

Effect of Individual Midwifery Nursing Intervention on Delivery Outcomes of Older Women

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Abstract: *Objective:* To investigate the impact of individualized midwifery care on delivery outcomes among older women. *Methods:* A total of 72 cases involving elderly puerpera, admitted to the hospital from June 2022 to June 2023, were randomly assigned to two groups. Group A received individual midwifery intervention, while Group B received routine obstetric intervention. The mode of delivery, maternal emotional score, and maternal vital signs were compared. Indices such as total labor duration, postpartum hemorrhage, and nursing satisfaction were also assessed. *Results:* The cesarean section rate in Group A was significantly lower than that in Group B ($P < 0.05$). Following nursing, the SAS and SDS scores in Group A were lower than those in Group B, and indicators such as SBP, DBP, and HR were also lower in Group A ($P < 0.05$). The total labor duration was shorter in Group A, and the amount of postpartum bleeding at 24 hours was lesser compared to Group B ($P < 0.05$). Furthermore, parturients in Group A expressed higher satisfaction than those in Group B ($P < 0.05$). *Conclusions:* Individualized midwifery care for older women proves effective in reducing the cesarean section rate, shortening the labor process, and minimizing bleeding. These findings underscore the practicality and feasibility of implementing individualized midwifery care for this demographic.

Keywords: Advanced maternal age; Individualized midwifery care; Delivery outcome

Online publication: December 26, 2023

1. Introduction

Older puerpera are defined as those aged 34 or older at the time of conception, including first-time pregnant women aged ≥ 35 . With evolving fertility concepts, the population of older women is steadily increasing. Clinical analyses reveal that older women face a higher risk of premature delivery, dystocia, prolonged labor, and intrauterine growth restriction (IUGR) compared to their younger counterparts. This heightened risk is linked to the unique physiological structure of women^[1].

Beyond the age of 35, the pubic bone, ischium, cuboid bone, and iliac bone undergo ossification, forming a fixed pelvic cavity. This anatomical transformation makes fetal delivery challenging and increases the

likelihood of various complications during childbirth. Consequently, childbirth nursing intervention becomes crucial. A contemporary nursing strategy, individualized midwifery care, emerges as a novel approach. Rooted in midwifery theory, this strategy involves tailored interventions based on the parturient's physical condition and the progression of the labor process, aiming to safeguard the health of both elderly parturients and infants [2].

This article delves into the significance of individualized midwifery care, drawing on a sample of 72 cases of elderly puerpera admitted to the hospital between June 2022 to June 2023.

2. Materials and methods

2.1. General information

Between June 2022 and June 2023, 72 cases of elderly puerpera admitted to the hospital were randomly allocated to two groups. No significant differences in baseline data for advanced maternal age were found between Group A and Group B ($P > 0.05$), as detailed in **Table 1**. All participants have given consent to participate in this study.

Table 1. Data comparison of advanced maternal age

Group	Age (years)		Gestational weeks (weeks)	
	Range	Average	Range	Average
Group A ($n = 36$)	36–42	38.11 ± 1.25	37–42	38.15 ± 2.22
Group B ($n = 36$)	36–43	38.15 ± 1.28	36–42	38.18 ± 2.19
χ^2 / t	0.1341		0.0577	
P	0.8937		0.9541	

2.2. Inclusion and exclusion criteria

Inclusion criteria included patients with imaging showing a normal pelvis and a single pregnancy, informed consent, and natural childbirth indications. Exclusion criteria included patients with post-dated pregnancy, pregnancy-induced hypertension, and malignant tumors.

2.3. Methods

Individualized midwifery care for Group A:

- (1) Management of the active phase of the first stage of labor:
 - (a) For slow progress and uterine contractions: Avoid the supine position, and encourage and supervise walking, yoga, and gymnastics to increase the intensity and frequency of uterine contractions.
 - (b) Large fetal head circumference: Use a birthing ball for pelvic movement and encourage walking with long strides.
 - (c) Fetal head located under the ischial spine: Maintain the forward position, utilize the gravity effect to promote the rotation of the fetal axis, and assist the parturients in the occipital posterior positioning to relieve the pain of uterine contraction.
 - (d) Cervical edema or sacral pain: Instruct knee-chest positions, crawling, and pelvic rotation to relieve maternal discomfort, promote cervical edema absorption, and optimize fetal heart function.
 - (e) Low pubic arch: Use a birthing ball to stimulate relaxation of the pelvic floor muscles and descent

of the fetal head.

