Retrospective Study

Effects of cooperative nursing and patient education on postoperative infection and self-efficacy in gastrointestinal tumors

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Abstract

BACKGROUND
Gastrointestinal tumors have a high incidence rate. The application value of the cooperative nursing care system of medical care has received widespread attention in recent years. However, there are few studies on the value of the joint application of collaborative nursing care and self-efficacy education.

AIM
To explore the effect of cooperative nursing care management/self-efficacy education on postoperative infection and self-efficacy in gastrointestinal tumor surgery patients.

METHODS
A total of 102 patients with gastrointestinal tumors treated in our hospital from October 2018 to February 2020 were selected and divided into a conventional group (n = 51) and a combined group (n = 51) according to the nursing plan. The routine group adopted routine nursing, and the joint group adopted the medical care cooperative responsibility system nursing management combined with self-efficacy education. The self-efficacy scores, coping style scores, self-experience burden scores, and postoperative complication rates of the two groups before and after intervention were counted.

RESULTS
After intervention, the daily life behavior management, cognitive symptom management, and disease management scores of the two groups were higher than those before the intervention, and those of the combined group were higher than those of the conventional group (all P = 0.000). After the intervention, the positive response scores of the two groups were higher than those before the intervention, the negative response scores were lower than those before the intervention, and the combined group was better than the conventional group (all P = 0.000). After
the intervention, the two groups’ emotional, economic, and physical factor scores were lower than those before the intervention, and the combined group was lower than the conventional group (all \( P = 0.000 \)). The incidence of infection in the combined group (1.96%) was lower than that in the conventional group (15.69%) (\( P = 0.036 \)).

**CONCLUSION**

Cooperative nursing care management and self-efficacy education improved the physical and mental states of gastrointestinal surgery patients, change the response to disease, and reduce the risk of postoperative infection.

**Key Words:** Medical care cooperative responsibility system nursing management; Self-efficacy education; Gastrointestinal neoplasms; Postoperative infection; Self-efficacy; Nursing

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**Core Tip:** The application value of the cooperative nursing care system of medical care has received widespread attention in recent years. However, there are few studies on the value of the joint application of collaborative nursing care and self-efficacy education. The effective measures should be taken to intervene in patients with gastrointestinal tumors after surgery.

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**INTRODUCTION**

Due to many factors, such as dietary changes and increased living pressure, the incidence rate of gastrointestinal tumors has continued to increase\(^1\)\(^-\)\(^3\). Surgery is an essential treatment for gastrointestinal tumors\(^4\)\(^-\)\(^5\) because it can effectively remove the lesions. However, surgery can cause physiological changes and trauma to the body, further aggravating the patient’s pain and increasing the risk of postoperative complications, affecting the patient’s state of mind and self-efficacy\(^6\)\(^-\)\(^8\). Therefore, effective measures should be taken to intervene in patients with gastrointestinal tumors after surgery.

Routine care is mostly based on common diseases with a lack of targeted and systematic treatments, which results in low patient benefits. Self-efficacy education is an essential clinical intervention model. It is an individual’s expectation of his ability. It can eliminate inner fear and other psychologies through many forms of care and deepen the disease’s correct recognition, establishing confidence in recovery\(^9\)\(^-\)\(^10\). The application value of the cooperative nursing care system of medical care has also received widespread attention in recent years. In this system, a joint medical staff and nursing staff, through the promotion of cooperation, provide patients with comprehensive, effective, and safe medical care services; however, there are few studies on the value of the joint application of collaborative nursing care and self-efficacy education.

Therefore, this study selected patients after gastrointestinal cancer surgery in our hospital to discuss the effect of medical care cooperative responsibility system nursing management combined with self-efficacy education intervention.
MATERIALS AND METHODS

General information
A total of 102 patients with gastrointestinal tumors treated in our hospital from October 2018 to February 2020 were selected, and the inclusion criteria were: (1) Diagnosis by surgical pathology; (2) Clear consciousness and specific expression ability; (3) Clinical staging of stage I-III; and (4) Know the study and sign the consent form. Exclusion criteria were: (1) The presence of other benign and malignant tumors; (2) The presence of speech communication impairments, cognitive dysfunction, and neuropathy; (3) The use of antidepressant or antianxiety drugs within 2 wk before the study; (4) Cardio-cerebrovascular disease; and (5) Expected survival period of less than 6 mo.

