study that "the use rate of non-drug analgesic measures in the observation group was significantly higher than that of the control group". This suggested that continuous delivery services can increase the proportion of the non-drug analgesic measures, effectively reducing the use of analgesics and improving the safety of the delivery. Studies have pointed out that continuous midwifery services can significantly alleviate the negative emotions of primiparas [19, 20], which is consistent with the results of this study. This study showed that there was no significant difference in SAS scores between the two groups at admission ($P>0.05$), but the SAS scores of the continuous midwifery group were significantly better than

they were in the traditional midwifery group at the time of waiting for delivery and at one day after delivery. This suggests that continuous delivery services can effectively alleviate the anxiety of primiparas, enhance their confidence in the delivery, and effectively ensure a smooth delivery. In addition, this study found that continuous midwifery services can greatly shorten the time spent in the first stage of labor, reduce the postpartum hemorrhage amounts, improve the quality of the newborns, and greatly improve the primiparas' nursing satisfaction levels.

In conclusion, continuous delivery services for primiparas during natural delivery can significantly increase the natural delivery rate, reduce the use of analgesics, shorten the delivery time, alleviate the primiparas' delivery-related anxiety, and reduce the postpartum hemorrhaging, effectively improving the delivery outcomes, enhancing the quality of the newborns and improving the primiparas' nursing satisfaction levels, so it has a positive significance for reducing the cesarean section rate, ensuring successful deliveries, and enhancing the quality of the population.

Disclosure of conflict of interest

None.

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