



# The Application Effect of Doctor-Nurse Collaborative and Hierarchical Management Combined with Nursing Risk Management in Nursing Management of Patients with Postpartum Hemorrhage

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(Received 10 Jan 2021; accepted 23 Apr 2021)

## Abstract

**Background:** To study the application effect of doctor-nurse collaborative and hierarchical management combined with nursing risk management in nursing management of patients with postpartum hemorrhage.

**Methods:** Overall 200 patients with postpartum hemorrhage treated in *Guangdong Second Provincial General Hospital* (Guangzhou, China) from Mar 2018 to Mar 2019 were divided into the experimental group and the control group. The experimental group received the nursing model of doctor-nurse collaborative and hierarchical management combined with nursing risk management while the control group received nursing risk management to compare the satisfaction, medical record quality before and after nursing, incidence of nursing risk events and treatment effect between the two groups.

**Results:** After nursing management, the bleeding volume in the experimental group was significantly less than that in the control group ( $P < 0.05$ ). The quality score of nursing records in the experimental group was higher than that in the control group ( $P < 0.01$ ). The occurrence of nursing risk events in the experimental group was significantly less than that in the control group ( $P < 0.05$ ). The overall nursing satisfaction of the experimental group was higher than that of the control group ( $P < 0.01$ ). The treatment effect of the experimental group was significantly better than that of the control group ( $P < 0.01$ ).

**Conclusion:** Doctor-nurse collaborative and hierarchical management combined with nursing risk management had a significant effect in the nursing management of patients with postpartum hemorrhage, which is worthy of promotion and application.

**Keywords:** Doctor-nurse collaboration; Hierarchical management; Nursing risk management; Postpartum

## Introduction

Postpartum hemorrhage refers to the total amount of vaginal bleeding more than 500 ml at 24 h after the delivery of the fetus. It will not on-

ly cause many serious complications to the parturients but also is a major factor that endangers their life, seriously threatening their life and



health (1-3). Doctor-nurse collaborative and hierarchical management combined with nursing risk management is a high-quality nursing model, in which doctor-nurse collaborative and hierarchical management mainly reflects a management mode of the team cooperation and multi-disciplinary collaboration among medical staff, and can put forward favorable and decisive measures through scientific coordination and communication, which plays an important role in the treatment and nursing of severe patients.

Nursing risk management refers to the identification and treatment of the existing or potential risks of patients so as to reduce the incidence of risk events, reduce economic losses and provide patients with maximum safety guarantee at the lowest cost (4-6).

In order to further study the application effect of doctor-nurse collaborative and hierarchical management combined with nursing risk management in nursing management of patients with postpartum hemorrhage, 200 patients were enrolled, and detailed data were reported as follows.

## Materials and Methods

### General information

Overall 200 patients with postpartum hemorrhage treated in Guangdong Second Provincial General Hospital (Guangzhou, China) from Mar 2018 to Mar 2019 were enrolled as the study subjects, and divided into two groups according to the order of admission, the experimental group and the control group with 100 patients in each group. The patients of the control group were aged 21-34 yr old with an average age of  $(32.39 \pm 2.71)$  yr old, including 61 patients with vaginal delivery and 39 patients with operative delivery. The patients of the experimental group were aged 23-35 yr old with an average age of  $(29.16 \pm 2.03)$  yr old, including 66 patients with vaginal delivery and 34 patients with operative delivery. There was no significant difference in the general data between the two groups of patients, with no statistical significance ( $P < 0.05$ ) but with research significance.

**Inclusion criteria:** In this study, patients had no allergic reactions or contraindications to the drugs used.

The study was approved by the ethics committee of Guangdong Second Provincial General Hospital (approval no. 20180119), and all patients and their families were aware of the purpose and methods of this study, signed the informed consent form and agreed to participate in the study.

**Exclusion criteria:** patients with drug contraindications; patients with heart failure and severe respiratory failure; patients with abnormal intelligence and cognitive level or failure to cooperate with treatment.