The nursing plan was divided into a conventional group (n = 51) and a combined group (n = 51). There was no statistically significant difference in the general data between the two groups of patients, as shown in Table 1.

Nursing methods
The conventional group took routine care, including condition monitoring, pain care, medication guidance, and explanation of relevant precautions. The combined group adopted the cooperative medical care responsibility system nursing management and joint self-efficacy education based on the conventional group.

The medical care cooperative responsibility system nursing management: (1) Selected the attending physicians and experienced nursing staff to form an intervention group, earnestly learned the medical care cooperative responsibility system nursing management, gastrointestinal cancer postoperative care, and other related content, conducted assessments, and carried out nursing interventions after passing the training; (2) Was responsible for nursing, completing nursing evaluation, life nursing, basic nursing, etc. During physician rounds, the chief physician reported the examination status and bedside readings, introduced the medical history, treatment, and rehabilitation process; the nurses explained the postoperative pain, sleep, diet, and other related knowledge to the patient. After feedback, a targeted rehabilitation plan based on the individualized condition of the patient was made; (3) Chose multimodal analgesia; the responsible nurse evaluated the pain perception of patients after gastrointestinal tumor surgery and used timely targeted health for those who lacked cognition by playing videos, organizing lectures, and other forms of education to deepen their recognition of postoperative pain; if the patient’s pain control was not good, the doctor was consulted to develop an analgesic plan and intervened according to the specific situation; and (4) Explained postoperative precautions, diet knowledge, etc. 10 min/time; the rehabilitation therapist, responsible nurses, and attending physicians guided patients with postoperative depression and anxiety, pain, and compliance with functional exercise during ward rounds.

Self-efficacy education included: (1) Health knowledge education, specialized medical personnel who regularly explained disease-related knowledge to patients with gastrointestinal tumor surgery, deepened their correct understanding of disease severity, postoperative treatment, and rehabilitation measures, eliminated psychological barriers, alleviated the fear, anxiety, and other emotions arising from the lack of awareness of the disease; (2) Mental health education because patients with gastrointestinal cancer have a greater economic burden on treatment, and the disease is more serious. It is prone to different degrees of depression and anxiety emotions, and self-efficacy is poor. Medical staff should be patient, communicate with patients, master their state of mind, target psychological counseling, share with patients successfully treated past cases, establish a positive image, and help patients to positively face disease and rehabilitation treatment; (3) Family support encouragement; because patients may have different types of adverse reactions or complications after surgery, it is necessary to inform the family in advance to prevent the patients suffering from gastrointestinal tumor stress due to excessive emotional reactions, such as fear. Family members should be encouraged to improve communication with patients through “we will be with you” and other language to give comfort and support; (4) Targeted encouragement based on the specific conditions of each patient to develop targeted goals and tasks, including playing Tai Chi, playing chess, listening to music, walking, etc., to be completed under the supervision of family members or medical staff in order to divert attention to the disease and improve self-efficacy; and (5) Discharge guidance, which instructed patients to return to the hospital regularly for re-examination, develop good diet and rest habits outside the hospital, and utilize a 24-h consultation hotline to solve...
| Table 1 Comparison of two groups of general information, n (%) |
|-------------------------------------------------------------|
| **Conventional group (n = 51)** | **Combined group (n = 51)** | **t/P values** |
| Sex (male/female) | 31/20 | 33/18 | 0.168/0.682 |
| Age (yr) | 50.61 (7.78) | 49.68 (8.08) | 0.592/0.555 |
| BMI (kg/m²) | 22.96 (2.20) | 23.04 (2.11) | 0.187/0.852 |
| Pathological type | | | |
| Gastric cancer | 29 (56.86) | 26 (50.98) | 0.359/0.836 |
| Cancer | 9 (17.65) | 10 (19.61) | | |
| Colon cancer | 13 (25.49) | 15 (29.41) | | |
| Stage of disease | | | |
| Phase I | 12 (23.53) | 14 (27.45) | 0.602/0.547 |
| Phase II | 19 (37.25) | 20 (39.22) | | |
| Phase III | 20 (39.22) | 17 (33.33) | | |
| Level of education | | | |
| Secondary and below | 15 (29.41) | 18 (35.29) | 0.440/0.803 |
| High school | 21 (41.18) | 20 (39.22) | | |
| College or above | 15 (29.41) | 13 (25.49) | | |

BMI: Body mass index.

problems encountered by patients during out-of-hospital rehabilitation in a timely manner.

