

Original Article

Analysis of the change of clinical nursing pathway in health education among patients with ovarian carcinoma

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Abstract: Objective: To investigate the effect of health education via clinical nursing pathway (CNP) on self-care agency, quality of life, negative emotions and nursing satisfaction among patients with ovarian carcinoma. Methods: The clinical data of 61 patients with ovarian carcinoma admitted to the Oncology Department of our hospital from January 2019 to January 2020 were analyzed retrospectively. According to the different nursing methods, the patients were divided into a control group (n=31) and an observation group (n=30). The postoperative complications, the scores of self-care agency and quality of life before and after intervention, sleep quality and negative emotions were compared and analyzed between the two groups. Results: Patients in the observation group had higher mastery of health knowledge and lower incidence of postoperative complications than those in the control group. The scores of SDS, SAS and PSQI were significantly decreased in both groups after intervention compared with those before intervention ($P<0.05$), and the scores in the observation group were significantly lower than those in the control group ($P<0.05$). After intervention, both groups showed higher scores of self-care agency and quality of life than before intervention ($P<0.05$), and patients in the observation group showed higher scores than those in the control group ($P<0.05$). The overall nursing satisfaction of patient was relatively high. Conclusion: Health education via CNP can help patients better understand the diseases, reduce their psychological burden and improve sleep quality. Informing patients of the methods of postoperative restorative exercise through health education is able to reduce complications incidence and improve self-care agency and quality of life of patients.

Keywords: Health education, clinical nursing pathway, ovarian carcinoma

Introduction

Ovarian carcinoma is one of the common gynecological tumors, with the incidence ranking the third among gynecological malignant tumors, second only to cervical cancer and endometrial cancer [1]. Due to the high malignancy and the concealed pathogenesis, ovarian carcinoma shows unobvious initial clinical symptoms. As a result, ovarian carcinoma lacks early diagnostic methods. More than 70% of patients were in advanced stage, and the mortality rate ranked first among gynecological tumors [2, 3].

Cytoreductive surgery combined with adjuvant chemotherapy (antitumor platinum drugs) has become the gold treatment for ovarian carcinoma

[4]. According to the pathological stage and differentiation degree of postoperative tumor, the formulation of targeted chemotherapy regimens can effectively prolong the survival time of patients [5]. However, chemotherapy kills both tumor cells and normal cells, leading to severe side effects. During chemotherapy, patients may not only have nausea, vomiting, hair loss, weight loss and other physiological symptoms, but also experience anxiety, depression and other psychological symptoms, which will seriously affect the quality of life of patients. In recent years, studies have shown that nurses play an important role in the treatment of tumor patients. They can provide patients with safe and high-quality nursing and more importantly correct health education, which contributes to

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patients' rational understanding of diseases, positive attitude and high compliance, thus greatly improving therapeutic effect and quality of life [6, 7].

This study introduced clinical nursing pathway (CNP) into the health education for patients with ovarian carcinoma, and analyzed the effect of CNP on self-care agency, quality of life and negative emotions of patients with ovarian carcinoma after surgery, so as to provide theoretical basis to improve the therapeutic effect of patients with ovarian carcinoma.

Materials and methods

General materials

The clinical data of 61 patients with ovarian carcinoma admitted to the Oncology Department of our hospital from January 2019 to January 2020 were analyzed retrospectively. According to the different nursing methods, the patients were divided into a control group (n=31) and an observation group (n=30).

Inclusion criteria: (1) patients who were diagnosed as ovarian carcinoma by imaging and pathological examination; (2) those aged between 30 and 60 years; (3) those with tumor of stage I or II; (4) those who were in good physical condition and could tolerate the surgery; and (5) those who participated in this study voluntarily.

Exclusion criteria: (1) patients with severe liver and kidney function injury; (2) those complicated with uterine leiomyoma and adenomyosis; (3) those with cognitive impairment; (4) lactation or pregnancy; and (5) those who were not suitable for surgical treatment.

