ORIGINAL RESEARCH

The Application Value of CICARE Communication Mode Combined with Detailed Nursing on the Related Factors of Poor Prognosis of Patients After Gastric Cancer Resection

Shuiqin Xu, MM; Lingjuan Huang, BM; Haiyan Xing, PhD; Ci Li, MM; Jing Guo, BM; Kongjun Jin, MM

ABSTRACT

Objective • To explore the independent risk factors for poor prognosis in patients with gastric cancer after resection and analyze the clinical application value of (connect-introduce-communicate-ask-respond-exit) CICARE communication mode combined with detailed nursing for such patients.

Methods • 96 patients who underwent gastric cancer resection in our hospital from January 2019 to October 2019 were analyzed. They were divided into the good prognosis and poor prognosis group according to the postoperative adverse prognosis. The factors related to poor prognosis were analyzed by univariate and multivariate analysis. Another 106 patients who underwent gastric cancer resection from January 2020 to October 2021 were randomly divided into study and control group, with 53 patients in each group. The control group received routine nursing, and study group received CICARE communication mode combined with detailed nursing. Adverse mood changes were compared between the two groups before and after nursing. The changes of pain before surgery and 6 and 12 h after surgery were compared between the two groups as well as nursing satisfaction rate.

Results • Univariate and multivariate results showed that body mass index (BMI) ≥ 28.00 kg/m^2, length of hospital stay≥10 d, and preoperative complications≥2 were independent risk factors for poor prognosis after gastric cancer resection ($P < .05$). Compared with the control group, the incidence of postoperative adverse reactions in the study group was significantly reduced ($P < .05$). The bad mood of the two groups was alleviated compared with that before nursing, but the study group was significantly better than control ($P < .05$). The pain degree in both groups decreased with time, the study group was significantly lower than that in control ($P < .05$). Nursing satisfaction of the study group was significantly higher than that of control ($P < .05$).

Conclusion • BMI ≥ 28.00 kg/m^2, length of hospital stay≥10 d, and preoperative complications ≥ 2 types can cause postoperative adverse reactions in patients with gastric cancer resection. CICARE detailed nursing based on the above risk factors can effectively reduce postoperative complications and relieve postoperative pain and adverse emotions of patients, which has high clinical application value. (*Altern Ther Health Med.* [E-pub ahead of print.])

Shuiqin Xu, MM, Associate Professor; **Haiyan Xing,** PhD, Professor; **Ci Li,** MM, Assistant Professor; **Jing Guo,** BM, Assistant Professor; **Kongjun Jin,** MM, Assistant Professor; Department of Nursing, Medical School, Shaoxing University, Shaoxing, China. **Lingjuan Huang,** BM, Chief Superintendent Nurse; Gastrointestinal surgery and Breast nail surgery, The First Affiliated Hospital of Shaoxing University, Shaoxing, China.

Corresponding author: Shuiqin Xu, MM
E-mail: xsq@usx.edu.cn

INTRODUCTION

According to the 2020 global cancer data, the incidence of gastric cancer is 5.6%, and the mortality rate is 7.7%, as one of the top three fatal diseases worldwide, with the continuous progress of medical means, the prognosis of such patients has improved, but the mortality is still at a high level.[1,2] According to data, gastric cancer mostly occurs in middle-aged and elderly groups. Such patients are often accompanied by other complications due to their declining physical function in various aspects as they age.[3] Currently, resection is one of the effective means for the treatment of gastric cancer, and the general survival rate of postoperative patients has been prolonged, but the incidence of postoperative adverse reactions has remained high. Therefore, it is a common demand of many gastric cancer patients and medical staff to discuss how to reduce the incidence of postoperative complications.[4] Studies have shown that age is one of the main reasons for the high complication rate of gastric cancer patients after surgery. As the body metabolism level of the elderly group decreases, the trauma caused by

surgery causes certain psychological and physiological damage to them, resulting in reduced self-efficacy and low nursing compliance.[5,6] CICARE nursing model is a process-guided nurse-patient communication mode implemented by medical institutions in the United States, which mainly involves 6 contents including connect (C), introduce (I), communicate (C), ask (A), respond (R), exit (E), which is an orderly and standardized nurse-patient communication mode.[7] In this study, through a study of patients with gastric cancer resection in our hospital, the risk factors causing postoperative adverse reactions of such patients were further analyzed, and CICARE detailed nursing was performed on the basis of which to observe the improvement of prognosis of patients with gastric cancer resection by this nursing modeTo reduce the postoperative complications of such patients in the future, I will improve the quality of life to lay a theoretical foundation. Patient outcomes and healthcare costs can be improved by identifying risk factors and evaluating nursing interventions.

