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Original Article

Effect of high-quality nursing on postpartum hemorrhage and quality of life in puerperants with gestational hypertension

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Abstract: Objective: To observe the effect of high-quality nursing on puerperants with gestational hypertension. Methods: In this study, 144 puerperants with gestational hypertension admitted to our hospital were included and divided into a research group and a control group according to the nursing method. The control group (n = 72) adopted the routine nursing and the observation group (n = 72) adopted the high-quality nursing. The rate of postpartum hemorrhage, the incidence of eclampsia, the amount of 1 d-postpartum hemorrhage, the quality of life (QOL), the psychological states, and the nursing satisfaction were compared between the two groups. Results: The rate of postpartum hemorrhage, the incidence of eclampsia, and the amount of 1 d-postpartum hemorrhage of the patients in the observation group were significantly lower than those in the control group (all $P < 0.05$). After intervention, the scores of psychological states in both groups decreased, which dropped more in the observation group (all $P < 0.05$). The scores of physical function, overall health, social function, and emotional role in the observation group were significantly higher than those in the control group (all $P < 0.05$). The patients' satisfaction on nursing in the observation group was significantly higher than that in the control group ($P < 0.05$). Conclusion: High-quality nursing has certain advantages in improving postpartum hemorrhage and QOL in puerperants with gestational hypertension. It can also improve patients' negative emotions, life quality, and nursing satisfaction.

Keywords: High-quality nursing, pregnancy, hypertension, life quality

Introduction

Gestational hypertension is a pregnancy-specific disease. It is mainly characterized by transient hypertension, proteinuria, and edema after 20 weeks of pregnancy [1, 2]. The etiology is complex. It is closely related to basic physiological and pathological conditions (such as pregnant women in their first gestation, younger than 20 or older than 40 years old; co-twin or superfoetation; susceptibility factors for hypertension; vascular disease, kidney disease, and abnormal glucose and lipid metabolism; and overweight or malnutrition) of the mother and environmental factors during pregnancy [3, 4]. Studies have reported that gestational hypertension accounts for 5% to 10% of all pregnancy diseases, with an incidence of about 9.4% in China and 7% in foreign countries [5, 6]. Clinical treatments of gestational hypertension are mainly sedation, rest, diet, and antihypertensive drug therapy [7]. Puerperants are affected by hypertension, often accompanied by negative emotions, which affect their life quality. Puerperants and fetuses are affected by long time high blood pressure. During delivery, once the condition deteriorates, profuse metrorrhagia may occur [8, 9]. Improving the patient's postpartum hemorrhage, negative emotions, and life quality have become the focuses of clinical research.

In clinical practice, routine nursing is to execute the doctor's orders, participate in treatment, and complete basic nursing tasks. Clinical practice does not actively focus on the patient's emotion and life quality. The patient's medical experience and satisfaction are not high. High-

quality nursing is not simply to strengthen basic care, but to implement basic nursing on the focus of the patient's condition, medical safety, diagnosis and treatment effect, outcome, and rehabilitation needs. High-quality nursing professionalizes and integrates basic nursing, including specializing nursing, humanizing service, and implementing humanistic care of nursing services for patients, with the purpose of providing a patient-centered diagnosis and treatment scheme and high-quality nursing services for discharged patients [10].

Jing et al. believed that high-quality nursing could reduce the occurrence of preeclampsia in pregnant women with gestational hypertension. Some studies applied high-quality nursing in pregnant women with pregnancy induced hypertension but did not focus on its impact on depression, anxiety, and life quality [11, 12]. In this study, we observed the application effect of high-quality nursing service on puerperants with gestational hypertension. We also analyzed the effects of the nursing intervention model on the incidence of eclampsia, the amount of 1 d postpartum hemorrhage, anxiety, depression, and nursing satisfaction, to provide theoretical guidance for clinical nursing.

Materials and methods

The baseline data

In this study, 144 puerperants with gestational hypertension admitted to our hospital from June 20, 2019 to July 10, 2020, were selected as the observation subjects. The control group (n = 72) adopted routine nursing and the observation group (n = 72) adopted high-quality nursing. The baseline data of the patients in the two groups were compared.

