Original Article
The clinical outcomes of high-quality nursing on women of advanced reproductive age and their delivery outcomes

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Abstract: Objective: To investigate the clinical effect of high-quality nursing on women of advanced reproductive age and their delivery outcomes. Methods: Eighty women of advanced reproductive age were divided into a control group (n=40) and an observation group (n=40) according to the nursing method they received. The control group underwent routine nursing during the delivery process, while the observation group received high-quality nursing. The pain they experienced, their psychological and emotional changes during delivery, the outcomes of their deliveries, the amount of postpartum blood loss, the newborns' Apgar scores, and the maternal satisfaction rate with the nursing were observed and recorded. Results: After nursing, the observation group had significantly lower SAS scores, SDS scores (P=0.001) and postpartum blood loss (P<0.001) but a significantly higher natural delivery rate (P=0.01) and maternal satisfaction rate compared with the control group (all P=0.005). Conclusion: High-quality nursing can effectively reduce the pain women of advanced reproductive age experience during childbirth, improve their psychological status, increase their natural delivery rate, reduce the amount of postpartum blood loss, and promote the health of newborns, and can be widely applied to the pregnancy care of women of advanced reproductive age.

Keywords: High-quality nursing, women of advanced reproductive age, clinical effect, delivery outcomes

Introduction

With the development of society and the improvement of the quality of life, people's economic conditions, life pressure, and opinions on procreation have changed, and the proportion of primipara over age 35 is increasing [1]. Due to their poor physical conditions and emotional stability, dystocia, and undesirable situations such as uterine inertia are prone to occur in women of advanced reproductive age during childbirth, which threaten the health of the mother and child and significantly increases the risk of the pregnancy [2, 3]. Previous studies have reported that the incidence of miscarriage, premature delivery, and various complications in the pregnancies of women of advanced reproductive age (over 35) is significantly higher than it is in women of appropriate reproductive age. Moreover, the adverse pregnancy outcomes of the former is as high as 44.42%, among which premature birth is the main outcome (45.03%), followed by low birth weight infants (34.50%) [4].

The division of labor for traditional nursing is based on the specific work, such as injection, infusion, dispensing drugs, etc., and it is a kind of fragmented treatment. High-quality nursing is a kind of people-oriented nursing mode. Compared with traditional nursing work, high-quality nursing can provide comprehensive assistance for patients, meet the patients' psychological and physiological needs, promote rapid full-time and seamless care and accelerate the rehabilitation process, so as to improve the quality of the care services [5, 6]. Clinically, high-quality nursing has been applied to the entire treatment process, including postoperative care, obstetric care, and the like and has achieved good results with significantly reduced number of postoperative complications and an improved prognosis [7-9]. However, there are few studies on the clinical effects of high-quality nursing on the delivery outcomes of women of advanced reproductive age. Therefore, this study took into account the pain scores, mental status scores, delivery methods, delivery out-

comes and patient satisfaction as indicators to observe the clinical effects of high-quality nursing on women of advanced reproductive age.

Materials and methods

General information

The clinical data of 80 women of advanced reproductive age who underwent delivery from July 2017 to June 2018 in our hospital were selected and retrospectively analyzed, and they were divided into a control group (n=40) and an observation group (n=40) according to the nursing method they received: the control group received routine nursing and the observation group received high-quality nursing. The general clinical data of the two groups were compared. The study was approved by the Ethics Committee of Yongchuan Hospital of Traditional Chinese Medicine, and all the patients volunteered to participate and signed informed consent forms.

Inclusion and exclusion criteria

Inclusion criteria: Pregnant women over 35 years old; normally pregnant primipara; pregnant women with intrauterine singleton pregnancies, and their fetus protections, pregnancy check-ups and deliveries were all carried out in our hospital; both the mother and father are healthy and have no serious disease history or genetic diseases; pregnant women who have graduated from junior secondary or a higher education institution.

Exclusion criteria: Pregnant women who terminated their pregnancies due to accident or illness; pregnant women with severe psychiatric, digestive, or mental illnesses; pregnant women with limited physical activity or communication abilities; pregnant women with severe pregnancy complications (pregnancy-induced hypertension, pre-eclampsia, or gestational diabetes, etc.).

Methods

Both groups of pregnant women were given the necessary knowledge guidance on maternal nursing and daily dietary guidance. The control group received routine nursing, in which the nurses would perform health education and health status assessments, observe their physiological indicators, understand and resolve their needs, and conduct pharmaceutical care according to the medical orders; after the

12-week pregnancy check-up, the nurses would provide outpatient intervention to them and their basic conditions were recorded. Their pre-pregnancy heights, weight, diets and exercise statuses were recorded and assessed.

