

The Effect of Self-Nutrition Management Combined with Mindfulness Intervention on Postoperative Nutritional Status and Quality of Life of Patients Undergoing Radical Gastric Cancer Surgery

Yan Pan
HaiPing Wu

Yan Pan and HaiPing Wu Department of General Surgery, First Affiliated Hospital of Soochow University, China, *Corresponding Author: HaiPing Wu, Email: 248951344@qq.com

Background Gastric cancer patients after surgery due to surgical trauma, digestive tract reconstruction of negative emotions and other factors, resulting in reduced postoperative food intake, nutritional status decreased immune function, resulting in tumor escape and postoperative recurrence or metastasis. Self-nutrition management combined with mindfulness intervention has a positive effect on postoperative nutritional status and quality of life of patients. **Objective** To analyze the effect of self-nutrition management combined with mindfulness intervention on postoperative nutritional status and quality of life of patients undergoing radical gastric cancer surgery. **Methods** A total of 130 gastric cancer patients admitted to our hospital from October 2018 to February 2021 were selected and divided into groups according to their intervention plan. All 130 patients were treated with laparoscopic radical resection of gastric cancer, 65 patients in the control group were given routine nutritional intervention and nursing intervention, and 65 patients in the observation group were given self-nutrition management intervention and mindfulness intervention. The postoperative rehabilitation indicators, hospitalization expenses and complications were compared between the two groups, and the changes in nutritional indicators between the two groups were detected. The Self-Rating Depression Scale (SDS) and the Self-Rating Anxiety Scale (SAS) were used to evaluate negative emotions. The European the Cancer Research and Treatment Organization Quality of Life Scale (QLQ-C30) evaluates the quality of life. **Results** The observation group's first exhaust time, oral feeding time, and hospital stay were shorter than those in the control group. Compared with the control group, there was no significant difference in hospitalization expenses ($P>0.05$). Compared with before the intervention, the ALB, PA, and TRF of the two groups were increased ($P<0.05$), and the improvement of nutritional indicators in the observation group after the intervention was more obvious than that of the control group ($P<0.05$). Compared with before the intervention, the SDS scores and SAS scores of the two groups decreased ($P<0.05$), and the negative emotion scores of the observation group improved more significantly than those of the control group after the intervention ($P<0.05$). Compared with the pre-intervention, the two groups of QLQ-C30 scores in the areas of general health, physical function, role function, emotional function, social function and economic difficulties, etc. scores increased ($P<0.05$), fatigue, insomnia and loss of appetite, etc. The score decreased ($P<0.05$). There was no significant difference between the two groups in the areas of cognitive function, nausea and vomiting, constipation, diarrhea, etc. ($P>0.05$). In the area of pain and shortness of breath, observe the group was lower than before the intervention, but the difference between the control group and before the intervention was not statistically significant ($P>0.05$). The QLQ-C30 scores of the observation group after intervention (except in areas such as cognitive function, nausea and vomiting, constipation, diarrhea, financial difficulties, etc.) generally improved significantly compared with the control group ($P<0.05$). The incidence of complications in the observation group was lower than that in the control group, which was statistically significant ($P<0.05$). **Conclusion** Self-nutrition management combined with mindfulness

intervention for radical gastric cancer surgery can promote postoperative recovery, reduce complications and negative emotions, improve nutritional status, and improve quality of life.

Keywords: Self-nutrition management; Mindfulness intervention; Radical gastric cancer surgery; Negative emotions; Nutritional status; Quality of life

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Gastric cancer is a common malignant tumor of digestive system in clinic. China is a country with high incidence of gastric cancer. More than half of the new cases of gastric cancer occur annually in the world. At present, the clinical treatment of gastric cancer includes surgery, chemotherapy, radiotherapy, biological immunotherapy, and traditional Chinese medicine treatment. Among them, surgery is the only possible method for radical treatment of gastric cancer. However, due to the huge surgical trauma, negative emotions of digestive tract reconstruction and other factors, the postoperative food intake is reduced, and the nutritional status is reduced, thereby affecting the quality of life and survival time of patients. Decreased nutritional status can also reduce the immune function of the body, leading to tumor escape and postoperative recurrence or metastasis.