**Observation indicators**
The observation indicators include the following aspects: (1) Count the self-efficacy scores of the two groups before and after the intervention and evaluate according to the general self-efficacy scale, including three dimensions of daily life behavior management, cognitive symptom management, and disease management. The higher the score, the better the self-efficacy; (2) Count the coping style scores of the two groups before and after the intervention and evaluate according to the simple coping style questionnaire, including two dimensions of positive coping and negative coping, adopting a 4-level scoring system, divided into “frequently adopted,” “sometimes adopted,” “occasionally adopted,” and “not adopted”; (3) Calculate the self-experience burden scores of the two groups before and after the intervention according to the self-perceived burden scale assessment, including three dimensions of emotional factors, economic factors, and physical factors. The higher the score, the more severe the self-experience burden; and (4) Count the incidence of postoperative complications in the two groups.

**Statistical analysis**
SPSS 22.0 software package was used for data processing. Measurement data were expressed by mean ± SD and calculated by t test. Count data were expressed by n (%) and calculated by the χ² test. P < 0.05 indicated a statistically significant difference.

**RESULTS**

**Self-efficacy score**
There was no significant difference in the scores of daily life behavior management, cognitive symptom management, and disease management between the two groups before intervention (P > 0.05). The combined group was higher than the conventional group (P < 0.05; Table 2).
Table 2 Comparison of self-efficacy scores between two groups (mean ± SD, score)

|                              | Combined group (n = 51) | Conventional group (n = 51) | t/P values |
|------------------------------|-------------------------|----------------------------|------------|
| Number of cases              | 51                      | 51                         |            |
| Daily life behavior management|                         |                            |            |
| Before intervention          | 11.20 ± 1.97            | 10.99 ± 2.03               | 0.530/0.597|
| After intervention           | 19.71 ± 2.28<sup>1</sup> | 15.63 ± 2.10<sup>1</sup>   | 9.400/0.000|
| Cognitive symptom management |                         |                            |            |
| Before intervention          | 9.96 ± 1.13             | 10.10 ± 1.09               | 0.637/0.526|
| After intervention           | 19.18 ± 2.23<sup>1</sup> | 15.41 ± 2.15<sup>1</sup>   | 8.692/0.000|
| Disease management           |                         |                            |            |
| Before intervention          | 16.98 ± 3.03            | 17.12 ± 2.93               | 0.237/0.813|
| After intervention           | 28.60 ± 3.10<sup>1</sup> | 23.96 ± 2.92<sup>1</sup>   | 7.781/0.000|

<sup>1</sup>Indicates significant difference in comparison to before intervention (P < 0.05).

**Coping style score**

There was no significant difference between the positive and negative coping scores of the two groups before the intervention (P > 0.05). The positive coping scores of the two groups after the intervention were higher than before the intervention, and the negative coping scores were lower than before the intervention (P < 0.05; Table 3).

**Burden of self-perception**

There was no significant difference in the scores of affective factors, economic factors, and physical factors between the two groups before intervention (P > 0.05). After the intervention, the scores of affective factors, economic factors, and physical factors were lower than before the intervention, and the combined group was lower than the conventional group (P < 0.05; Table 4).

**Postoperative complications**

The incidence of infection in the combined group (1.96%) was lower than that in the conventional group (15.69%) (P < 0.05; Table 5).

**DISCUSSION**

Gastrointestinal cancer surgery can have a significant impact on the quality of life of the patient. If the patient does not receive the timely and effective intervention after surgery, complications such as postoperative infection may occur, adversely affecting the functional recovery of the body and the prognosis of the disease<sup>[11-15]</sup>. Therefore, the application of effective nursing intervention after gastrointestinal tumor surgery is of great significance.