This study was approved by the ethics committee of our hospital. All the patients signed the informed consent.

Intervention method

Patients in the control group received health education of routine nursing. Nurses briefly introduced the hospital environment, disease-related knowledge and matters needing attention to the patients and their families according to their own knowledge and clinical experience.

Patients in the observation group received health education via CNP. The details are as follows:

(1) Professional nursing team was established. A professional health education nursing group was established and composed of 2 doctors, 1 head nurse, 3 primary nurses, 8 bed nurses, 1 dietitian and 1 psychological counselor. Roles and responsibilities needed to be identified. Patients' specific physical and psychological status was evaluated to perform health education via CNP.

(2) CNP health education table was formulated. By consulting the data related to ovarian and other carcinomas, team members discussed and then formulated CNP table of health education in chronological order (**Table 1**) on the basis of fully understanding the needs of patients and their families for health education.

(3) Health education via CNP was implemented. Primary nurses needed to make patients understand the goals of health education and obtain patients' recognition and active participation. Through daily communication, nurses needed to understand the patients' cognitive degree of disease and their psychological state. Health education would be conducted according to the formulated CNP table of health education until patients could fully grasp it. The effect of patients' health education was evaluated by asking questions and practical drills. The time and mode of education were recorded on the CNP table of health education, which also needed signatures of both patients and medical staffs.

Observation indices and evaluation standard

Incidence of deep venous thrombosis: Cancer procoagulant secretion and long-term bedridden after surgery are inclined to cause vascular blockage and lower extremity deep venous thrombosis (DVT). DVT is a common postoperative complication of ovarian carcinoma. It delays postoperative recovery and even causes death in severe cases [8, 9].

5 ml of fasting venous blood was taken. D-dimer (D-D), platelets (PLT) and prothrombin time (PT) were detected by automatic biochemical analyzer to compare the blood coagulation

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Table 1. Clinical nursing pathway table of health education for patients with ovarian carcinoma

Reference time	Education time	Education content	Education mode	Result evaluation	Executor
At admission		Nurses need to introduce the facilities needed in the hospital and daily life, doctors and nurses in charge, work and rest time, visiting hours, companionship rules and requirements for the placement of desktop items.			
Before examination		Nurses need to introduce the matters needing attention in examinations and their significance to surgery.			
At 24 hours after admission to before surgery		Disease-related knowledge, etiology, patients' clinical symptoms, how to relieve pain, diet planning and the importance of surgery for disease treatment are introduced.			
One day before surgery		Preoperative preparation, the matters needing attention of surgery, and the guidance of the psychological pressure of patients are introduced.			
Pre-operation on the surgery day		Attentions about anesthesia and intraoperative cooperation are introduced.			
Post-operation on the surgery day		Matters needing attention after surgery, how to use anesthetic pump, time setting to get out of bed and diet time are introduced, and patients are aided to take the correct lying position.			
From post-operation to pre-discharge		Dietary precautions and how to exercise after surgery are introduced.			
One day before discharge		Discharge guidance. Patients are told to pay attention to psychological state adjustment, coordinate work and rest, take medication timely and revisit regularly.			

function between the two groups and evaluate DVT incidence. Higher D-D, lower PLT and longer PT indicate better blood coagulation function and lower DVT risk [10].

Quality of life: The quality of life of patients was evaluated by Quality of Life Questionnaire-30 (QLQ-30). The scale included five dimensions, *i.e.*, physical function, social function, emotional function, role function and cognitive function. Higher score indicates better quality of life [11, 12].

Health knowledge: Patients' health knowledge was evaluated by a self-made ovarian carcinoma knowledge questionnaire, which involved knowledge about ovarian cancer, postoperative diet, medication, *etc.* The questionnaire had a full score of 100. The score of 80-100 referred to good mastery, 60-79 to basic mastery, and <60 to non-mastery. Higher score indicates the better the disease-related health knowledge will be.