Inclusion criteria: (1) The parturients diagnosed with gestational hypertension [13]. (2) The parturients with singleton. (3) The parturients with normal cognitive function. (4) The parturients who met the indications for natural labor or caesarean section.

Exclusion criteria: (1) The parturients with a history of unexplained miscarriage. (2) The parturients complicated with liver, kidney, and other organ dysfunctions. (3) The parturients with IVF. (4) The parturients with a history of mental illness or cognitive impairment. (5) The parturients with other malignant tumors. (6) The parturients with systemic immune diseases. (7) The parturients who participated in other studies or could not cooperate with this study simultaneously.

All the patients included in this study and their families were aware of this study and signed an informed consent form. This study had been approved by the Hospital Ethics Committee.

Methods

The patients in the control group received routine nursing. The changes of their maternal condition were the focus.

The observation group adopted the high-quality nursing model based on the control group. The specific measures included: (1) A high-quality nursing team composed of 6 medical staff was established, including 2 doctors (1 chief physician, 1 attending physician), 1 dietitian, 1 psychological counselor, 1 head nurse, and 1 chief nurse. (2) The specific role of each team member was assigned: The doctor was responsible for solving the clinical treatment of puerperae bleeding. The dietitian was responsible for formulating dietary prescriptions. The psychological counselor was responsible for discovering the psychological problems of patients and their families. The head nurse was responsible for coordinating and arranging the work of the team members to ensure the smooth implementation and quality of the work. The nurse in charge was responsible for instructing patients and their families in home self-care and health education. (3) A WeChat communication group for high-quality nursing was established. Patients and their families joined the group by scanning the code. The basic knowledge of diseases, and knowledge of rehabilitation, diet, and self-care were uploaded and shared by the group members every day. Professional answers were provided to the patients' consultations in the group. Uterine bleeding was prevented by drug treatment and uterine massage [14].

Outcome measurements

The main outcomes: (1) The rate of postpartum hemorrhage was compared between the two groups. Postpartum hemorrhage refers to the bleeding volume greater than or equal to 400 mL in 2 hours or 500 mL in 24 hours.

Table 1. Comparison of the baseline data between the two groups (n, $\bar{x} \pm sd$)

Indexes	Observation group (n = 72)	Control group (n = 72)	χ^2/t	P
Age (years old)	26.4 ± 3.2	28.5 ± 3.9	3.532	0.001
Gestational week (weeks)	39.5 ± 5.1	39.3 ± 4.9	0.240	0.811
Delivery mode (n)			0.111	0.736
Cesarean section	30	32		
Natural labor	42	40		
Education level (n)			0.331	0.850
Junior high school and below	16	18		
High school and technical secondary school	31	32		
Junior college and above	25	22		

Note: χ^2: observation group vs. control group (Chi-square test statistic); t: observation group vs. control group, (t-test statistic).

Postpartum hemorrhage rate = number of cases of postpartum hemorrhage/total number of cases ×100% [15].

(2) The amount of postpartum hemorrhage in the first day was compared between the two groups.

(3) The patients' quality of life (QOL) of the two groups was observed: The MOS SF-36 scale was used to analyze the patients' QOL from 5 dimensions, including physical function, overall health, social function, emotional role, and mental health, with 100 points of the full score of each dimension [16].

The secondary outcomes: (1) Incidence of maternal eclampsia: Incidence of eclampsia = number of cases of eclampsia/total number of cases *100%.

(2) The depression status of the two groups was compared: SDS was used to evaluate the patients depressive states (mild depression: 53-62, moderate depression: 63-72, severe depression: > 72) [17]. Higher SDS scores indicated more severe depression conditions.

(3) The anxiety of the patients in the two groups was observed: the SAS was used to evaluate the anxiety of the two groups [18]. The SAS score ≥50 indicated that there were anxiety symptoms. Higher SAS scores indicated more severe anxiety conditions.

