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Review Article

Comfortable nursing intervention for gastric cancer patients after operation can reduce postoperative complications and improve quality of life

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Abstract: To explore whether comfortable nursing intervention for gastric cancer patients can reduce postoperative complications and improve their quality of life. A total of 82 patients with gastric cancer admitted to the Department of Gastroenterology and Oncology of our hospital from April 2017 to May 2019 were collected and divided into a control group (35 cases, given routine nursing) and a research group (47 cases, given comfortable nursing). Visual analogue scale (VAS) was applied for pain degree assessment after operation. Self-rating anxiety scale (SAS) and Hamilton Depression Scale (HAMD) were respectively, used to evaluate mental health, and depression level of patients. Pittsburgh sleep quality index (PSQI) was used to evaluate the sleep quality before and after nursing, and general quality of life scale (GQOL-74) for quality of life. The postoperative adverse reactions and complications were observed, and hospitalization time and hospital costs were recorded. A self-made "Nursing Satisfaction Questionnaire" was used for assessment. VAS scores in the research group were notably lower than those in the control group at 1 week and 2 weeks after operation. After nursing intervention, SAS scores, HAMD scores, and PSQI scores of the research group decreased notably when compared with the control group. Compared with the control group, the research group had remarkably higher GQOL-74 score, lower total adverse reaction rates, and better exhaust time and defecation time. In addition, auscultation of bowel sounds after surgery showed that the research group was superior to the control group. The hospitalization time of the research group was notably shorter than that the control group, while the hospital costs had no significant difference. The nursing satisfaction of patients in the research group was 97.88%, which was notably higher than the control group (77.14%). Comfortable nursing can alleviate postoperative pain, anxiety and depression of gastric cancer patients, reduce the occurrence of complications, and improve sleep quality and life quality.

Keywords: Gastric cancer, comfortable nursing, quality of life, complications

Introduction

Gastric cancer is the most common malignant tumor in the world, which is mostly found in middle-aged and elderly people in Japan and China [1]. The report of Li et al. [2] shows that the incidence onset age of gastric cancer has become increasingly younger in recent years. According to the statistical results of Kim et al. [3], in 2016, the incidence of gastric cancer was as high as 42.8%, especially in South Africa and India. Gastric cancer not only has an extremely high incidence rate, its high mortality accounts for the world's leading cause of malignancy. According to the statistics of Satoh et al. [4], about 1.2 million people died of gastric cancer worldwide in 2015, and the survival rate within 5 years was only 29.7%. Due to its high morbidity and mortality rate, gastric cancer has always been a hot research topic in clinical practice, and is a serious disease that needs to be continuously researched in clinical practice. In the early stage of gastric cancer, there are no obvious clinical symptoms, and its lesions are often hidden, making it generally difficult to find and detected by patients in the early stage. According to statistics by Tsujiura et al. [5], only 8% of gas-

tric cancer patients in the world can be diagnosed at an early stage. Therefore, in clinical practice, there is continuous probing for the gold standard of early detection and diagnosis of gastric cancer, and more effective methods are being tried for gastric cancer treatment. At present, with the continuous development and improvement of medical technology and medical devices, radical gastrectomy has generally become the best method to treat gastric cancer [6, 7].

At present, the postoperative care for gastric cancer patients is rather messy, and there is no clear research to prove which model is reasonable and most suitable for patients undergoing radical gastrectomy. The current research [8-10] shows that the conventional nursing mode can achieve great effects in gastric cancer patients, and is also a more commonly used nursing mode for gastric cancer patients in clinical practice. However, the research of Matsumoto et al. [11] shows that the comfortable nursing mode has achieved extremely significant and excellent results in lung cancer; but for gastric cancer patients, there is no research to prove that it is also applicable. Therefore, it is suspected that the comfortable nursing mode can also achieve great results for patients undergoing radical gastrectomy for gastric cancer. For this reason, experimental analysis was carried out to provide effective reference and guidance for future clinical treatment of patients undergoing radical gastrectomy for gastric cancer.

