RESEARCH ARTICLE

Preventive value of systematic nursing for lower limb deep venous thrombosis after obstetrics and gynaecology surgery

Yao Wang[1], Jinyu Hu[2], Chao Wang[3], Xiaohui Zhang[4], Hua Yan[5], Boyu Wang[6]

Abstract

Objective: To clarify the impact of systematic nursing on preventing lower limb deep venous thrombosis after obstetrics and gynaecology surgery.

Method: The study was conducted at the Nanjing Women and Children's Healthcare Hospital, Nanjing, China, from November 2020 to November 2022, and comprised women inpatients who had undergone caesarean section. The subjects were randomised into control group CG and observation group OG. CG subjects underwent conventional nursing, while OG subjects received systematic nursing intervention, including preoperative, intraoperative and postoperative nursing. Negative emotions, nursing satisfaction, complication incidence and lower limb status were compared between the groups. Data was analysed using SPSS 27.

Results: Of the 100 subjects, 50(50%) women were in CG group with mean age 29.41±1.34 years, while 50(50%) were in OG group with mean age 29.55±1.35 years. Post-intervention, negative emotion scores were lower, nursing satisfaction scores were higher, the incidences of lower limb deep venous thrombosis and pulmonary embolism were fewer, and the scores of lower limb status were lower in OG group compared to CG ($p<0.05$).

Conclusion: The application of systematic nursing intervention in obstetrics and gynaecology patients undergoing surgery could effectively prevent lower limb deep venous thrombosis, reduce the incidence of pulmonary embolism, improve patients' lower limb status and negative emotions, and increase satisfaction level with nursing.

Keywords: Lower limb, Deep venous thrombosis, Obstetrics and gynaecology, Systematic nursing.

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Introduction

In recent years, the rate of caesarean section (CS) among pregnant women has increased year by year.[1-3] Due to prolonged bed rest after CS, as well as hormonal and mechanical factors, haemodynamic changes can occur that increase the risk of venous thromboembolism, including deep venous thrombosis (DVT) and pulmonary embolism (PE).[4-6] Abnormal blood coagulation or blockage in deep vein lumen is called DVT, which can easily lead to obstruction of blood flow and return, leading to chronic deep vein dysfunction and ultimately resulting in lower limb DVT.[7,8] The formation of lower limb DVT poses a huge threat to health and safety of patients, and can even lead to PE if it falls off.[9,10] Finding effective nursing measures to minimise the formation of lower limb DVT has become an important research topic.

The systematic nursing intervention model has been widely used in clinical practice.[11] Conceptually, the model emphasises nursing procedures as the core, and incorporates standard nursing plans, nursing philosophy and nursing staff responsibility management into the clinical nursing system.[12] On the basis of being patient-centred, systematic nursing has changed the traditional mode of nursing division, which is of great significance in improving nursing quality and efficiency.[13]

The current study was planned to clarify the impact of systematic nursing on preventing lower limb DVT in CS patients.

Patients and Methods

The study was conducted at the Nanjing Women and Children's Healthcare Hospital, Nanjing, China, from November 2020 to November 2022, and comprised women inpatients who had undergone CS. Those included were women who delivered at term, met relevant CS indications, did not have any mental illness, and had complete clinical data available. Those excluded were women with severe pregnancy complications, those having special circumstances requiring separate nursing for mothers and infants, and those with communication barriers, comprehension barriers and mental disorders. After taking informed consent from all the subjects, they were randomised into control group CG and observation group OG using the random number table method. Approval was obtained from the institutional ethics review committee.

[1]Department of Delivery Room, [2]Department of Anaesthesiology, [3]Department of Emergency Care Unit, [4,5]Department of Paediatric Orthopedics, Tai'an Central Hospital, Tai'an, Shandong, China; [6]Department of Emergency Care Unit, Weifang People's Hospital, Weifang, Shandong, China.

Correspondence: Shasha Luo. e-mail: shashaluo_njfy@sina.com

ORICID: 0009-0007-2513-6608

CG subjects received conventional nursing. The nursing staff routinely monitored patients' vital signs, and, if abnormalities were found, timely treatment measures were taken.

In addition, OG subjects recived systematic nursing. The nursing staff explained the CS process to the women, explained CS aetiology and prognosis as well as its relationship with lower limb DVT. The staff actively communicated with the parturient, and gave her enough respect and understanding to improve her treatment compliance. The nursing staff engaged the parturient's family in keeping her encouraged and comforted, eliminating the parturient's negative emotions, and enhancing her confidence in treatment. In addition, the nursing staff enhanced the parturient's treatment confidence and compliance by narrating successful treatment cases.