(4) The nursing satisfaction was evaluated by using a self-made satisfaction survey scale. The nursing satisfaction was divided into satisfied (the scores were 90-100), basically satisfied (the scores were 60-89) and dissatisfied (the scores < 60). Satisfaction = number of cases (satisfied + basic satisfied)/total number of cases ×100%.

Statistical analysis

The data were analyzed by the software of SPSS 20.0. The numeration data were expressed as n% and compared by chi-square test. The measurement data were expressed as mean ± standard deviation ($\bar{x} \pm s$), and the comparison between groups was conducted by the independent t-test. The various indexes before and after treatment within the group were compared by paired t-test. $P < 0.05$ indicated that the difference was statistically significant.

Results

The baseline data comparison

The baseline data, including age, delivery mode, and education level of patients, was compared between the two groups. The results showed no significant differences (all $P > 0.05$), indicating that the two groups were comparable. See **Table 1**.

Comparison of postpartum hemorrhage rate

The observation group had a significantly lower postpartum hemorrhage rate than that of the control group ($P < 0.05$), as shown in **Figure 1**.

Comparison of the amount of 1 d postpartum hemorrhage

The observation group had a significantly lower amount of 1 d postpartum hemorrhage volume

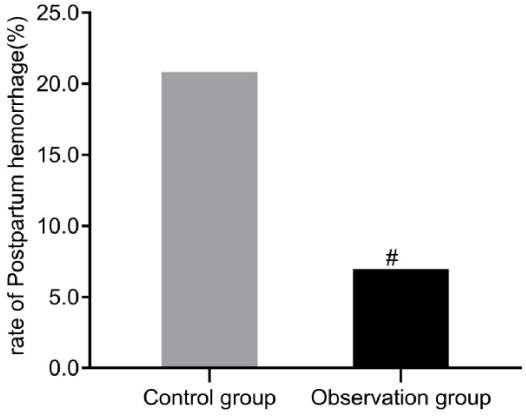

Figure 1. Comparison of postpartum hemorrhage rate. Compared with the control group, $^{\#}P < 0.05$.

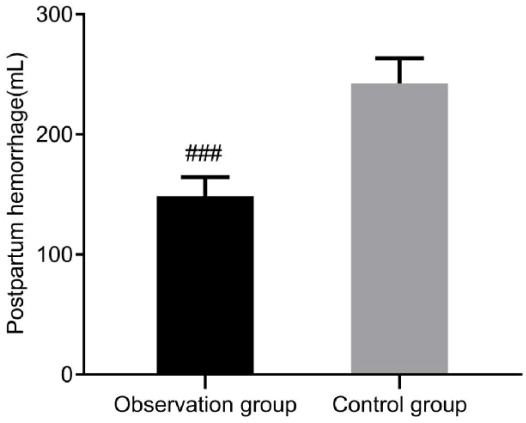

Figure 2. Comparison of the amount of postpartum hemorrhage volume on the first day between the two groups. Compared with the control group, $^{\#\#\#}P < 0.001$.

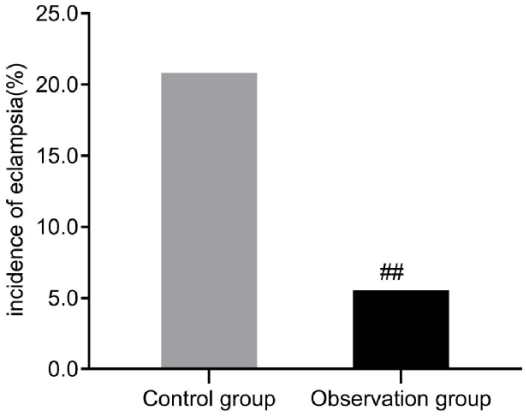

Figure 3. Comparison of the incidence of eclampsia between the two groups. Compared with the control group, $^{\#\#}P < 0.01$.