Self-care agency: The exercise of self-care agency scale (ESCA) was used to evaluate the patients' self-care agency. The scale involved four dimensions, namely self-care agency, self-care responsibility, self-care concept and health knowledge level. Higher score refers to stronger self-care agency.

Negative emotions and sleep quality: Serious negative emotions can impair patients' quality of sleep, which in turn makes the daytime mood more restless and irritable [13, 14]. Therefore, Hamilton Anxiety Scale (HAMA) and Hamilton Depression Scale (HAMD) were used to evaluate the negative emotions of patients. Higher score indicates more serious anxiety and depression. The Pittsburgh Sleep Quality Index (PSQI) was used to evaluate the sleep quality of patients. It included 24 items (sleep quality, duration, daytime dysfunction and others). Higher score indicates the worse sleep quality.

Nursing satisfaction: A self-made nursing satisfaction questionnaire was used to evaluate the nursing satisfaction of patients. This scale involved the daily basic nursing, psychological counseling, comprehensive content of health education, service attitude, *etc.* provided by the primary nurses. The full score is 100. A score of more than 80 indicates very satisfied, 60-79 indicates satisfied, and less than 60 indicates unsatisfied. Higher score indicates higher nursing satisfaction.

Statistical analysis

SPSS 20.0 software was performed for statistical analysis. Measurement data were expressed as mean \pm standard deviation ($\bar{x} \pm s$). Independent *T* test was used to perform comparison between groups. *F* test was used to perform comparison within groups. $P < 0.05$ was considered as statistical significance.

Results

Comparison of general clinical indices between the two groups

The general clinical indices such as age, height, weight and tumor stage in the control group and the observation group were not statistically different ($P > 0.05$), thus were comparable (**Table 2**).

Comparison of DVT incidence between the two groups after intervention

The observation group showed significant higher D-D, lower PLT, shorter PT and lower DVT incidence than the control group (**Table 3**), indicating that health education via CNP could make patients be more aware of the matters needing attention after surgery and actively complete lower limb flexion and extension rehabilitation training under the guidance of primary nurses, and decrease DVT incidence.

Comparison of the changes of quality of life between the two groups before and after intervention

Before intervention, there was no significant difference in the scores of five dimensions of QOC-30 between the two groups ($P > 0.05$). After intervention, the scores of all dimensions were increased in both groups, and the scores in the observation group were significantly higher than those in the control group ($P < 0.05$, **Figure 1**), suggesting that health education via CNP could significantly improve the quality of life of patients with ovarian carcinoma after surgery.

Comparison of health knowledge between the two groups after intervention

The mastery rate of health knowledge was 93.3% in the observation group, which was significantly higher than 74.19% in the control

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Table 2. Comparison of general clinical indices between the two groups ($\bar{x} \pm s$)/n (%)

General clinical indices	Control group (n=31)	Observation group (n=30)	P
Average age (year)	50.91±7.10	48.21±6.93	0.343
Height (cm)	157±4.96	158±6.38	0.684
Weight (kg)	56.98±6.13	58.30±8.95	0.360
Proportion of tumor stage			0.717
Stage I	8	9	
Stage II	23	21	

Table 3. Comparison of blood coagulation function and DVT incidence between the two groups after intervention ($\bar{x} \pm s$)/n (%)

Group	D-D (mg/L)	PLT ($\times 10^{10}$ /L)	PT (s)	DVT (%)
Control group (n=31)	1.48±0.85	24.18±2.57	10.12±2.05	8 (25.8)
Observation group (n=30)	3.15±0.89	18.42±2.32	11.93±2.37	2 (6.6)
χ^2	8.342	6.435	5.647	9.134
P	0.035	0.013	0.022	0.005

group, and the difference was statistically significant ($P < 0.05$), proving that health education via CNP could significantly improve the mastery rate of patients' health knowledge (Table 4).