At present, the clinical intervention measures for malnutrition in patients with gastric cancer include enteral nutrition, parenteral nutrition, immune nutritional support, oral nutritional supplements and other methods. Most patients are passively treated, and their participation and enthusiasm are not high. Mindfulness intervention is a common psychological intervention in clinical practice. It is widely used in the treatment of chronic pain, sleep disorders, malignant tumors and other chronic diseases, which can improve emotional fluctuations and reduce stress. This study analyzed the effect of self-nutrition management combined with mindfulness intervention on postoperative nutritional status and quality of life of patients with radical gastrectomy for gastric cancer, which is reported as follows.

MATERIALS AND METHODS

General information

Case selection criteria

Inclusion criteria: (1) Gastric cancer confirmed by postoperative pathology. (2) Age ≥ 18 years, ≤ 75 years. (3) Preoperative mental normal, can cooperate with the relevant treatment and evaluation. (4) No preoperative chemoradiotherapy was performed. (5) The first operation. (6) Complete clinical data.

Exclusion criteria: (1) Tumor metastasis. (2) Combined with other tumors. (3) Suicide tendency. (4) Combined diseases of immune system and blood system. (5) Concurrent heart, liver, kidney and other organs insufficiency. (6) Recent history of trauma. (7) Preoperative malnutrition.

Case data

130 patients with gastric cancer admitted to our hospital from October 2018 to February 2021 were selected and divided into groups according to their intervention plans. 130 patients were treated with laparoscopic radical gastrectomy for gastric cancer, and 65 patients in the control group were given routine nutritional intervention and nursing intervention, with 35 males and 30 females. The average age was (56.96 ± 12.05) years. In the observation group, 65 cases were given self-nutrition management intervention and mindfulness intervention, 37 males and 28 females. The average age was (57.82 ± 11.96) years. There was no significant difference in general data between the two groups ($P > 0.05$).

Methods

The control group was given routine nutritional intervention and nursing intervention. On admission, the information of competent doctors and responsible nurses, rules and regulations during hospitalization, and precautions were introduced.

The importance of disease-related knowledge and postoperative nutrition was explained to guide patients to eat reasonably.

The observation group was given self-nutrition management intervention and mindfulness intervention: through nutrition management lectures, distribution of nutrition intervention related knowledge manuals to help patients realize the important influence of postoperative nutrition on prognosis of gastric cancer, guide patients to enhance self-nutrition management consciousness. The nutritional status of patients was evaluated by oncology doctors and nutritionists. The individualized diet plan was formulated according to the patients' dietary habits, body mass index, and blood glucose value. The diet plan was modified according to the patients' opinions, and the feeding time, food type, diet amount, staple food, oil, salt intake, and cooking methods were specified. The specific content was explained to the patients in detail, and the patients were guided to record the food type, amount, and feeding time of three meals per day, if there was a meal to be noted. Regularly organize patients to communicate, test the effect of nutritional management at this stage, and answer questions about diet and nutrition. Mindfulness intervention: the first week to explain the theoretical knowledge of mindfulness and mindfulness training, guide patients to eat a food in a mindful way. Practice mindfulness breathing every day for the second week to guide the patient to focus on inspiratory and expiratory-related abdominal sensations without judging awareness and distractions. In the third week, the body was scanned from head to foot in order to detect the feelings of different parts of the body. In the fourth week, mindfulness meditation was conducted to gradually shift attention from the body to the environment based on the perception of breathing. In the fifth week, the patient was instructed to leave meditation with a mindfulness attitude, walk with mindfulness every day and enter the world. Mindfulness activities for the sixth week increase strength, balance and flexibility through a series of postures and increase awareness of physical feelings and

activities. The 7th week 3 minutes breathing space practice, consciously cultivate patients with a softer attitude to treat all kinds of discomfort experience, do to reconnect with the moment. Eight weeks choose one of the ways for mindfulness acceptance training.