MATERIALS AND METHODS

General Information

An analysis was performed on 96 patients who underwent gastric cancer resection in our hospital from January 2019 to October 2019, and they were divided into a good prognosis group (n = 51) and a poor prognosis group (n = 45) according to postoperative complications. The 96 patients included 44 females and 52 males aged 49-66 years. The average age was (54.14±6.36) years. Another 106 patients who underwent gastric cancer resection from January 2020 to October 2021 were selected and divided into a study group and control group according to random number table method, with 53 patients in each group. There were 27 males and 26 females in the control group, aged from 48 to 67 years, with an average of (54.93±5.83) years and the disease course ranged from 4 to 8 years, with an average of (6.36±2.51) years. There were 30 males and 23 females in the study group, aged from 48 to 66 years, with an average of (54.35±5.19) years, and the course of disease ranged from 4 to 8 years, with an average of (6.41±2.18) years. There was no statistical difference in general data between the two groups ($P > .05$), indicating comparability. All enrolled patients signed informed consent. Since the grouping method adopted in this study is random, you may be assigned to either the study or control groups. If you have any physical discomfort during the nursing process, please report it in time. All general information and clinical data during the study will be kept confidential and will not be used for other purposes. Your participation is entirely voluntary. You have the right not to participate in this study or to withdraw at any time without affecting the normal treatment of your disease. However, I hope to complete this study as far as possible without any special reasons. In any case, please inform your physician.

Inclusion criteria: (1) Preoperative clinicopathological examination results confirmed gastric cancer; (2) Professional physicians discussed that the patient's physical condition met the surgical criteria for gastric cancer resection; (3) Signing informed consent; (4) No other organ tumor diseases; (5) No postoperative death occurred; (6) Patient consented to undergo gastrectomy; (7) Conscious mind. This inclusion criteria focused on patients with confirmed gastric cancer, who can tolerate surgery and have certain compliance.

Exclusion criteria: (1) Absence of clinical data and general information (cannot determine the patient's basic condition); (2) Accompanied by mental diseases, poor compliance, and unable to cooperate with researchers (poor compliance); (3) Distant metastasis of the tumor (not suitable for surgery); (4) Preoperative radiotherapy and chemotherapy treatment (weak immunity); (5) History of previous abdominal surgery (not suitable for repeat abdominal surgery); (6) Complications included bleeding, perforation and obstruction (poor basic gastrointestinal condition); (7) Combined with other gastrointestinal functional diseases and important organ dysfunction (combined with other diseases will make the postoperative prognosis worse).

Methods

The measurement tools and nursing methods used in this study are described below

Emotion measurement tools

Self-rating Anxiety Scale (SAS). This scale is used to evaluate the degree of psychological anxiety of patients and the changes in the treatment process and score the patient's anxiety, fear, breathing and other conditions. The scoring system adopts a 4-level score, and no or little is recorded as 1 point. A small amount of time is 2 points, most of the time is 3 points, most or all of the time is 4 points. A total score below 50 is normal, 50-70 is classified as anxious, and over 70 is classified as severe anxiety. The higher the score is, the more serious the patient's anxiety mood is.

Self-rating Depression Scale (SDS). This scale is used to reflect the patient's depression and the changes in the treatment process, including 20 items such as depression, easy to cry, sleep disorder, etc. The scoring system adopts a 4-level scoring system, among which 10 items are positive and the other 10 are reverse scoring. A score below 53 indicates normal, between 53 and 72 indicates depression, and a score above 72 indicates major depression. The higher the score, the more serious the depression.