Comparison of self-care agency between the two groups before and after intervention

Before intervention, both groups exhibited no significant difference in the scores of four dimensions (self-care agency, self-care responsibility, self-care concept and health knowledge) of ESCA scale between the two groups ($P > 0.05$). After intervention, the scores of all dimensions were significantly increased in both groups, and were higher in the observation group than in the control group ($P < 0.05$, Figure 2), indicating that health education via CNP could significantly improve the self-care agency of patients with ovarian carcinoma after surgery.

Comparison of negative emotions between the two groups after intervention

HAMA, HAMD and PSQI scales were used to evaluate negative emotions and sleep quality of patients after intervention. After intervention, the observation group showed significantly lower scores of SAS, SDS and PSQI than the control group ($P < 0.05$, Figure 3), indicating that health education via CNP could reduce the incidence of postoperative negative emotions and

improve the sleep quality of patients with ovarian carcinoma.

Comparison of nursing satisfaction between the two groups after intervention

Through the questionnaire, the overall nursing satisfaction of patients in the observation group was significantly higher than that in the control group (93.33% vs. 67.74%), and the difference was statistically significant ($P < 0.05$), suggesting that health education via CNP could significantly improve nursing satisfaction (Table 5).

Discussion

Patients with early ovarian carcinoma can achieve better therapeutic results through surgical resection combined with chemotherapy. However, due to the particularity of the disease, many patients need to remove their ovaries during the surgery, which may lead to endocrine disorders and other symptoms [15]. In addition, surgical pain and the serious side effects of chemotherapy may further impose a heavy burden on both patients' physical and mental status. As a result, their quality of life is significantly reduced, affecting the therapeutic effect [16, 17]. Studies have shown that active postoperative nursing intervention is able to help patients build up confidence to overcome disease and improve their quality of life [18].

CNP is a novel, streamlined and efficient nursing model and can show the whole nursing process in the form of pathway table through the timeline. It can not only greatly elevate nurses' work efficiency, but also better prevent omissions in the nursing process [19, 20].

Formulating health education content urges nurses to carry out nursing work in a planned way. In the process of health education, nurses can correctly recognize patient's condition, understand the correct way of medication, master the relevant self-care knowledge, increase

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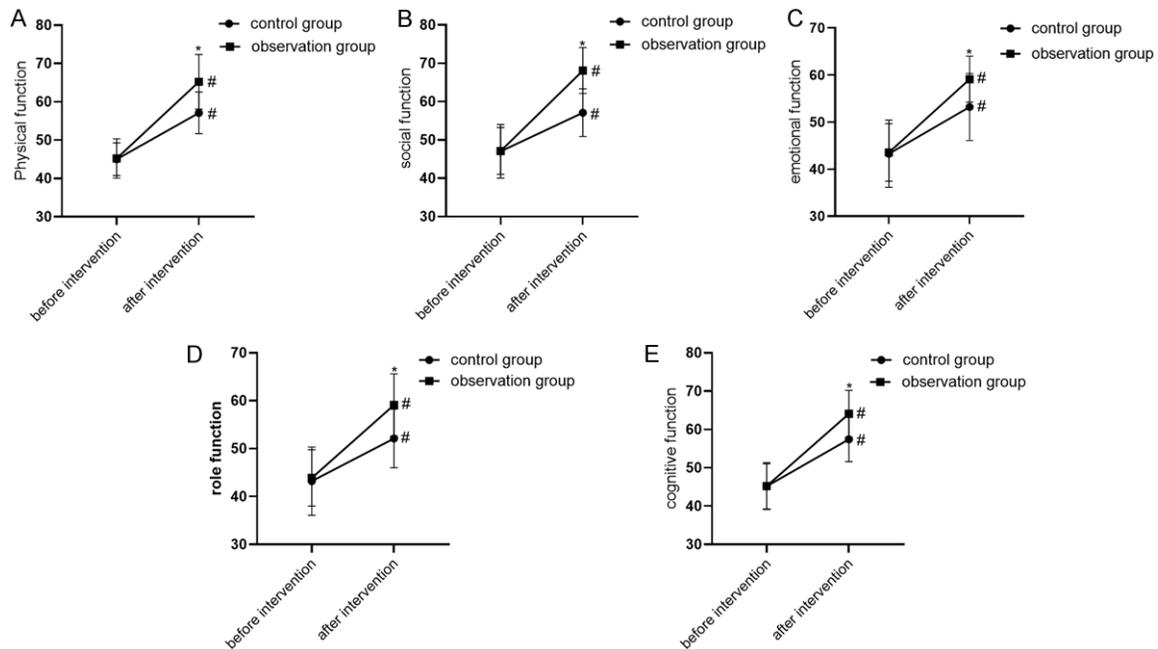