### Methods

Doctor-nurse collaborative and hierarchical management. Special teams of doctors and nurses with responsibility were established. A three-level physician who was enrolled and evaluated according to title, ability and experience, was responsible for and led each team. Each team also had at least one first-level physician, an attending physician and a resident (7-11). Head nurses were responsible for the nurses who were assigned according to the combination criteria of doctors. Doctors and nurses should cooperate with each other in ward rounds, and relevant doctors in charge should supervise the nurses to complete the daily nursing, health guidance and various related examinations for the patients. The three physicians and head nurses should regularly discuss the patients' conditions, give feedback on the existing problems and make timely changes.

**Nursing risk management.** First, a monthly meeting on nursing safety analysis was held. Regular nursing risk education for nurses was regularly carried out in combination of clinical nursing cases to find out the potential safety hazards and put forward corresponding improvement and management measures to deal with these hazards. During nursing, personal wishes of the parturients should be fully respected and they should be informed of the possible risk events in detail (12-15). Second, the nursing model should be improved, and the number of nursing staff should be increased, especially the number of staff in the

emergency room at night, to ensure that every service for the patients were implemented. The number of midwives should be increased, accompanying childbirth in whole course was encouraged, and cooperation between nursing staff should be paid attention to. The risk factors of postpartum hemorrhage should be evaluated and identified. For patients with multiple pregnancies, postpartum hemorrhage history and gynecological diseases, the prevention work of childbirth should be done. 10U of oxytocin was injected when the fetus was delivered to the anterior shoulder and 20ml of 0.9% sodium chloride solution was injected immediately after the fetus was completely delivered. Once the maternal vaginal bleeding exceeded 300 ml, a vein access should be established in time to make preparations (16, 17). On this basis, it was also necessary to formulate a first aid program on maternal hemorrhage to strengthen the risk control and treatment.

### Observation indexes

The satisfaction, bleeding volume after nursing management, medical record quality after nursing, incidence of nursing risk events and treatment effect were compared between the two groups of patients. The less the bleeding volume

in patients was, the better the nursing quality was; The higher the quality score of nursing records was, the more detailed the records of patient's illness were; The lower the incidence of risk events was, the better the nursing effect of nurses on patients was.

### Statistical methods

All relevant materials and survey data were processed by SPSS 21.0 (IBM Corp., Armonk, NY, USA) software. The measurement data were measured by *t* test, expressed by ( $\bar{x} \pm s$ ), and the count data were tested by  $X^2$ , expressed by (n, %). The difference of the two groups of data was statistically significant when  $P < 0.05$ .

### Results

After nursing management in two groups of patients, the bleeding volume of patients in the experimental group was significantly less than that in the control group, with a statistically significant difference ( $P < 0.05$ ) (Table 1). The quality score of nursing records in the experimental group was higher than that in the control group, with a statistically significant difference ( $P < 0.01$ ) (Table 2).

**Table 1:** Comparison of bleeding volume in two groups of patients

Group	n	Postpartum bleeding volume (ml)
Experimental group	100	313.56±24.89
Control group	100	421.03±25.73
$X^2$		30.021
<i>P</i>		<0.001

**Table 2:** Comparison of nursing record quality in two groups of patients

Group	n	Quality score of nursing records (points)
Experimental group	100	98.14±2.13
Control group	100	91.19±2.49
$X^2$		21.210
<i>P</i>		<0.001

After treatment and nursing, the occurrence of nursing risk events in the experimental group was signifi-

cantly less than that in the control group, with a statistically significant difference ( $P < 0.05$ ) (Table 3).

As for the nursing quality between the two groups, the patients of the experimental group were more satisfied with the quality than those of the control group (Table 4).

The patients of the experimental group were more satisfied with the hospital facilities than those of the control group during the treatment and nursing (Table 5).