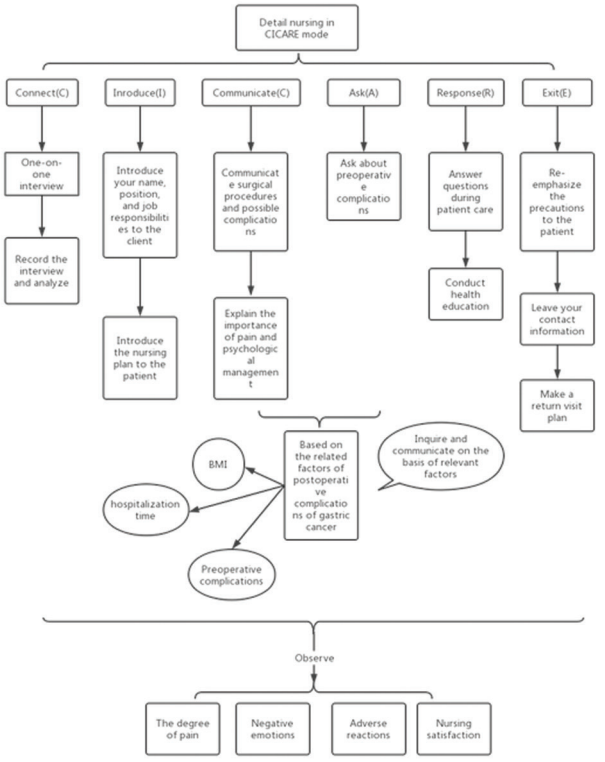
Visual Analogue Scale (VAS) of pain. This scale is mainly used to evaluate the pain degree of patients. The specific operation is to draw a line with a length of 10cm on the paper, with one end marked as 0, indicating no pain. The other end is marked with a 10, indicating extreme pain, and patients are asked to mark it on a straight line according to their own perception of pain. Scores ≤ 3 indicate mild pain and tolerable, a score of 4-6 indicates that the pain has affected sleep but is still tolerable, and a score of ≥7 indicates unbearable pain that interferes with daily life.

Nursing methods

The control group adopted conventional nursing methods, the specific operations are: (1) Comprehensive evaluation of the patient's physiological indicators and status, according to the results of the corresponding nursing plan for patients; (2) Regularly carrying out health education to make patients understand in detail the matters needing attention after gastric cancer surgery; (3) Provide detailed medication guidance. Patients with abnormal physiological indicators can be rationally used under the guidance of doctors; (4) Give certain psychological guidance to some patients suffering from negative emotions and adjust their diet structure and bad lifestyle.

The research group adopted CICARE communication mode of detailed nursing, The specific contents include Connect, Introduce, Communicate, Ask, Response, and Exit. (1) Connect: 1) Conduct one-to-one interviews with patients on the premise of doctors' orders, and record the conversations in detail for future analysis; 2) CICARE communication group was established, consisting of several nurses with professional certificates, to investigate the psychological state of patients and the cognitive degree of postoperative pain, and to understand the pain management and psychological needs of patients through communication, so as to establish the nurse-patient relationship and pave the way for the follow-up nursing work; (2) Introduce: Introduce their own detailed information to patients, and make interview time, pain management and psychological intervention schedule for each patient; (3) Communicate: 1) The specific operation and possible postoperative complications were explained in detail to each patient before surgery, as well as the limitations and effectiveness of surgery, so as to establish the confidence of rapid postoperative recovery; 2) Explain the importance of postoperative pain and psychological management, and how to deal with pain when it occurs; (4) Ask: Based on the risk factors of postoperative complications analyzed by multiple factors, Ask the patients whether they have complications before surgery, take appropriate treatment to minimize the degree of complications, and implement strict diet control for patients with high body weight to reduce the length of hospital stay; (5) Response: 1) Timely answer questions raised by patients in the process of nursing; 2) Carry out health education in different ways for patients with different educational backgrounds to ensure that each patient has a clear understanding of postoperative complications and other adverse reactions; (6) Exit: Further emphasize the matters needing attention when the patient is discharged, and leave the contact information for timely contact during home management. The detailed intervention process in CICARE communication mode is shown in Figure 1.