The observation group received high-quality nursing on the basis of the control group. The main methods were as follows: (1) Before delivery, every pregnant woman was assigned a midwife for one-on-one care; during the delivery, the midwife counseled them with knowledge and tips about the delivery, actively communicated with them, and paid close attention to their emotional states. And if they experienced any adverse psychological conditions such as nervousness or anxiety, targeted counseling was quickly conducted. (2) During delivery, the midwives paid attention to the contractions of the puerperae at all times; if regular contractions occurred, the puerperae were transferred to the labor room; the family members were allowed to company the puerperae throughout the delivery process to ease them; according to puerpera's contractions, stage of labor and other factors, the delivery risk was evaluated; for puerperae with a high delivery risk, emergency plans were made; the midwife provided guidance to the puerperae during the delivery process and actively communicated with the puerperae to distract them from the pain caused by the contractions. (3) Postpartum nursing: the puerperae were informed in a timely matter of their newborns' health status and the nurses appeased their anxieties to avoid postpartum complications caused by emotional instability. Meanwhile, the nurses provided guidance for the puerperae and their families on newborn care and breastfeeding and guided them on postpartum rehabilitation exercises.

Outcome measures

The Visual Analog Scale (VAS) was used to evaluate the pain of the puerperae during pregnancy [10]. Briefly, a 10 cm line was drawn in the self-made scorecard and labeled with 0 to 10 from left to right, which indicates the different degrees of pain. The puerperae marked the card according to their own feelings. This evaluation was repeated three times, and high scores represent a lot of pain.

The maternal psychological status was evaluated using the Self-Rating Anxiety Scale (SAS) and the Self-rating depression scale (SDS) [11,

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

Indicators	Control group (n=40)	Observation group (n=40)	t/x^2	P
Height (cm)	163.13±4.03	164.99±5.36	-1.760	0.083
Pre-pregnancy weight (kg)	54.58±6.04	52.93±5.97	1.227	0.224
Age (years old)	39.81±2.57	40.43±2.54	-1.084	0.281
Gestation (week)	38.58±0.59	38.50±0.50	0.607	0.545
Educational level			1.875	0.171
Junior school	21	27		
High school	19	13		
Vocation			0.504	0.777
Civil servant	12	15		
Worker	10	9		
Other	18	16		
Household income/year			1.131	0.770
Poor	12	9		
Low	18	17		
Median	8	11		
High	2	3		

Note: The annual income of poor families exceeds 30,000 yuan, but does not exceed 80,000 yuan; the annual income of low-income families exceeds 80,000 yuan, but does not exceed 150,000 yuan; the income of median-income families exceeds 150,000 yuan, but is not more than 800,000 yuan. High-income families have an annual income of more than 800,000 yuan, but not more than 2 million yuan.

(%) = (number of very satisfied cases + number of generally satisfied cases)/total number of puerperae * 100%.

Statistical methods

The data were processed using SPSS 20.0 software. The measurement data were expressed as the means ± standard deviations ($\overline{X}$ ±sd), and the comparisons between groups were performed using independent-samples t tests, while the comparisons within the groups were performed using paired t tests. The enumeration data were expressed as the number of cases or percentages (n/%), and the comparisons between groups were performed using chi-square tests. P<0.05 means a statistically significant difference.

Results

12]. The whole process was strictly implemented in accordance with the scales. High scores represent a poor psychological status.

The delivery mode and the amount of postpartum blood loss was observed and recorded by the midwives, who also assessed the physical condition of the newborns using the neonate Apgar score, which is a 10-point scale: 10 points indicate a healthy newborn; 7 to 10 points indicate that the newborn has normal breathing; scores less than 7 points indicate mild asphyxia; a score below 4 indicates severe asphyxia [13].

The nursing satisfaction rate of the puerperae was accessed using a self-made scale, which includes 15 questions, and each question is worth 6-8 points. If the total score is over 96 points, the puerpera is very satisfied; if the score is 60-95 points, the puerpera is generally satisfied; if the score is less than 60 points, the puerpera is not satisfied. The main contents of the scale include: satisfaction with the nursing service, health education, degree of comfort with the maternity environment and the maternal rehabilitation condition. Satisfaction rate

Comparison of the general data between the two groups

The average ages of the control group and the observation group were (39.81±2.57) and (40.43±2.54) years old respectively; the gestational periods were 38-40 weeks and 38-39 weeks, and the average gestation periods were (38.58±0.59) weeks and (38.50±0.50) weeks respectively. There were no significant differences in the heights, pre-pregnancy weights, ages, educational levels, occupational distributions or other indicators between the two groups, suggesting that the data of the two groups are comparable (**Table 1**).