Materials and methods

Basic information

A total of 82 gastric cancer patients admitted to the Department of Gastroenterology and Oncology of Zhujiang Hospital of Southern Medical University from April 2017 to May 2019 were collected in this experiment. Patients received routine nursing were enrolled in the control group (35 cases), of which 19 were males and 16 were females, with an age of 35-65 years and a mean age of (47.7±7.4) years. Patients who received comfortable nursing were enrolled in the research group (47 cases), of which 26 were males and 21 were females, with an age of 34-65 years and a mean age of (47.5±7.6) years. This study was conducted with the approval of the Ethical Committee of Zhujiang Hospital of Southern Medical University, and was in accordance with the Declaration of Helsinki. All participants and their families signed informed consent forms before carrying out the study.

Inclusion and exclusion criteria

Inclusion criteria: All the selected patients were confirmed to have gastric cancer by biopsy in the Pathology Department of Zhujiang Hospital of Southern Medical University. Patients underwent radical gastrectomy in Zhujiang Hospital of Southern Medical University after the diagnosis. Patients were willing to cooperate with our hospital medical staff and the arrangements for treamtent. Patients had a complete case data. All patients signed the informed consent.

Exclusion criteria: Patients were complicated with other cardiovascular and cerebrovascular diseases, other digestive tract or respiratory tract diseases. Patients without surgical tolerance, or thoes with physical disabilities, or language dysfunction, etc. Patients transferred to other hospitals halfway the study.

Nursing methods

The control group received routine nursing: Routine nursing was carried out for the patients in this group. Preoperative preparation was conducted, and drug intervention was carried out according to the doctor's orders. Treatment measures were carried out according to the corresponding doctor's orders and nursing levels, and regular dietary guidance and nutritional support suggestions were given. Vital signs were monitored in a timely manner to prevent adverse reactions.

The research group was given comfortable nursing: In addition to routine nursing, the patients in the research group were treated with the following corresponding physiological and psychological comfort care in the process of postoperative rehabilitation.

Physiological aspects: Patients were arranged to stay in a private room, which was quiet, clean and well ventilated. The indoor temperature was kept at 18-25°C, and the humidity was kept at 50%-60%. Various nursing operations were conducted as intensively as possible to avoid frequently disturbance to patients. Patient's family members instead of nursing

staff accompanied the patients. For patients with poor appetite, a diet that was palatable and easy to digest, that was both delicious and appetizing, was conducive to increasing the nutrition and vitamin intake of patients.

Sleep aspects: In view of the obvious pain and difficulty in falling asleep of gastric cancer patients, nursing staff were required to understand the physiological rhythm of the patients, and try their best to focus treatment and nursing on the awake period of the patients. At the same time, aiming at the problems of frequent dreams, easy waking and poor sleep quality of the patients, they were instructed to drink milk before going to bed, and use measures such as using soft lighting lamps, isolating noise, giving sleeping pills and analgesics were taken to help the patients improve sleep quality.

Psychological aspect: When patients were admitted to hospital, the nurse should actively introduce the ward environment, the doctor in charge and nurse in charge to eliminate the strangeness and nervousness of patients to their surroundings, and guide their family members to support the patients in raising spirits and life skill enhancement. Communicate with patients through nonverbal communication skills such as language and listening, gesture, touch, etc., so that patients could vent their negative emotions, thus providing effective psychological counseling, and helping patients build up the confidence to overcome the disease. Music therapy could also be used to relieve anxiety and depression of patients and accompanying family members, improve the psychological state of patients and improve the quality of life.