Figure 1. Comparison of the changes of quality of life between the two groups before and after intervention. Before intervention, there was no significant difference in the scores of each dimensions of QOC-30 between the two groups ($P > 0.05$). After intervention, the scores of all dimensions significantly increased in both groups and were significantly higher in the observation group than in the control group (# refers to $P < 0.05$ compared with after intervention; * refers to $P < 0.05$ compared with the control group).

Table 4. Comparison of health knowledge between the two groups after intervention n (%)

Group	Good mastery	Basic mastery	Non-mastery	Mastery rate
Control group (n=31)	13 (41.94)	10 (32.26)	8 (25.81)	23 (74.19)
Observation group (n=30)	27 (90.00)	2 (6.67)	1 (3.33)	29 (96.67)
χ^2				7.325
P				0.017

patients' compliance and improve the overall nursing effect by means of propaganda and education, personal demonstration, typical case narration, etc. [21].

Studies of domestic and foreign scholars showed that, the combination of CNP and health education can give better play to their advantages. Once a patient's condition changes, nurses can respond in time and take the most effective intervention measures, consequently maximizing the nursing effect [22, 23]. Utilization of CNP to comprehensively plan the content of health education for patients with ovarian carcinoma before, during and after surgery is able to improve the practicability of health education, prevent the education content from blindness and repetition and avoid patients' resistance. Meanwhile, the primary

nurses should first clear the objectives and methods of each stage of education, increase professionalism and humanization in the process of health education, enhance relationship and establish mutual trust with patients in the process of communication, and improve clinical outcome and overall nursing satisfaction [24, 25]. In a previous study of 70 patients with avascular necrosis, patients received fast-track surgery combined with CNP had a lower incidence of total complications and a shorter hospitalization time, as well as higher satisfaction scores for nursing work compared with patients received routine nursing, which was consistent with the present study [26]. In another study, 120 neuroblastoma patients were included and divided into control group with standard nursing care and CNP group with evidence-based CNP, and the results showed that CNP

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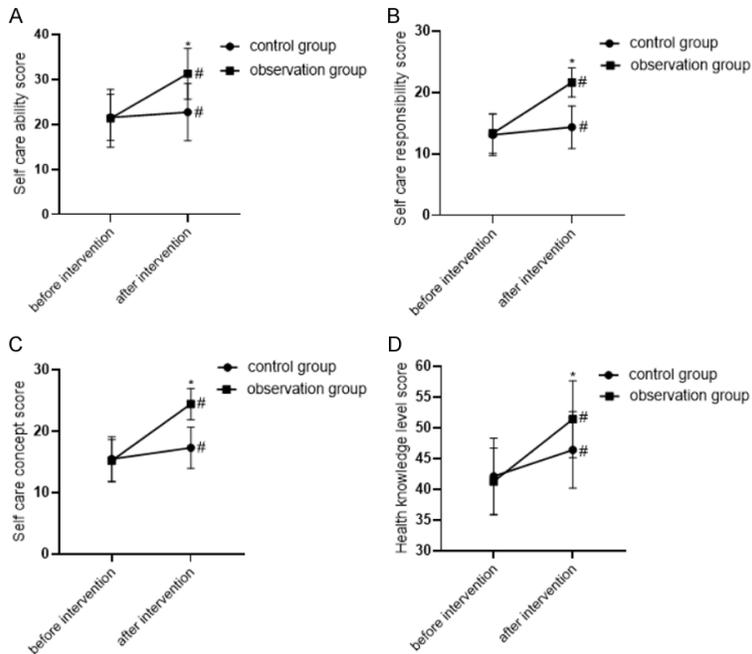