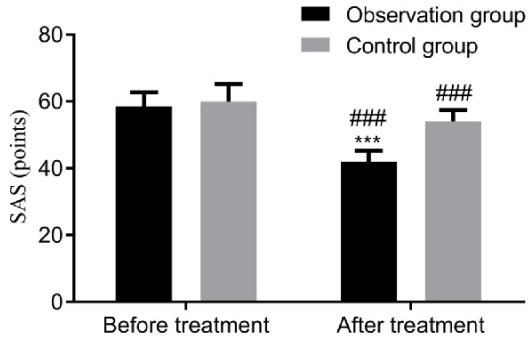

Figure 4. Comparison of SAS scores between the two groups. Compared with before intervention, $^{\#\#\#}P < 0.001$; Compared with control group, $^{***}P < 0.001$. SAS: self-rating anxiety scale.

than that in the control group ($P < 0.001$), as shown in **Figure 2**.

Comparison of the incidence of eclampsia

The observation group had a lower incidence of eclampsia than that in the control group, and the difference was statistically significant, as shown in **Figure 3**.

Comparison of anxiety

Before intervention, the two groups had no significant difference in SAS score ($P > 0.05$). After intervention, the SAS scores in both groups was reduced, with a significantly lower SAS score in the observation group than that in the control group ($t = 5.674$, $P < 0.001$), as shown in **Figure 4**.

Comparison of depression

Before intervention, the two groups had no significant difference in SDS scores ($P > 0.05$). After intervention, the SDS scores in the two groups were reduced. The observation group had significantly lower SDS scores than that in the control group ($P < 0.001$), as shown in **Figure 5**.

Comparison of patients' QOL

Before intervention, the two groups had no significant difference in the QOL score ($P > 0.05$). After intervention, the scores of patients in both groups increased The observation group had higher scores of all the dimensions than

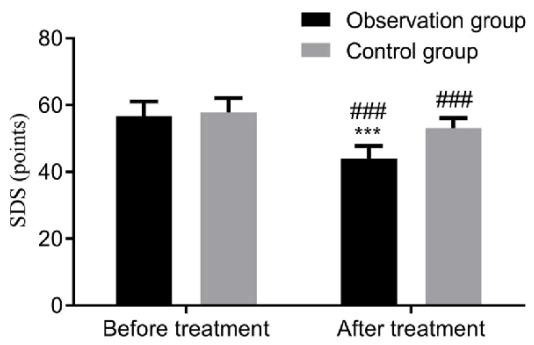

Figure 5. Comparison of SDS scores between the two groups. Compared with before intervention, ###P < 0.001; Compared with control group, ***P < 0.001. SDS: self-rating depression scale.

those of the control group, (all P < 0.01), as shown in **Table 2**.

Comparison of nursing satisfaction

The observation group had a significantly higher satisfaction rate about nursing quality than that in the control group (P < 0.05), as shown in **Table 3**.

Discussion

As early as 2010, the General Office of the Ministry of Health of China issued a notice on the "Implementation Plan of High-quality Nursing Service Demonstration Project in 2010", and the concept of high-quality nursing was included. This established a nursing model to put patients in the center, strengthening the basic nursing, fully implementing the nursing responsibility system, deepening the connotation of nursing profession, and improving the overall level of nursing service [10]. In recent years, high-quality nursing has been widely used in a variety of patients and diseases, such as fracture, Alzheimer diseases, chronic disease and post-operative, and gravidas and parturients, which has achieved good practical results [19-22].

Studies have shown that gravidas with hypertensive were often accompanied by negative emotions. They were prone to abnormal uterine contractions, postpartum hemorrhage, and even puerperal metrorrhagia without timely attention and treatment [23]. A research comprised of 246 parturients as the research object, found that the amount of bleeding at 2, 12, and 24 h postpartum and the rate of late postpartum hemorrhage in the high-quality nursing service group were lower than those of the control group [24, 25]. It showed that the implementation of high-quality nursing services for parturients with postpartum hemorrhage has good nursing effects. In this study, the rate of postpartum hemorrhage and the amount of 1 d postpartum hemorrhage volume in the observation group were lower than those in the control group, which may be due to the improvement of maternal symptoms through personalized psychological nursing, health education, and other measures in the process of high-quality nursing. This is consistent with the research results of Jing et al. that high-quality nursing has a significant effect on postpartum hemorrhage in pregnant women with hypertension [11]. This study also observed the incidence of maternal eclampsia, showing that the observation group had a lower incidence of postpartum eclampsia. It is consistent with the above results, which confirmed the advantage of high-quality nursing in reducing the incidence of postpartum hemorrhage and eclampsia in patients with gestational hypertension.