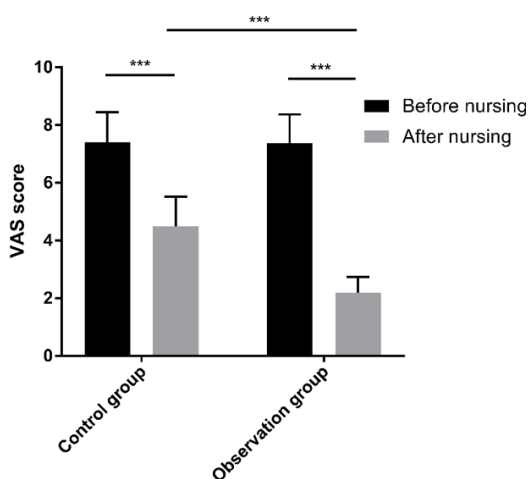*High-quality nursing decreases the VAS scores of women of advanced reproductive age*

The VAS scores of women of advanced reproductive age in the control group and the observation group were compared before nursing, and the differences were not statistically significant (P>0.05). After nursing, the postpartum VAS in the observation group was lower than it was in control group (P<0.05, **Table 2**; **Figure 1**).

Table 2. Outcomes

	Control group (n=40)	Observation group (n=40)	t	χ²	P
VAS score					
Before nursing	7.40±1.04	7.37±1.00	0.135		0.893
After nursing (postpartum)	4.49±1.03***	2.18±0.56***	12.454		<0.001
SAS score					
Before nursing	40.96±10.77	43.35±11.59	0.955		0.343
After nursing	39.01±11.07	29.48±12.67***	3.584		0.001
SDS score					
Before nursing	45.16±10.71	46.80±10.71	0.685		0.495
After nursing	38.78±11.54*	30.91±8.98***	3.402		0.001
Natural delivery (n, %)	19 (47.5)	30 (75.0)		6.372	0.01
Caesarean section (n, %)	21 (52.5)	10 (25.0)			
Postpartum blood loss (mL)	354.11±48.91	150.65±27.85	22.865		<0.001
Apgar score of newborns	7.41±0.71	9.51±0.83	12.106		<0.001
Very satisfied (n, %)	16 (40.0)	24 (60.0)		7.825	0.005
Moderately satisfied (n, %)	17 (42.5)	14 (35.0)			
Not satisfied (n, %)	7 (17.5)	2 (5.0)			
Satisfaction rate (%)	82.5	95.0			

Note: Compared with before the nursing, *P<0.05, ***P<0.001. VAS - Visual Analog Scale; SAS - Self-Rating Anxiety Scale; SDS - Self-rating depression scale.

Figure 1. Comparison of the VAS scores in the two groups of women of advanced reproductive age. ***P<0.001. VAS-Visual Analog Scale.

High-quality nursing improved the psychological statuses of the women of advanced reproductive age

Adverse emotions such as stress, depression, and anxiety caused by various factors will impact the delivery outcome in different ways or even directly threaten the health of the mothers and the newborns. In this study, the SAS and SDS scores were used to assess the psy-chological statuses of the women of advanced reproductive age. The results showed that there was no significant difference in the SAS and SDS scores between the two groups before the nursing (P>0.05). After the nursing, the SAS and SDS scores of the observation group were significantly decreased, and the SDS score of the control group was also significantly lower. Also, the SAS and SDS scores of the observation group were significantly lower than they were in the control group (P<0.05, **Table 2**).

High-quality nursing improved the maternal delivery outcomes

The cesarean section rates of the observation group and the control group were 25.0% and 52.5%, respectively; the natural delivery rates were 75.0% and 47.5%, respectively. The natural delivery rate of the observation group was significantly higher than it was in the control group (P<0.05, **Table 2**).

High-quality nursing improved the amount of postpartum blood loss of the puerperae and the newborns' Apgar scores

Postpartum blood loss is a gestational complication and poses a great threat to the health of older women. The amount of postpartum blood

loss of the observation group (150.65±27.85 mL) was significantly lower than the amount in the control group (354.11±48.91 mL, P<0.001). The Apgar score is one of the commonly used indicators in the evaluation of the physical condition of newborns. In this study, the Apgar scores of the newborns in the observation group were significantly higher than the scores in the control group, (P<0.05, **Table 2**).