- (f) Cohesive pelvic opening or large fetal head: Encourage a wider pelvic outlet with the help of a crossbar.
- (2) Breath-holding intervention in the second stage of labor:
 - (a) Observe cervical dilation and fetal presentation every 15–30 minutes.
 - (b) Initiate force when reflex anal defecation occurs.
 - (c) If no progress, reassess fetal position and presentation; stimulate uterine contractions if needed.

Routine nursing care for Group B: Midwives provide guidance on correct breathing and appropriate force usage, plan the parturient’s diet, and offer postpartum education to expedite recovery.

2.4. Statistical analysis

Maternal data underwent processing with SPSS 21.0, utilizing % records (χ^2 test) for maternal count data and mean \pm standard deviation (SD) records (t -test) for maternal measurement data. A statistical difference was considered when $P < 0.05$.

3. Results

3.1. Analysis of maternal delivery mode

Table 2 shows that the cesarean section rate in Group A was 13.89%, which was significantly lower than the rate in Group B (41.67%, $P < 0.05$).

Table 2. Comparison of delivery modes of parturients [n (%)]

Group	Vaginal delivery	Assisted vaginal delivery	Cesarean section
Group A ($n = 36$)	23 (63.89)	8 (22.22)	5 (13.89)
Group B ($n = 36$)	12 (33.33)	9 (25.00)	15 (41.67)
χ^2	-	-	6.923
P	-	-	0.009

3.2. Analysis of nursing-related observation indicators

Following nursing, Group A exhibited a lower self-rating anxiety scale (SAS; 33.25 ± 1.85 points) and self-rating depression scale (SDS; 33.36 ± 1.89 points) compared to Group B. Additionally, the systolic blood pressure (SBP; 120.36 ± 2.21 mmHg), diastolic blood pressure (DBP; 77.29 ± 1.87 mmHg), and heart rate (HR; 77.05 ± 1.36 times/min) were all lower in Group A than in Group B ($P < 0.05$), as shown in **Table 3**.

Table 3. Comparison of observation indicators related to maternal care before and after nursing (mean \pm SD)

Group	SAS (points)		SDS (points)		SBP (mmHg)		DBP (mmHg)		HR (times/min)	
	Before	After	Before	After	Before	After	Before	After	Before	After
Group A ($n = 36$)	51.25 \pm 2.48	33.25 \pm 1.85	52.36 \pm 2.51	33.36 \pm 1.89	123.25 \pm 2.51	120.36 \pm 2.21	87.15 \pm 2.08	77.29 \pm 1.87	85.36 \pm 1.63	77.05 \pm 1.36
Group B ($n = 36$)	51.36 \pm 2.46	43.69 \pm 2.21	52.39 \pm 2.53	44.15 \pm 2.18	123.27 \pm 2.53	122.42 \pm 2.45	87.17 \pm 2.06	83.43 \pm 1.96	85.41 \pm 1.61	80.43 \pm 1.29
t	0.189	21.734	0.051	22.439	0.034	3.746	0.041	13.599	0.131	10.819
P	0.851	0.000	0.960	0.000	0.973	0.000	0.967	0.000	0.896	0.000

3.3. Analysis of labor duration and postpartum hemorrhage

Table 4 shows that Group A displayed a significantly shorter total labor time at 431.75 ± 21.05 min compared to Group B, and the amount of postpartum 24-hour bleeding was lower at 173.81 ± 12.25 mL than in Group B ($P < 0.05$).

Table 4. Comparison of labor duration and postpartum appearance (mean \pm SD)

Group	Total labor time (min)	24h postpartum bleeding volume (mL)
Group A ($n = 36$)	431.75 ± 21.05	173.81 ± 12.25
Group B ($n = 36$)	548.25 ± 29.43	240.63 ± 15.11
<i>t</i>	19.318	20.611
<i>P</i>	0.000	0.000

3.4. Analysis of maternal satisfaction

Table 5 shows that maternal satisfaction in Group A was notably higher at 97.22% compared to Group B (83.33%; $P < 0.05$).