Figure 1. Nursing flow chart



Nursing satisfaction rate

Oral inquiry was used to investigate the nursing satisfaction rate, and the satisfaction rate was divided into very satisfied, satisfied, general, not satisfied, very dissatisfied, with satisfaction rate=(very satisfied+satisfied)/number of people ×100%.

Adverse reaction rate

Postoperative complications of all patients were observed and recorded, including gastric bleeding, gastric emptying disorder, reflux gastritis, dumping syndrome, duodenal stump fistula, etc.

Observation Indicators

(1) Univariate and multivariate analysis of risk factors for poor prognosis of patients after gastric cancer resection (to explore the related factors of poor postoperative prognosis);
(2) The incidence of adverse reactions after nursing was compared between the two groups (to explore the effect of CICARE communication mode on postoperative adverse reactions of patients);
(3) Adverse mood changes were compared between the two groups before and after nursing (to explore the effect of CICARE communication mode on postoperative negative emotions of patients);
(4) The pain degree was compared between the two groups before surgery, 6 h and 24 h after surgery (to explore the effect of CICARE communication mode on postoperative pain, and the pain degree monitoring at 6 h and 24 h after surgery is specific);
(5) The nursing satisfaction rate of the two groups was compared (to explore the influence of CICARE communication mode on patient satisfaction).

Statistical analysis

The study data were collected, sorted out, and put into Statistic Package for Social Science (SPSS) 25.0 statistical software

Table 1. Single factor analysis

Factors	Good prognosis (n = 51)	Poor prognosis (n = 45)	t/χ^2	*P* value
Age (years)	54.62±6.31	55.29±6.28	-0.520	.604
Course of disease (years)	5.24±1.25	5.53±1.32	-1.105	.272
Type of preoperative complications (type)	1.28±0.12	2.06±0.51	-10.602	<.001
The degree of education			2.355	.428
Primary and below	9(17.65%)	7(15.56%)		
Junior to Senior High	28(54.90%)	25(55.56%)		
University and above	14(27.45%)	13(28.89%)		
Spouse situation			0.958	.328
Y	39(76.47%)	38(84.44%)		
N	12(23.53%)	7(15.56%)		
BMI (kg/m²)	26.38±1.02	27.81±1.24	-6.197	<.001
Children status (individual)			0.950	.330
0 ~ 1	21(41.18%)	23(51.11%)		
≥2	30(58.82%)	22(48.89%)		
History of diabetes			0.337	.561
Y	42(82.35%)	39(86.67%)		
N	9(17.65%)	6(13.33%)		
Length of stay (days)	6.92±1.94	8.72±2.95	-3.571	.001
Operation time (h)	3.18±0.72	3.31±0.68	-0.906	.367
Gender			1.161	.281
Male	25(49.02%)	27(60.00%)		
Female	26(50.98%)	18(40.00%)		

Table 2. Multi-factor assignment table

Variable	Assignment
The dependent variable	
There were adverse reactions after operation	Y=1; N=0
The independent variables	
Preoperative complications≥2	Y=1; N=0
BMI≥28.00 kg/m²	Y=1; N=0
Hospital stay≥10 d	Y=1; N=0

Table 3. Multi-factor analysis

	B	*S.E.*	*Wald*	*P* value	*Exp(B)*	95%*CI*
Preoperative complications≥2	2.046	1.016	4.403	.019	8.435	1.151~61.814
BMI≥28.00 kg/m²	2.192	1.211	3.923	.012	10.998	1.025~1.352
Hospital stay≥10 d	2.629	1.240	5.664	.027	19.150	1.684~1.983

Table 4. Comparison of adverse reactions

Adverse reactions	Study group (n = 53)	Control group (n = 53)	χ^2	*P* value
Stomach bleeding	3(5.66%)	5(9.43%)		
Gastric emptying disorder	2(3.77%)	3(5.66%)		
Reflux gastritis	2(3.77%)	4(7.55%)		
Duodenal stump fistula	1(1.89%)	3(5.66%)		
Dumping syndrome	3(5.66%)	5(9.43%)		
Total adverse reaction rate	11(21.57%)	20(44.44%)	5.722	.017