Scoring criteria

Visual analogue scale (VAS) [12] was applied to evaluate the pain degree of patients after operation, with a full score of 10. The higher the score was, the more severe the degree of pain was, and the worse the pain control effect was. Self-rating anxiety scale (SAS) [13] and Hamilton Depression Scale (HAMD) [14] were applied for mental health assessment. The SAS scale has a total score of 100, a score of 50-70 after nursing intervention indicates mild anxiety, a score of 71-90 after nursing intervention indicates moderate anxiety, and a score of > 90 after nursing intervention indicates severe anxiety. HAMD measured the depression level of patients. The scale includes 24 items. The higher the score was, the more serious the depression was. Pittsburgh sleep quality index (PSQI) [15] was utilized for evaluation of the sleep quality of patients before and after nursing. The score consisted of 5 questions from others peoples evaluations and 19 self-evaluation questions, with a total score of 21 points. The higher the score of patients after evaluation was, the lower the sleep quality of patients after operation was. The GQOL-74 scale [16] was utilized to assess the quality of life of patients. There were 4 dimensions in the scale, and the total score of each dimension was 100 points. The higher the score after evaluation was, the better the quality of life of patients was. The patients were scored with a self-made "nursing satisfaction questionnaire" from our hospital, with a total of 20 questions. According to the nursing content of our hospital, the patients were rated for satisfaction, with 5 points for each question. The total score of < 70 was not satisfied, 70-89 was satisfied, and ≥ 90 was extremely satisfied. Satisfaction = (extremely satisfied + satisfied)/total cases × 100%.

Outcome measures

Main outcome measures: VAS score, SAS score, HAMD score, PSQI score and GQOL-74 score were observed.

Secondary outcome measures: Postoperative adverse reactions and complications, hospitalization time, hospital costs, and gastrointestinal function indicators were observed.

Statistical methods

In this study, statistical analysis of the collected data was performed using SPSS 20.0 software package (IBM Corp., Armonk, NY, USA), and GraphPad 7 software package was used to illustrate the figures. K-S test was utilized to analyze the distribution of counting data, in which the normal distribution data was expressed as mean ± standard deviation (Mean ± SD). Independent sample t test was applied for comparison between groups. Intra-group comparison was analyzed using the paired t test. Counting data were expressed with rate (%), adopted chi-square test, and represented by χ^2. $P < 0.05$ suggested statistical difference.

Table 1. Basic information [n (%)]

	Research group (n=47)	Control group (n=35)	X^2 or t	P
Age (years)	47.5±7.6	47.7±7.4	0.119	0.905
Marital status				
With	41 (87.23)	30 (85.71)	0.040	0.842
Without	6 (12.77)	5 (14.29)		
BMI	23.05±1.24	23.02±1.17	0.111	0.912
Smoking history				
With	30 (63.83)	24 (68.57)	0.201	0.654
Without	17 (36.17)	11 (31.43)		
Drinking history				
With	28 (59.57)	23 (65.71)	0.322	0.571
Without	19 (40.43)	12 (34.29)		
Residence				
City	29 (61.70)	20 (57.14)	0.173	0.677
Countryside	18 (38.30)	15 (42.86)		
Food preference				
Light	22 (46.81)	16 (45.71)	0.010	0.922
Spicy	25 (53.19)	19 (54.29)		
Exercise habits				
With	17 (36.17)	14 (40.00)	0.125	0.724
Without	30 (63.83)	21 (60.00)		
Pathological stage				
I~II	18 (38.30)	13 (37.14)	0.114	0.915
III~IV	29 (61.70)	22 (62.86)		

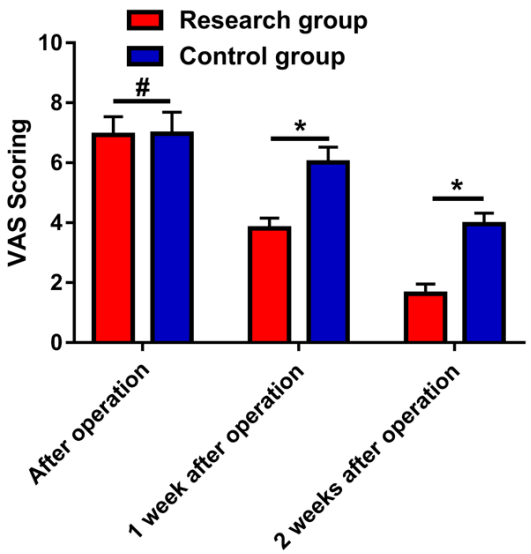

Figure 1. VAS score of patients. VAS scores were notably lower in the research group 1 week and 2 weeks after operation than in the control group (P < 0.05). Notes: symbol # indicates that there is no difference between the two groups (P > 0.05), and symbol * indicates that there is difference between the two groups (P < 0.05).