Further, before delivery, the nursing staff instructed the parturient to actively move knees and ankle joints to accelerate blood circulation, and wear elastic socks when necessary to prevent lower limb DVT.

The nursing staff measured the thigh and calf circumference of the parturient. If the thigh and calf circumference of the parturient exceeded the normal level, relevant measures were taken in time. After the parturient was admitted, the nursing staff actively introduced the ward and hospital environment to establish a good nurse-patient relationship. The staff actively informed the parturient of causes and precautions in order to eliminate the parturient's negative emotions, such as tension. Additionally, the nursing staff actively assisted patients in understanding their own disease status, in order to eliminate panic and suspicion. Before the surgery, the nursing staff actively encouraged the parturient to drink more water, consume more vegetables and fruits, and always adhere to dietary principles of eating less frequently and consuming light, low-fat and easy-to-digest food.

Intraoperatively, the nursing staff assisted the parturient to choose a reasonable and comfortable position during surgery, and cooperated with the doctors in completing various surgical procedures.

Postoperatively, the nursing staff provided postpartum woman with bed activity guidance, helped her implement active knee and ankle joint activity, and assisted the family members in turning over the postpartum woman. The staff informed the patients of the importance of healthy diet, provided effective dietary guidance, encouraged the patients to pay attention to daily diet, and explained the relationship between DVT and poor diet in detail. After the completion of the operation, it was forbidden to eat immediately. However, a small amount of sugar-free, low-fat liquid food could be given. The nursing staff encouraged the patients and their families to consume less food frequently to avoid aggravating the burden on postpartum women's gastrointestinal tract. The patients were asked to drink more water to prevent constipation.

Data was collected using the Self-Rating Anxiety Scale (SAS) and the Self-Rating Depression Scale (SDS).[14] The anxiety scale included 20 items, with a total score of 100 points, and a cut-off of 50 points. The depression scale consisted of 20 items, with a total score of 100 points, and a cut-off of 53 points. On both scales, lower scores indicate more stability.

The satisfaction of patients with nursing was evaluated using a self-developed scale with a total score of 100. A score of 80-100 indicated significant satisfaction, 60-79 indicated satisfaction, and <60 points indicated dissatisfaction.

The incidence of lower limb DVT and PE was noted in both groups.

The lower limb indicators included temperature, swelling and pain, and were scored 0-3 points, with lower scores indicating better status.

Data was analysed using SPSS 27. Count data conforming to normal distribution was expressed as frequencies and percentages, followed by chi-square test. Measurement data was expressed as mean ± standard deviation, followed by t-test. P<0.05 was taken as statistically significant.

Results

Of the 100 subjects, 50(50%) women were in CG group with mean age 29.41±1.34 years, while 50(50%) were in OG group with mean age 29.55±1.35 years (Table 1).

At baseline, no significant difference was noted in negative emotion scores between the groups (p>0.05). Post-intervention, the scores in both groups declined, but OG subjects had lower negative emotion scores compared to CG subjects (p<0.05) (Figure 1).

The nursing satisfaction among OG subjects was higher

Table-1: Patient characteristics.

Groups	n	Mean Age (years)	Fertility frequency	
			Primipara	Pluripara
CG	50	29.41±1.34	21 (42.0)	29 (58.0)
OG	50	29.55±1.35	18 (36.0)	32 (64.0)
x^2/t-test		1.204	0.757	
***p*-value**		0.234	0.384	

OG: Observation group, CG: Control group.

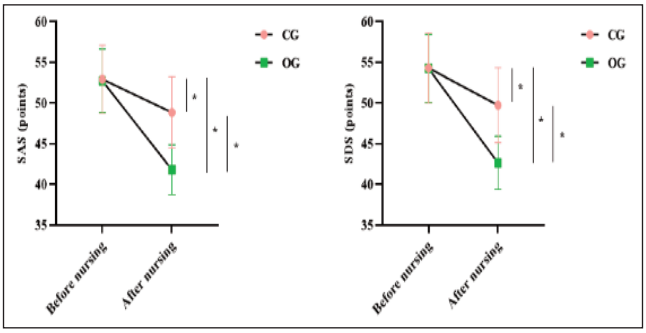

Figure-1: Psychological state in the groups.

**p<0.05. OG: Observation group, CG: Control group, SAS: Self-rating anxiety scale, SDS: Self-rating depression scale.*

Table-2: Nursing satisfaction levels in the two groups.

Groups	n	Significant satisfaction	Satisfaction	Dissatisfaction	Total satisfaction rate [n (%)]
CG	50	20	21	9	41 (82.0)
OG	50	29	19	2	48 (96.0)
x^2					10.01
***p*-value**					0.002

OG: Observation group, CG: Control group.