Figure 2. Adverse reactions

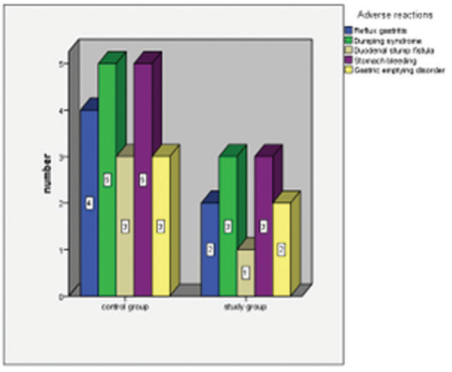


Table 5. Comparison of adverse mood changes

		Study group (n = 53)	Control group (n = 53)	*t*	*P* value
Before nursing	SAS	65.35±10.24	67.24±10.82	-0.924	.358
	SDS	66.29±10.58	63.26±10.71	1.465	.146
After ursing	SAS	36.35±8.35	44.25±9.25	-4.615	<.001
	SDS	35.26±8.83	46.24±8.92	-6.369	<.001

(IBM, Armonk, NY, USA) for data analysis. (1) Measurement data: represented by mean±standard deviation, paired sample *t* was used to test within groups, and variance comparison was used between groups. *F* test was performed for comparison between multiple groups. Repeated measurement anova was used between multiple groups to conduct the spherical test. Measurement data were expressed as mean±standard deviation ($\bar{x} \pm s$). (2) Count data: Descriptive statistical analysis was conducted by percentage, and χ^2 test was performed. (3) Multivariate analysis: *Logistic* regression was used to analyze the independent risk factors for adverse reactions in postoperative gastric cancer patients. $P < .05$ indicates a significant difference, and $P < .01$ indicates very significant difference.

RESULTS

Univariate analysis of related factors leading to adverse reactions after gastrectomy

Univariate results showed that the type of preoperative complications, body mass index (BMI), and length of hospital stay were related factors affecting postoperative adverse reactions of patients undergoing gastrectomy ($P < .05$), as shown in Table 1.

Multivariate analysis of related factors causing adverse reactions after gastric cancer resection

The multi-factor assignment table is shown in Table 2. The postoperative adverse reactions were taken as dependent variables, and the type of preoperative complications, BMI and length of hospital stay were taken as independent variables. *Logistic* regression analysis showed that≥2 types of complications, BMI ≥ 28.00 kg/m² and length of hospital stay≥10 d, were independent risk factors for postoperative adverse reactions ($P < .05$), as shown in Table 3.

The incidence of postoperative adverse reactions was compared

The results showed that the rate of postoperative adverse reactions in the study group was significantly lower than that in the control group ($P < .05$), as shown in Table 4 and Figure 2.

Adverse mood changes were compared

The results showed that after nursing, the adverse mood of patients in the two groups was improved, and the improvement of the research group was significantly better than the control group ($P < .05$), see Table 5, Figure 3-4.

Figure 3. SAS change

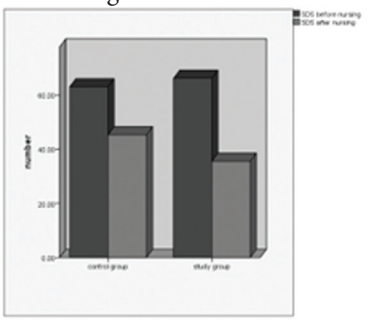
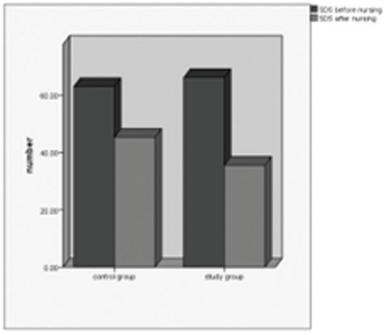


Figure 4. SDS change



The pain degree was compared before surgery and 6 h and 12 h after surgery

The results showed that there was no significant difference in preoperative pain degree between the two groups ($P > .05$), and the pain degree decreased after nursing, and the pain degree in the study group was significantly lower than that in the control group at the same time ($P < .05$), as shown in Table 6 and Figure 5.