Results

Clinical data

There was no remarkable difference between the research group and the control group in clinical data such as age, marital status, BMI, smoking history, drinking history, residence, food preference, exercise habits, or pathological stage; suggesting group comparability (P > 0.05), as shown in **Table 1**.

Postoperative VAS scoring of patients

There was no remarkable difference in postoperative VAS scores between the two groups (P > 0.05). The VAS score of the research group was notably lower than those of the control group at 1 week and 2 weeks after operation (P < 0.05), as shown in **Figure 1**.

Postoperative SAS scoring and HAMD scoring of patients

There was no difference in SAS and HAMD scoring between the two groups before nursing intervention (P > 0.05), while both in the research group decreased remarkably after nursing intervention compared with the control group (P < 0.05), as shown in **Figure 2**.

PSQI scoring and GQOL-74 scoring after operation

There was no remarkable difference in PSQI scoring between the two groups before nursing intervention (P > 0.05). After nursing intervention, however, the research group was notably lower than that in the control group (P < 0.05). Further observation of GQOL-74 scoring showed that the scores (somatic function, psychological function, social function, material life) of the research group were considerably higher than those of the control group (P < 0.05), as shown in **Figure 3**.

Postoperative adverse reaction complications of patients

Only one case of malnutrition occurred in the research group, with a total incidence rate of 2.70%. While in the control group, there were 2

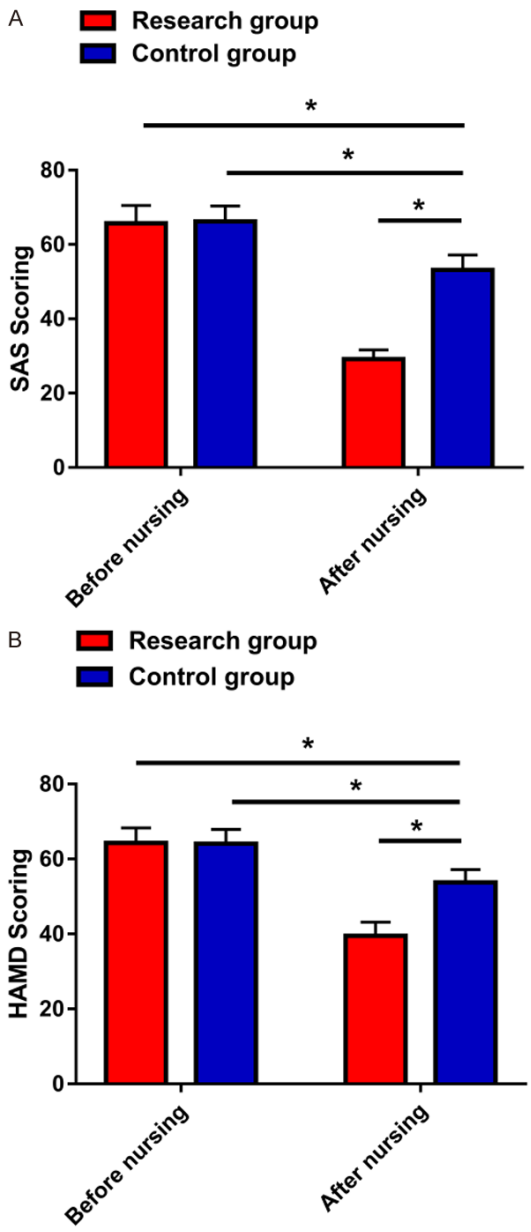

Figure 2. SAS scoring and HAMD scoring of patients after operation. A. SAS scoring of the research group after nursing intervention were notably lower than those of the control group. B. HAMD scoring of the research group after nursing intervention was notably lower than that of the control group. Note: the symbol * indicates a difference between the two groups ($P < 0.05$).