**Table 3:** Comparison of the occurrence of nursing risk events between two groups of patients

<i>Group</i>	<i>n</i>	<i>Nursing defects</i>	<i>Nursing disputes</i>	<i>Accidents</i>
Experimental group	100	1(1.00)	1(1.00)	0(0.00)
Control group	100	7(7.00)	10(10.00)	6(6.00)
X <sup>2</sup>		4.688	7.792	6.186
P		<0.05	<0.05	<0.05

**Table 4:** Comparison of satisfaction with nursing quality between two groups of patients

<i>Group</i>	<i>n</i>	<i>Satisfied</i>	<i>Generally satisfied</i>	<i>Dissatisfied</i>
Experimental group	100	92(92.00)	3(3.00)	5(5.00)
Control group	100	65(65.00)	15(15.00)	20(20.00)
X <sup>2</sup>		21.597	8.791	10.286
P		<0.001	<0.05	<0.05

**Table 5:** Comparison of satisfaction with hospital facilities between two groups of patients

<i>Group</i>	<i>n</i>	<i>Satisfied</i>	<i>Generally satisfied</i>	<i>Dissatisfied</i>
Experimental group	100	90(90.00)	4(4.00)	6(6.00)
Control group	100	69(69.00)	10(10.00)	21(21.00)
X <sup>2</sup>		13.530	2.765	9.633
P		<0.001	0.096	<0.001

The overall nursing satisfaction of the experimental group was higher than that of the control group, with a statistically significant difference ( $P < 0.01$ ) (Table 6).

The treatment effect of the experimental group was significantly better than that of the control group, with a statistically significant difference ( $P < 0.01$ ) (Table 7).

**Table 6:** Comparison of overall nursing between two groups of patients

<i>Group</i>	<i>n</i>	<i>Satisfied</i>	<i>Generally satisfied</i>	<i>Dissatisfied</i>	<i>Overall satisfaction</i>
Experimental group	100	93(93.00)	5(5.00)	2(2.00)	98.00(98/100)
Control group	100	68(68.00)	15(15.00)	17(17.00)	83.00(83/100)
X <sup>2</sup>					13.085
P					<0.001

**Table 7:** Comparison of treatment effect between two groups of patients

<i>Group</i>	<i>n</i>	<i>Markedly effective</i>	<i>Effective</i>	<i>Ineffective</i>
Experimental group	100	91(91.00)	6(6.00)	3(3.00)
Control group	100	66(66.00)	11(11.00)	23(23.00)
X <sup>2</sup>		18.515	1.607	17.683
P		<0.001	0.205	<0.001

## Discussion

With the adjustment of production policy in China and the increasing number of pregnant women choosing cesarean section, the risk of placenta previa increases and cesarean section will also lead to the risk of uterine rupture, which in turn leads to postpartum hemorrhage, threatening the life and health of parturients. Doctor-nurse collaborative and hierarchical management is particularly important in the prevention and treatment of postpartum hemorrhage. Through the establishment of collaborative hierarchical teams, emergency prevention and treatment programs can be launched, with prevention as the main purpose, to improve the emergency capacity of medical staff, ensure maternal life safety, and reduce the occurrence of medical risk events (18, 19). Nursing risk management can improve the nursing quality of obstetrics, strengthen risk education for nurses, improve the nursing service quality and professional skills of nurses, increase the ability of nurses to assess and identify the risk of postpartum hemorrhage and reduce maternal hemorrhage. It can also effectively avoid risk events in the nursing process, improve the risk awareness of nurses, improve patient satisfaction, and reduce the occurrence of nurse-patient disputes.

The results of our study are similar to the results of Guo et al (20) which showed that the postpartum hemorrhage volume in patients with nursing risk management ( $530.79 \pm 117.81$ ) was significantly less than that of control group ( $615.46 \pm 154.37$ ), with a statistically significant difference ( $P < 0.05$ ). The bleeding volume in this

study was less for the combination of doctor-nurse collaborative and hierarchical management with nursing risk management, thus proving that doctor-nurse collaborative and hierarchical management with nursing risk management has a significant effect in the nursing management of patients with postpartum hemorrhage.

## Conclusion

Doctor-nurse collaborative and hierarchical management combined with nursing risk management had a significant effect in the nursing management of patients with postpartum hemorrhage. It can effectively reduce postpartum bleeding, improve patient satisfaction, and reduce the occurrence of nursing risk events, which is worthy of promoting and application.

## Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

## Acknowledgements

No funding was received in this study.

## Conflict of interest

The authors declare that there is no conflict of interest.

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