Studies have reported that maternal hypertension during pregnancy will have more adverse effects on maternal and infant pregnancy outcomes. Most pregnant women lack cognition and understanding of the treatment of pregnancy-induced hypertension and are extremely prone to anxiety and depression. This negative emotion can increase patients' blood pressure and arrhythmia, aggravating the patient's condition and causing the risk of delivery [25]. In this study, the observation group had significantly lower scores of the negative emotion index than that in the control group, indicating that high-quality nursing can reduce patients' anxiety. This may be due to the implementation of health education, psychological counseling, diet guidance, and other nursing care for patients through WeChat and face-to-face counseling.

Shi et al. found that the scores of physiological function, overall health, emotional function, and mental health in the QOL of pregnant women with hypertension were lower than the norm [26]. The age, gestational times, gestational weeks, place of residence, and whether they had received assisted reproduction were the factors affecting the QOL of patients. In this study, the patients' QOL in the observation

Table 2. Comparison of the MOS SF-36 score between the two groups of patients (points, $\bar{x} \pm sd$)

The scores of SF-36	Observation group (n = 72)		Control group (n = 72)		t	P
	Before intervention	After intervention	Before intervention	After intervention		
Physical function	78.17 ± 10.21	60.85 ± 8.21*	79.21 ± 10.09	65.85 ± 9.23*	7.595	0.000
Overall health	91.56 ± 10.12	80.08 ± 10.11*	90.12 ± 9.08	85.08 ± 12.15*	3.477	0.001
Social function	72.28 ± 11.24	60.83 ± 9.25*	73.01 ± 10.76	65.82 ± 10.26*	3.602	0.000
Emotional role	63.70 ± 9.14	50.53 ± 7.22*	64.67 ± 9.36	55.54 ± 7.24*	5.938	0.000
Mental health	68.28 ± 10.22	51.31 ± 6.21*	68.86 ± 10.01	57.30 ± 7.23*	7.442	0.000

Note: MOS SF-36: Medical Outcomes Study Short Form 36-Item Questionnaire. Compared with that before intervention, *P < 0.05; t: observation group vs. control group, t-test statistical value.

Table 3. Comparison of nursing satisfaction between the two groups

Groups	Satisfied	Basic Satisfied	Dissatisfied	Satisfaction
Observation group (n = 72)	36 (50.00)	28 (38.89)	8 (11.11)	64 (88.89)
Control group (n = 72)	29 (40.28)	25 (34.72)	18 (25.00)	54 (75.00)
χ^2				4.691
P				0.030

Note: χ^2: observation group vs. control group, chi-square test statistic.

group was higher than that in the control group. This indicated that high-quality nursing carried out positive and effective intervention measures from the dimensions of physical function, overall health, social function, emotional role, and mental health to stabilize the living condition, and to improve the life quality of the patients. This may be that through health education, patients can understand the basic status and development trend of the disease and reduce their anxiety and depression. As a result, the patients' QOL has also improved, which proved the advantages of high-quality nursing measures, and it is consistent with the research results of Xia et al. [27].

This study also found that the nursing satisfaction of patients in the observation group was higher. This may be because the high-quality nursing model can reduce patients' depression and anxiety, improve patients' QOL, postpartum hemorrhage, and subjective experience of seeking medical treatment.

This study has the shortcomings of a small sample size, single-center, and short follow-up time. The psychological status of the husband has not been observed. A large sample study should be carried out in the later stage to confirm the feasibility and importance of high-quality nursing model in puerperants with gestational hypertension and their families.

In summary, high-quality nursing has certain advantages in improving postpartum hemorrhage and QOL of puerperants with gestational hypertension, improving patients' negative emotions, improving their life quality, and nursing satisfaction.

Disclosure of conflict of interest

None.

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