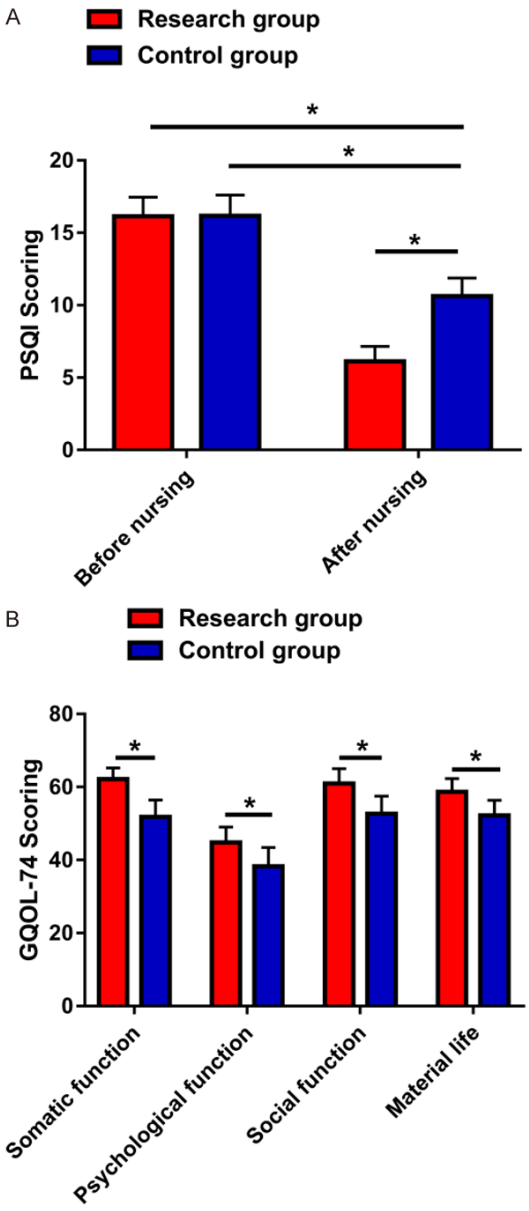

Figure 3. Postoperative PSQI scoring and GQOL-74 scoring. A. PSQI scoring of the research group after nursing intervention was remarkably reduced, and was lower than that of the control group. B. GQOL-74 scoring of the research group was notably higher than those in the control group ($P < 0.05$). Note: the symbol * indicates a difference between the two groups ($P < 0.05$).

cases of malnutrition, 1 case of gastrointestinal hemorrhage, 2 cases of pyloric obstruction, and 2 cases of anastomotic fistula, with the total incidence rate of 22.86%. The total incidence rate in the research group was notably lower than the control group ($P < 0.05$), as shown in **Table 2**.

Indexes of gastrointestinal function, hospitalization time and hospital costs

By comparing the postoperative gastrointestinal function, hospitalization time and hospital costs between the two groups, it could be seen that the exhaust time and defecation time of the research group were remarkably

Table 2. Incidence of complications [n (%)]

Type	Research group (n=47)	Control group (n=35)	X^2	P
Malnutrition	1 (2.13)	2 (5.71)		
Gastrointestinal hemorrhage	0 (0.00)	1 (2.86)		
Pyloric obstruction	0 (0.00)	2 (5.71)		
Anastomotic fistula	0 (0.00)	2 (5.71)		
Total incidence	1 (2.13)	7 (20.00)	7.278	0.007