Most patients with gastrointestinal tumors have different negative emotions, such as fear, anxiety, and depression due to the disease itself and surgically invasive treatment; thus, the self-efficacy is poor. Such factors can harm the rehabilitation of the disease<sup>[16-19]</sup>. Therefore, this study implemented self-efficacy education for patients with gastrointestinal tumors during the intervention period. It implemented self-efficacy training for patients based on health knowledge and guided by psychological intervention that created a family support environment and deepened their knowledge of the gastrointestinal tract. Tumor and surgical treatment measures, postoperative rehabilitation, and postoperative complications may facilitate their acceptance of the diseased state, easing negative emotions and enhancing confidence in defeating the disease and continuing life<sup>[20,21]</sup>.

The cooperative nursing care system is also a clinically significant nursing intervention model. Through the nursing staff as an intermediate hub, fostering close contact with physicians and patients, nursing staff can participate in physician rounds and discuss medical records to comprehensively evaluate and master patient treatment and provide timely care to patients. The plan will be improved and updated.
Table 3 Comparison of coping style scores between groups (mean ± SD, score)

|                         | Combined group (n = 51) | Conventional group (n = 51) | t/P values |
|-------------------------|-------------------------|-----------------------------|------------|
| Number of cases         | 51                      | 51                          |            |
| Positive responses      |                         |                             |            |
| Before intervention     | 1.30 ± 1.01             | 1.27 ± 0.98                 | 0.152/0.879|
| After intervention      | 2.95 ± 0.88¹           | 1.97 ± 0.90¹                | 5.560/0.000|
| Negative responses      |                         |                             |            |
| Before intervention     | 2.78 ± 0.62             | 2.81 ± 0.65                 | 0.239/0.812|
| After intervention      | 0.80 ± 0.56¹           | 1.56 ± 0.60¹                | 6.613/0.000|

¹Indicates significant difference in comparison to before intervention (P < 0.05).

Table 4 Comparison of self-feeling burden between groups

|                         | Combined group (n = 51) | Conventional group (n = 51) | t/P values |
|-------------------------|-------------------------|-----------------------------|------------|
| Number of cases         | 51                      | 51                          |            |
| Emotional factors       |                         |                             |            |
| Before intervention     | 20.06 ± 2.96            | 19.85 ± 3.03                | 0.354/0.724|
| After intervention      | 14.59 ± 1.98¹           | 17.91 ± 2.06¹               | 8.298/0.000|
| Economic factors        |                         |                             |            |
| Before intervention     | 9.65 ± 2.04             | 10.02 ± 1.86                | 0.957/0.341|
| After intervention      | 6.50 ± 1.50¹            | 8.12 ± 1.41¹                | 5.620/0.000|
| Physical factors        |                         |                             |            |
| Before intervention     | 8.26 ± 2.13             | 8.53 ± 2.08                 | 0.648/0.519|
| After intervention      | 5.51 ± 1.14¹            | 7.28 ± 1.22¹                | 7.570/0.000|

¹Indicates significant difference in comparison to before intervention (P < 0.05).

Table 5 Comparison of postoperative complications between two groups, n (%)

|                  | Combined group (n = 51) | Conventional group (n = 51) | P values |
|------------------|-------------------------|-----------------------------|----------|
| Number of cases  | 51                      | 51                          |          |
| Infection        | 1 (1.96)                | 8 (15.69)                   | 4.387/0.036|
| Anastomotic fistula | 2 (3.92)            | 3 (5.88)                    | 0.000/1.000|
| Crack            | 2 (3.92)                | 4 (7.84)                    | 0.177/0.674|
| Intestinal obstruction | 0 (0.00)        | 3 (5.88)                    | 1.374/0.241|

At the same time, medical and nursing cooperative responsibility system nursing management is conducive to strengthening teamwork, making full use of medical resources, increasing communication time between nursing staff and patients, and ensuring health education duration. It is helpful for nursing staff to formulate nursing plans by patients’ specific conditions, and patients can be familiar with them. It proactively implements nursing programs to ensure the quality of intervention.