Table 5. Comparison of maternal satisfaction [n (%)]

Group	Markedly satisfied	Satisfied	Dissatisfied	Satisfaction rate
Group A ($n = 36$)	26 (72.22)	9 (25.00)	1 (2.78)	97.22
Group B ($n = 36$)	19 (52.78)	11 (30.56)	6 (16.67)	83.33
χ^2	-	-	-	3.956
<i>P</i>	-	-	-	0.047

4. Discussion

Elderly parturients often experience physiological and psychological fluctuations that can impact the smooth progression of the delivery process. To mitigate adverse factors during childbirth, efficient nursing interventions tailored for older parturients are essential. Traditional obstetric care, solely adhering to doctor's orders for various nursing services, falls short of meeting the needs of modern older women. In recent years, a new obstetric care model, individualized midwifery care, has gradually found application. Leveraging relevant professional skills and theoretical knowledge, this approach offers comprehensive perinatal psychological and physical care services for older women, optimizing pregnancy outcomes and ensuring the health of both mothers and babies [3].

During the implementation of individualized midwifery care, midwives enhance communication with puerperal individuals, providing professional and comprehensive physical and psychological care services. This proactive approach alleviates maternal stress and ensures the safety of the puerperal during childbirth [4]. Midwives also vigilantly attend to various labor stages, addressing abnormalities promptly and providing humanized and individualized services to facilitate the orderly progress of labor [5].

Considering clinical practice analysis, guiding maternal activities, posture, and breath-holding during the actual delivery period becomes a crucial aspect of midwifery care. The second stage of labor care directly influences delivery quality, and for most parturients, spending 1–2 hours in the second stage is common [6]. However, it is imperative to note that prolonged breath-holding during the second stage in elderly puerperal can

lead to complications such as reduced oxygenation levels, reduced cardiac output and venous return, increased blood pressure, and muscle strain. Individualized midwifery care, through personalized body position and activity interventions, can change fetal head orientation, use gravity to promote delivery, and shorten each labor process^[7].

Considering the data analysis in this paper, the cesarean section rate in Group A was 13.89%, which was lower than in Group B (41.67%; $P < 0.05$), suggesting that individual midwifery care can effectively reduce the cesarean section rate. Interventions during the active stage of the first labor stage, combined with flexible position guidance and nursing services tailored to the puerpera's physical condition, proved effective in resolving delayed labor issues. Scientific exercise methods were shown to mitigate adverse factors affecting the maternal labor process, promoting pelvic opening, stimulating uterine contractions, and improving the rate of vaginal delivery. Breath-holding intervention during the second labor stage, when done scientifically and reasonably, shortened voluntary exertion time, enhanced breath-holding effectiveness, and avoided adverse reactions associated with prolonged breath-holding^[8].

Another dataset revealed that after nursing, the SAS score (33.25 ± 1.85 points) and SDS score (33.36 ± 1.89 points) of Group A were lower than those of Group B, along with lower SBP (120.36 ± 2.21 mmHg), DBP (77.29 ± 1.87 mmHg), and HR (77.05 ± 1.36 times/min) ($P < 0.05$). This suggests that individualized midwifery care for older women, accompanying them through various labor stages, informing them of childbirth precautions, and calming their emotions, can reduce hemodynamic fluctuations.

The final dataset indicated that the total labor time in Group A (431.75 ± 21.05 min) was shorter than that in Group B, and the postpartum 24-hour bleeding volume (173.81 ± 12.25 mL) was lower than in Group B ($P < 0.05$). Maternal satisfaction in Group A was significantly higher at 97.22%, compared to 83.33% in Group B ($P < 0.05$). These results suggest that individual midwifery care for older women can shorten the labor process time and reduce the amount of childbirth bleeding. During individualized midwifery care, instructing the parturient to assume optimal limb positions in the first stage of labor and managing activities effectively, including swinging, walking, and jolting exercises, can promote pelvic opening, rotate fetal head positions, and ultimately shorten the labor process time^[9]. Building upon this foundation, instructing puerperal to reasonably hold their breath during the second stage of labor can conserve energy, prevent uterine atony due to fatigue, reduce postpartum hemorrhage, and enhance the satisfaction of older women^[10].

In summary, individualized midwifery care for older women proves to be a valuable approach, increasing the rate of vaginal delivery, shortening the labor duration, reducing postpartum hemorrhage, soothing negative emotions, and boosting satisfaction. These findings hold significant implications for promoting maternal and infant well-being.

Disclosure statement

The authors declare no conflicts of interest.

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