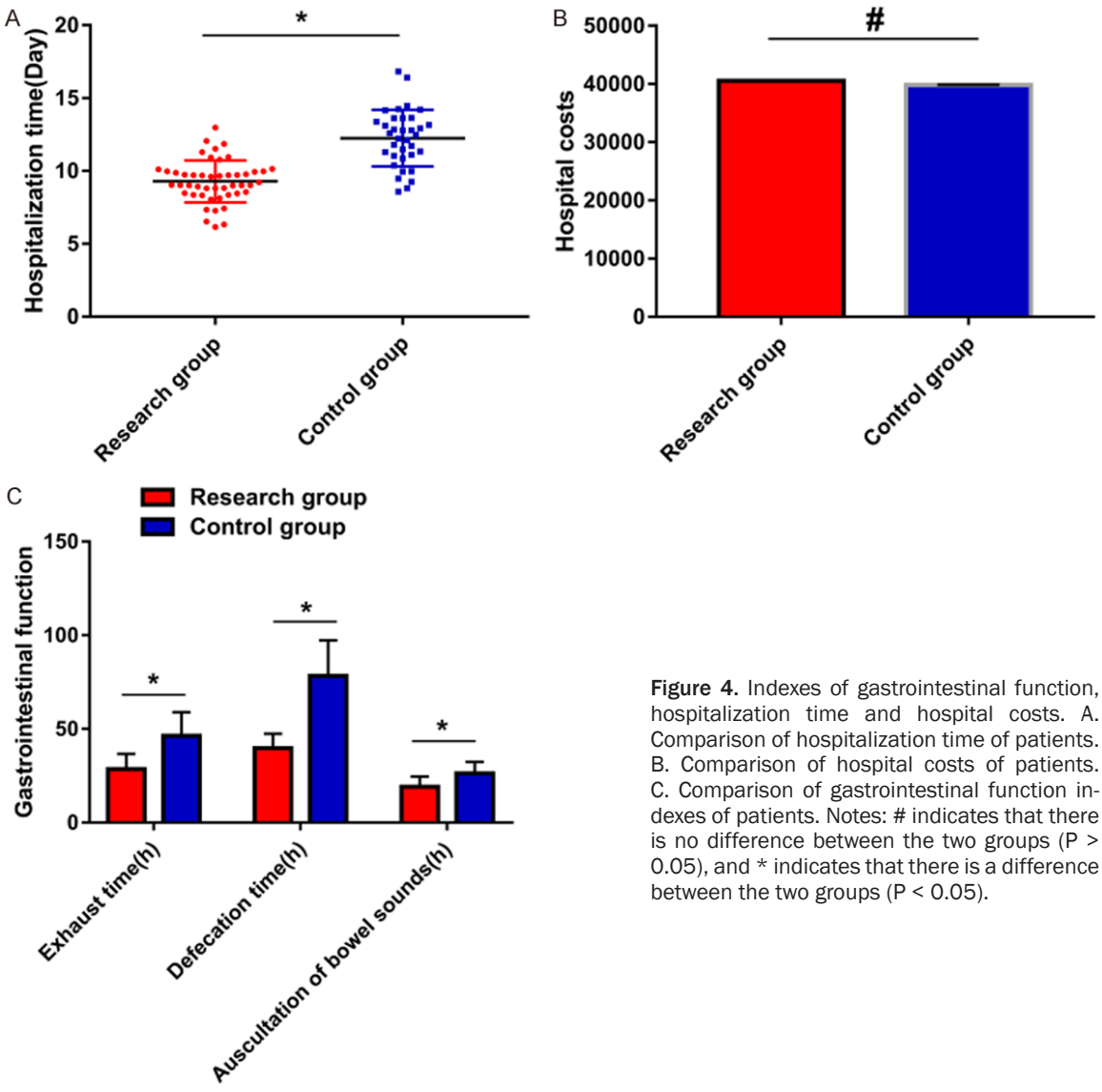

Figure 4. Indexes of gastrointestinal function, hospitalization time and hospital costs. A. Comparison of hospitalization time of patients. B. Comparison of hospital costs of patients. C. Comparison of gastrointestinal function indexes of patients. Notes: # indicates that there is no difference between the two groups (P > 0.05), and * indicates that there is a difference between the two groups (P < 0.05).

better than those of the control group (P < 0.05). Patients were auscultated for bowel sounds after surgery, and the results showed that the research group was superior to the control group (P < 0.05). The hospitalization time of the patients in the research group was notably lower than that in the control group (P < 0.05), while there was no difference in hospital costs between the two groups (P > 0.05), as shown in **Figure 4**.

Nursing satisfaction of each group

The nursing satisfaction of patients in the research group was 97.88%, compared with 77.14% in the control group, it was notably

Table 3. Nursing satisfaction of each group

Group	Number of cases	Satisfied	Moderate satisfied	Dissatisfied	Satisfaction (%)
Research group	47	36 (76.60)	10 (21.28)	1 (2.12)	36 (97.88)
Control group	35	10 (28.57)	17 (48.57)	8 (22.86)	27 (77.14)
t					8.822
P					0.030

higher in the research group than in the control group ($P < 0.05$), as shown in **Table 3**.