The nursing satisfaction rate was compared.

The nursing satisfaction rate of the study group was significantly higher than that of the control group ($P < .05$), as shown in Table 7 and Figure 6.

DISCUSSION

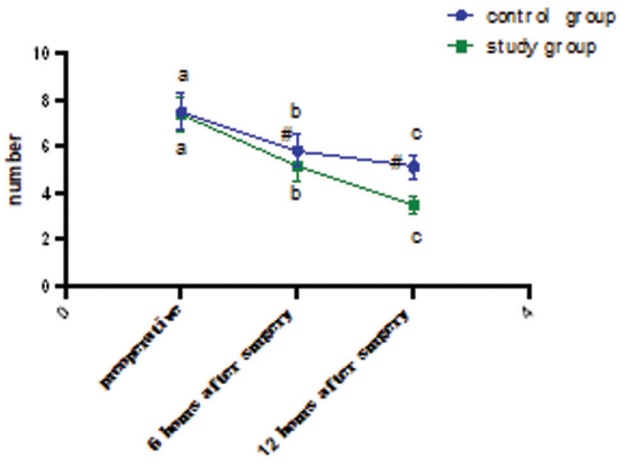
The research shows that with the continuous development of society, people's lifestyles and eating habits also gradually changed, resulting in middle-aged and old group of gastric cancer also rising, one of the main ways of surgery as a treatment for cancer of the stomach, because most people's body function gradually decline, thus has been high incidence of postoperative complications.[8] According to data, the incidence of complications after gastric cancer resection can be as high as 20%, and one of the main means to reduce complications is to explore the related factors causing postoperative adverse reactions and provide nursing guidance.[9] Therefore, in order to further improve the prognosis of patients undergoing gastrectomy and improve the quality of life of patients who died, this study conducted a multifactor analysis on patients with poor prognosis to explore the risk factors for postoperative complications. The results showed that BMI ≥ 28.00 kg/m^2, length of hospital stay≥10 d, and preoperative complications≥2 were risk factors for postoperative adverse reactions in patients undergoing gastric cancer resection ($P < .05$). Of BMI as an internationally recognized measure used, the greater its value shows that the higher the body fat percentage, a study shows that a high proportion of patients during surgery can cause tunnel vision, leading to higher operation difficulty, thus cannot be good for removing cancerous tissue, causing the postoperative complications.[10] Chao GF[11] also showed that fat accumulation in obese patients during surgery causes excessive bleeding of surrounding soft tissues, resulting in relatively low visibility of doctors during surgery and

Table 6. Comparison of VAS

VAS	Study group (n = 53)	Control group (n = 53)	*t*	*P* value
Preoperative	7.24±1.23	7.37±1.28	-0.533	.595
Postoperative 6 h	5.24±1.02[a]	5.87±1.19[a]	-2.926	.004
Postoperative 12 h	3.57±0.62[a,b]	5.02±1.02[a,b]	-8.844	<.001
F	4.268	5.268		
P value	<.001	.002		

[a]indicates that VAS changes at this stage are statistically significant compared with pre-operation.
[b]indicates that the value changes at this stage are statistically significant compared with the postoperative 6 hVAS level.

Figure 5. VAS change.

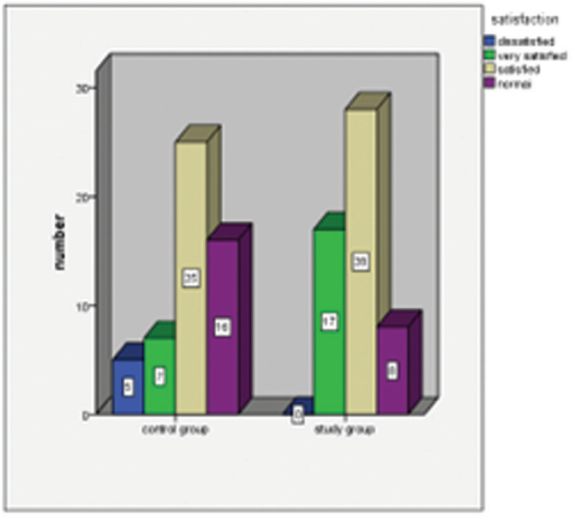


Note: "A, B, C" indicates that if the same letters are shared, there is no significant difference between groups, while different letters indicate significant difference between groups. "#" indicates that VAS level of the two groups is statistically significant in the same stage.