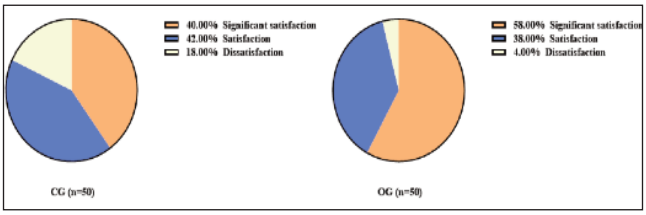

Figure-2: Nursing satisfaction in the groups.

OG: Observation group, CG: Control group.

Table-3: Complications in the groups.

Groups	n	Incidence of lower limb DVT [n (%)]	Incidence of pulmonary embolism [n (%)]
CG	50	30 (60.0)	15 (30.0)
OG	50	7 (14.0)	4 (8.0)
x^2		45.388	15.724
***p*-value**		<0.001	<0.001

OG: Observation group, CG: Control group, DVT: Deep venous thrombosis.

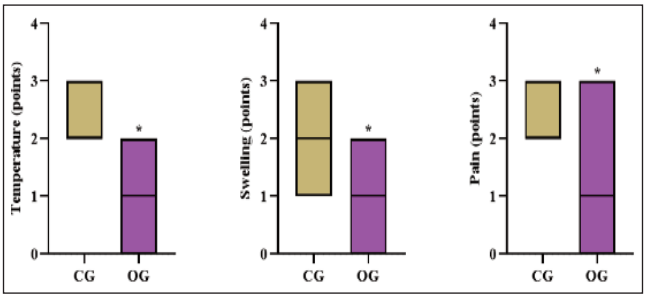

Figure-3: Lower limb status in the groups.

**P<0.05. OG: Observation group, CG: Control group.*

compared to CG subjects (p<0.05) (Table 2, Figure 2).

The incidence of lower limb DVT and PE was significantly lower in OG subjects than CG subjects (p<0.05) (Table 3).

The lower limb status was significantly better among OG subjects compared to CG subjects (p<0.05) (Figure 3).

Discussion

In clinical practice of obstetrics and gynaecology, there may be a variety of complications, especially in sections cases, and the most common complication is lower limb DVT.[15,16] Due to stimulation of CS surgery, levels of coagulation cytokines in maternal blood continue to rise, resulting in a hypercoagulable state of blood.[17] Since obstetrics and gynaecology operations are mostly carried out in the pelvic cavity close to the lower limbs, and the pelvic veins are dense, it is highly likely that the vascular wall of patients get damaged during the operation, resulting in the activation of thrombocytic factors and platelets, resulting in blood coagulation and the formation of lower limb DVT.[18] Additionally, other factors may contribute to lower limb DVT, such as a history of thrombosis, multiple pregnancies, medical comorbidities, inactivity, thrombogenesis, and antiphospholipid syndrome.[19] If due attention is not paid to the impact of CS on the human body, the probability of lower limb DVT increases. If measures are not taken to control the condition in time, or the clot breaks off, PE can form and endanger the life of the patient. Therefore, it is of great significance to implement nursing intervention in CS cases to prevent lower limb DVT.

In the current study, after nursing, OG subjects had lower negative emotion scores and higher nursing satisfaction relative to CG subjects. OG subjects had lower incidence of lower limb DVT and PE relative to CG women. OG women had lower scores of lower limb status, such as temperature, swelling and pain, relative to CG subjects. The reason is that nursing staff strengthened communication with the patients, provided psychological support, alleviated negative emotions, enhanced the confidence of the patients, and established a good nurse-patient relationship. The implementation of systematic nursing intervention effectively improved patients' understanding of the operation situation and postoperative precautions, enhanced patients' confidence in postoperative recovery, and effectively reduced the incidence of lower limb DVT through dietary guidance.[20]

Additionally, the nursing staff explained to the patients the link between lower limb DVT and CS, which improved patient's nursing compliance, and ultimately played a good role in the prevention of lower limb DVT.[21] Comprehensive

nursing intervention has been reported to be effective in preventing lower limb DVT after CS.[22]

The current study has limitations because the sample size was not calculated which could have affected the power of the study and the validity of the findings.

Conclusion

The application of systematic nursing intervention in obstetrics and gynaecology patients undergoing CS could effectively prevent lower limb DVT, reduce the incidence of PE, improve patients' lower limb status and negative emotions, and promote the satisfaction of patients with nursing.

Disclaimer: None.

Conflict of Interest: None.

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