Figure 2. Comparison of self-care agency between the two groups before and after intervention. After intervention, the scores of each dimension between the two groups were significantly higher than those before intervention, and the scores in the observation group were higher than those in the control group (# refers to $P < 0.05$ compared with after intervention; * refers to $P < 0.05$ compared with the control group).

This study intervened patients with ovarian carcinoma with health education via CNP by formulating CNP table. The results showed that compared with the control group, the observation group had better indices of postoperative coagulation function, lower risk of complications and higher mastery rate of health knowledge. Both groups showed higher scores of quality of life and self-care agency after intervention, and the observation group had higher scores in all dimensions than the control group. After intervention, the scores of SAS, SDS and PSQI in the observation group were significantly lower than those in the control group. Besides, the overall nursing satisfaction was 93.33% in the observation group, which was significantly higher than 67.74% in the control group.

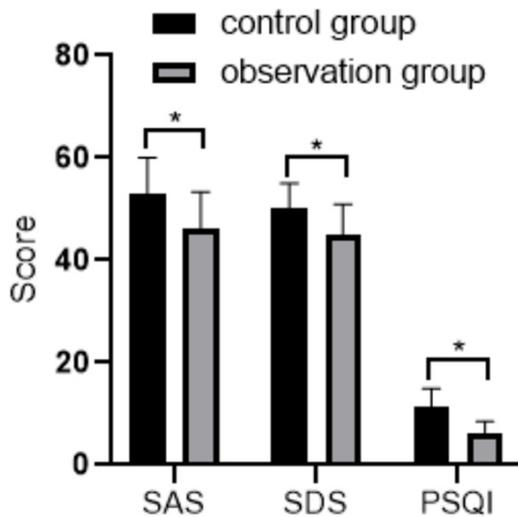


Figure 3. Comparison of changes of negative emotions and sleep quality between the two groups after intervention. After intervention, the observation group showed significantly lower scores of SAS, SDS and PSQI than the control group ($P < 0.05$).

To conclude, health education via CNP can enhance the blood coagulation function and reduce the incidence of complications of DVT after surgery in patients with ovarian carcinoma. Health education can also improve patients' awareness of disease, eliminate fears, improve patients' negative emotions and sleep quality, and enhance patients' self-care agency and quality of life, which is of great of clinical significance.

The innovative aspect of this study lies in the combination of CNP with health education to achieve better nursing effect. However, this study only focused on the postoperative situation of patients with ovarian carcinoma and failed to involve the CNP application in other diseases. Therefore, our conclusion is lack of generalization. The next step is to apply health education via CNP in more departments to conduct in-depth and comprehensive researches.

Disclosure of conflict of interest

None.

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group exhibited higher preoperative and postoperative quality of care and patient satisfaction with care, which was also consistent with this study [27].

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Table 5. Comparison of nursing satisfaction between the two groups n (%)

Group	Very satisfied	Satisfied	Unsatisfied	Overall satisfaction
Control group (n=31)	18 (58.06)	3 (9.68)	10 (32.3)	21 (67.74)
Observation group (n=30)	23 (76.67)	5 (16.67)	2 (6.67)	28 (93.33)
χ^2				4.97
<i>P</i>				0.02

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