Table 7. Comparison of nursing satisfaction

	Study group (n = 53)	Control group (n = 53)	χ^2	*P* value
Very dissatisfied	0(0.00%)	0(0.00%)		
Dissatisfied	0(0.00%)	5(9.43%)		
General	8(15.09%)	16(30.19%)		
Satisfied	28(52.83%)	25(47.17%)		
Very satisfied	17(32.08%)	7(13.21%)		
Satisfaction	45(88.24%)	32(71.11%)	4.416	.036

Figure 6. Satisfaction



relatively slow wound healing after surgery, which is more likely to cause adverse reactions. And preoperative complications or two as a trigger another risk factor for gastric cancer patients with postoperative adverse reactions, the main reason so many complications lead to a patient's serum indexes in the abnormal state thus the body's immune function of the sensitivity of the inflammatory response is reduced, thereby immune response in invasive surgery can be collected and further results in the decrease of patients with postoperative healing ability, Related postoperative complications.[12] In addition, this study also shows that the hospitalization time is one of the risk factors that affect patients with postoperative complications, hospitalization prolonged show that patient rehabilitation progress is relatively slow, further reaction of immunocompromised patients, at the same time due to large hospital population flow, the longer the length of hospital stay, the more prone to nosocomial infection, lead to the probability of infection and complications in patients with postoperative gastric cancer.

Based on this research to explore the cause of postoperative gastric cancer patients with adverse reaction-related factors, this study sets the control experiment, and USES the CICARE communication mode, according to the nursing of patients after observing the details of the application than the control group of conventional nursing group after surgery the incidence of adverse reactions was significantly lower ($P < .05$), This result indicates that through CICARE mode, preoperative complications of patients are counted, and corresponding therapeutic measures are taken to reduce the inflammatory response of the body, thus improving the immune capacity of the body.[13] After some nursing at the same time, two groups of patients in a bad mood eased, but improved team significantly better than that of control group, explain CICARE mode by adopting one-to-one communication mode, to further understand patients inner demand, and thus to give better guidance in the heart, mention of disease in patients with self-management ability, and self-efficacy, thus improve the treatment compliance, Further accelerate disease recovery.[14] And contrast degree of pain, according to two groups of patients with postoperative pain of relief, but the team at the same time period of pain was significantly lower than the control group ($P < .05$), intervention measures in this institute on preoperative pain education, make patients master the postoperative pain and how to avoid the pain causes.[15] After the end of the study on two groups of patients satisfaction survey team satisfaction is significantly higher than that of the control group ($P < .05$), this study adopted CICARE care The details of the communication mode can significantly reduce the postoperative complications, patients topic pain degree, ease the bad mood, improve the patient's physical rehabilitation and self-efficacy, It makes them full of confidence in the recovery of disease, and at the same time, the increase of patients' satisfaction with the hospital also increases the reputation of the hospital to a certain extent.[16] Although this study has made some achievements, there are still some shortcomings. Firstly, the sample size of this study is small and not representative, so the sample size should be further expanded in the next study to make the research results more convincing. In addition, the long-term prognosis of patients was not followed up in this study, so it is impossible to understand the long-term impact of this nursing model on patients. Therefore, follow-up follow-up should be carried out after discharge in the next study to further explore the long-term efficacy of detailed nursing under CICARE in patients undergoing gastrectomy.

In conclusion, based on the risk factors of adverse reactions after gastric cancer resection, detailed nursing under CICARE can effectively reduce the incidence of postoperative adverse reactions, relieve adverse emotions, reduce pain and improve satisfaction rate, which is worthy of clinical promotion and use.

CONFLICT OF INTEREST

The authors have no potential conflicts of interest to report relevant to this article.

AUTHOR CONTRIBUTIONS

SX and LH designed the study and performed the experiments, LH, HX and CL collected the data, JG and KJ analyzed the data, SX prepared the manuscript. All authors read and approved the final manuscript.

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