Discussion

At present, there have been numerous clinical studies on the predisposing factors of gastric cancer [17-19] to prove that there is a certain correlation with helicobacter pylori, genetic genes, dietary habits and so on, and it is precisely because of various predisposing factors that the disease is highly prevalent. Currently, gastric cancer radical surgery has achieved a great control effect on tumor lesions in clinical practice. Gastric cancer radical surgery is a large-area traumatic surgery; however, it not only causes great damage to patients, but also has a great negative impact on the recovery of postoperative gastrointestinal function of patients [20, 21]. Therefore, the postoperative nursing of patients undergoing radical gastrectomy is the convalescence of patients after extensive trauma. Among them, comfortable nursing has proved to be suitable for postoperative nursing of gastric cancer patients by a number of studies [22, 23]. Therefore, this time, by comparing patients undergoing radical gastrectomy using the comfortable nursing mode and the routine nursing mode, the purpose of this study aims to prove that comfortable nursing can significantly improve the situation of gastric cancer patients, and provide reference and guidance for clinical practice.

In this study, we adopted routine nursing (control group) and comfortable nursing (research group) for gastric cancer patients. We first compared the VAS scoring of the two groups of patients. The results revealed that there was no remarkable difference in the postoperative VAS scoring between the two groups, while that of the research group was notably lower than the control group at 1 week and 2 weeks after operation. This shows that comfortable nursing can effectively reduce the pain caused by large-area traumatic surgery. Postoperative pain is a complex physiological and psychological reaction caused by harmful stimulation, which occurs in almost every patient. According to the study of Miao et al. [24], comfortable nursing under the guidance of high-quality nurses and specialists can effectively reduce postoperative pain. We used SAS scoring and HAMD scoring to evaluate the patients' mental health after operation. The results showed that the SAS and HAMD scoring of the research group had no difference before nursing intervention, while both in the research group decreased notably compared with the control group after nursing intervention, indicating that the patients' mental health was effectively improved under the comfortable nursing mode. We counted the complications of patients and found that only one case of malnutrition occurred in the research group, while 2 cases of malnutrition, 1 case of gastrointestinal hemorrhage, 2 cases of pyloric obstruction and 2 cases of anastomotic fistula occurred in the control group. The total incidence rate in the control group was 20.00%, while that in the research group was only 2.13%. Cho et al. [25] suggested in their study that since surgical resection of the stomach is the most common abdominal surgery for gastric cancer patients, formulating nursing care for gastric cancer patients before and after surgery becomes crucial. For nursing, it is vital to quickly discover and respond to possible complications after gastrectomy through monitoring and close observation of patients, such as reflux gastritis, leakage or obstruction of anastomotic sites, hemorrhage, malabsorption and dumping syndrome. The results of this study revealed that there was no remarkable difference in the amount of hospital costs between patients in the research group receiving comfortable nursing mode and the control group receiving routine nursing mode, but the hospitalization time and gastrointestinal function indexes of patients in the research group were notably better than those in the control group, which further reflects the advantages of comfortable nurs-

ing. This is also consistent with the study of Moe et al. [26] on comfortable nursing for colorectal cancer patients, which supports the viewpoint of this research. A self-made nursing satisfaction scale from our hospital revealed that the nursing satisfaction rate of the patients in the research group was 97.88%, and that of the control group was 77.14%. Comfortable nursing has been unanimously recognized by patients and their families, suggesting that comfortable nursing has achieved great success.

Through the above research, we initially proved that comfortable nursing mode can alleviate postoperative pain, anxiety and depression of gastric cancer patients, and improve sleep quality and life quality of patients. However, this study still has certain limitations. First of all, there are numerous clinical nursing modes, while this study only uses routine nursing as the control group, which is a relatively single view point. Secondly, we did not follow up on the prognosis of patients. Therefore, we hope to include more nursing models in future research, follow up patients, as well as expand our comprehensiveness to supplement our research results.

To sum up, the comfortable nursing mode can effectively alleviate postoperative pain, anxiety, and depression, improve living ability and complications of gastric cancer patients, and improve sleep quality, nursing satisfaction and quality of life.

Disclosure of conflict of interest

None.

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