The satisfaction rate was higher in the women of advanced reproductive age with high-quality nursing

This study used a self-made satisfaction scale to investigate the nursing satisfaction rate of two groups of puerperae. The results showed that the satisfaction rate in the observation group (95.0%) was higher than it was in the control group (82.5%, P<0.05, **Table 2**).

Discussion

Being older and with the instability of their physiological and psychological conditions, women of advanced reproductive age are prone to negative emotions such as anxiety, depression, and fear throughout the delivery process, leading to various pregnancy complications, increasing the childbirth risks and even threatening maternal and newborn health [14-16]. High-quality nursing was performed by professional nurses who provided a targeted plan to help the women of advanced reproductive age achieve better delivery outcomes [17]. Compared with traditional nursing, high-quality nursing can achieve one-to-one full-time care, which stands out in avoiding and coping with the childbirth emergencies and ensuring the health and safety of the mother and child [18]. Studies have shown that high-quality nursing is widely used in obstetrics and gynecology, and it can effectively reduce the incidence of pregnancy complications and improve patient satisfaction with nursing [19].

The Visual Analog Scale (VAS), a tool for assessing the degree of pain in patients, has been widely used in clinical treatment [20]. A previous study randomly grouped 50 primiparae into two groups with one group receiving routine nursing and the other receiving one-to-one high-quality nursing. The results showed that the maternal VAS scores of the latter group was (5.4±1.5) points, significantly below the control

group's scores (7.6±1.7), indicating that high quality nursing can effectively reduce the degree of pain for primiparae [21]. In this study, a comparative analysis of the VAS scores in women of advanced reproductive age receiving different nursing methods was performed and the results were consistent with the previous findings [21], indicating that high quality nursing can effectively alleviate the pain of women of advanced reproductive age and provide them with better delivery experiences.

Women of advanced reproductive age tend to have more negative emotions such as anxiety and nervousness. During the delivery process, these negative emotions will reach their peak, which may lead to changes in the fetal position, increase sedative drug use, or slow or stagnate labor. Studies have shown that high quality nursing can enhance the trust between the pureperae and nurses, thus decreasing maternal tension and fear and stabilizing the pureperae's emotions. In this study, SAS and SDS scores were used to evaluate the psychological statuses of women of advanced reproductive age. The results suggest that high quality nursing plays an important role in relieving adverse emotions and helps women of advanced reproductive age maintain a good psychological status in the delivery process.

In another earlier study, 166 women of advanced reproductive age were selected as the study cohort, and they were randomly divided into a control group (received conventional nursing) and an observation group (received high-quality nursing). The results showed that the cesarean section rate (13.25%) of the observation group was significantly lower than of the rate in the control group (33.33%), suggesting that quality nursing can effectively increase the rate of natural delivery [22]. In addition, studies have shown that high-quality nursing plays an important role in reducing the postpartum blood loss of the pureperae and in improving the Apgar scores of newborns [23]. In this study, we found that the cesarean section rate of the observation group was significantly lower than the rate of the control group, and the newborns' Apgar scores were significantly higher than they were in the control group, which is consistent with the precious findings, suggesting that high-quality nursing can effectively reduce the cesarean section rate, promote

good postoperative outcomes, and improve the physical health of the newborns.

Since the initiation of "Quality Nursing Services" by the Chinese health system, patients' satisfaction with hospital care has increased significantly. Studies have reported that high-quality nursing increased the maternal satisfaction rate to 98.34%, which is significantly higher than the satisfaction rate (91.74%) of routine nursing [24]. The results of our study show that high-quality care can significantly improve maternal satisfaction, which is consistent with the previous findings, indicating that a high-quality nursing model based on a good service attitude and one-on-one full-time company can effectively increase patient satisfaction and play a positive role in the process of treatment and rehabilitation.

There are still some limitations in this study: the sample size is relatively small because the study was only carried out in our hospital, which may lead to biased results. Also, this study excluded patients with gestational diabetes, rendering limitations in the representativeness of the research subjects.

To sum up, the implementation of high-quality nursing during delivery can effectively alleviate the pain, stabilize the moods of women of advanced reproductive age, decrease the incidence of cesarean sections and postpartum blood loss, promote the good health status of the newborns, and maximize the safety of mother and child. Therefore, the application of high-quality nursing is worthy of clinical promotion.

Disclosure of conflict of interest

None.

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