In this study, the first joint medical and nursing cooperative responsibility management nursing management and self-efficacy education were used to intervene in patients with gastrointestinal tumors in our hospital. The results showed that after the intervention, the combined group’s self-efficacy score was higher than that of the conventional group. The scores of various dimensions of the coping style were better in the conventional group. Moreover, the score of each dimension of self-feeling
burden was lower than the corresponding score of the conventional group, and the incidence of postoperative infection was lower than that of the conventional group, indicating that the joint implementation of medical care cooperative responsibility system nursing management and self-efficiency education can improve the healing of the gastrointestinal tract more effectively.

Following tumor surgery, patients’ self-efficacy and coping styles can reduce the self-feeling burden and help reduce postoperative infection risk. Self-efficacy education guides patients to talk about subjective feelings and psychological problems, actively conducts targeted counseling, and encourages patients to relieve negative emotions through encouragement. It also helps them to become brave in facing their illness, builds confidence in their recovery, gradually reduces their psychological pressure, and stimulates their self-efficacy. Simultaneously, self-efficacy education can deepen the gastrointestinal cancer patient’s understanding of the disease, establish a correct health concept, and enhance the patient’s self-management and control capabilities.

The responsible nurse is the person who has the most contact with the patient. The harmonious nurse-patient relationship is conducive to directly grasping the patient’s psychological state and providing corresponding psychological counseling. However, some patients are affected by traditional concepts, and most think that the nursing staff will only perform medicine delivery and operations, such as injections, and only have a high degree of trust in physicians while lacking trust in the health education of the nursing staff, which in turn affects the effectiveness of health education. In the cooperative nursing system of medical care, full use of the authority of the doctor and the patient’s trust in the doctor let the doctor participate in the patient’s postoperative care, maximize the different professional advantages of medical care, and provide patients with a full range of medical and nursing support. In addition, in the management of the cooperative nursing responsibility system, patients are closer to physicians and nursing staff, which can make patients more familiar with physicians and nursing staff, create a comfortable hospitalization environment, increase patient trust, and reduce unneeded claims on the physicians’ and nursing staff’s time so that they have more time to communicate among each other and with patients.

Through the development of collaborative nursing care with medical care, physicians and nursing staff can accurately position their roles and put their job responsibilities in the proper place. Nursing staff and physicians can make rounds together to discuss the focus of medical care and the patient’s condition, treatment and rehabilitation, and other concerns. They can pay attention to information sharing and provide mutual help and mutual learning. The professional cooperation, communication, and contact between doctors and nursing staff are close and direct, which is conducive to the full implementation of diagnosis and treatment plans and early recovery of patients.

CONCLUSION
In summary, the joint adoption of medical care and cooperative responsibility management and self-efficacy education can improve patients’ physical and mental states after gastrointestinal tumor surgery, change the response to disease, and reduce postoperative infection risk.

ARTICLE HIGHLIGHTS

Research background
The value of the cooperative nursing care system of medical care has received widespread attention in recent years.

Research motivation
Surgery is an essential treatment for gastrointestinal tumors, which can effectively remove the lesions, but it can cause physiological changes and body trauma, further aggravate patient pain, increase the risk of postoperative complications, and affect patient mood and self-efficacy.
Research objectives
The joint adoption of cooperative nursing management and self-efficacy education can improve the physical and mental state of patients undergoing gastrointestinal tumor surgery, change the way of coping with the disease, and reduce the risk of postoperative infection, which is of positive significance to patients with gastrointestinal tumors.

Research methods
According to the nursing plan, a total of 102 patients with gastrointestinal tumors treated in our hospital from October 2018 to February 2020 were selected and divided into a conventional group (n = 51) and a combined group (n = 51).

Research results
After the intervention, the daily life behavior management, cognitive symptom management, and disease management scores of the two groups were higher than those before the intervention. Those of the combined group were higher than those of the conventional group after the intervention. After the intervention, the two groups' emotional, economic, and physical factors scores were lower than those before the intervention, and the combined group was lower than the conventional group. The infection incidence in the combined group (1.96%) was lower than that in the conventional group (15.69%).

Research conclusions
The joint adoption of medical care and cooperative responsibility management can improve patients’ physical and mental states after gastrointestinal tumor surgery, change the response to disease, and reduce the risk of postoperative infection.

Research perspectives
An innovative nursing model can achieve better treatment results.

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