Observation indexes and detection methods

The postoperative rehabilitation indexes, hospitalization expenses and complications were compared between the two groups. The changes of nutritional indexes were detected in the two groups. The self-rating depression scale (SDS) and self-rating anxiety scale (SAS) were used to evaluate negative emotions. The quality of life was evaluated by the European Organization for Research and Treatment of Cancer Quality of Life Scale (QLQ-C30). Before and 8 weeks after the intervention, 3ml fasting venous blood was collected and placed in EDTA anticoagulant tube and centrifuged 1h later. Centrifugal parameters: 3000r / min, 10min. Serum albumin (ALB), transferrin (TRF), prealbumin (PA) and other nutritional indicators were detected by Japanese Olympus AU2700 automatic biochemical analyzer.

Scoring standard

Negative emotions: SDS and SAS were used to evaluate together. SDS score ≥ 53 and SAS score ≥ 50 indicated negative emotions. The higher the score was, the more negative emotions were. Quality of life: QLQ-C30 score was applied to evaluate the quality of life, including the overall health field, functional field and symptom field, which were all converted into percentage points. The overall health field and functional field scores were proportional to the quality of life, and the symptom field was inversely proportional to the quality of life.

Statistical Methods

The data were processed by SPSS19.0. The measurement indexes were described by ($\bar{x} \pm s$). The t test was used for comparison. The enumeration data were described by the number of cases (percentage). The χ^2 test was used for comparison. The test level was 0.05.

RESULTS

Comparison of the two groups of general data

General data comparison between the two groups had no statistical significance ($P > 0.05$). See Table 1

Comparison of postoperative rehabilitation indexes in the two groups

The first exhaust time, oral intake time and hospitalization time of the observation group were less than the control group, as compared with the control group ($P > 0.05$). See Table 2

Comparison of two groups

Before intervention, differences between nutritional index groups ($P > 0.05$), increased ALB、PA、TRF compared before intervention ($PP > 0.05$), and significant improvement in the observation group compared with the control group ($PP > 0.05$). See Table 3

Comparison of negative mood scores between the two groups

Before intervention, the negative mood scores ($P > 0.05$), SDS scores and SAS scores ($P < 0.05$), and the negative mood score was significantly better than the control group ($P < 0.05$). See Table 4

Comparison of the QLQ-C30 scores of the two groups

Before intervention, there was no significant difference in QLQ-C30 score between the two groups ($P > 0.05$). Compared with before intervention, the overall health status, physical function, role function, emotional function, social function and economic difficulty score of the two groups increased ($P < 0.05$). In terms of pain and shortness of breath score, the observation group decreased compared with before intervention, but the control group had no significant difference compared with before intervention ($P > 0.05$). After intervention, the improvement of QLQ-C30 score (except for cognitive function, nausea and vomiting, constipation, diarrhea and economic difficulties) in the observation group was significantly higher than that in the control group ($P < 0.05$). See table 5

Comparison of complications between the two

groups

The incidence of complications in the observed group was lower than in the controls and was statistically significant ($P < 0.05$). See Table 6

DISCUSSION

The latest statistics of the World Health Organization on global malignant tumors show that the new cases of gastric cancer are about 10.3 million and the death cases are about 7.8 million, which imposes a certain burden on social medical resources. China is a country with high incidence of gastric cancer, which is closely related to unhealthy eating habits. Radical gastrectomy is the preferred treatment for gastric cancer patients. Malnutrition is a common complication after surgery, which can cause changes in physical and mental health, quality of life and clinical outcomes of patients. Therefore, nutritional support therapy should be paid attention to after radical gastrectomy for gastric cancer, and the negative emotional state of patients should be actively improved to improve the quality of life of patients. The self-management ability of patients plays an important role in this process, making them consciously implement healthy behaviors and consolidating the therapeutic effect.

The concept of mindfulness first came from Buddhism, and developed from meditation, meditation and enlightenment. It refers to the purposeful and conscious attention to and awareness of everything at present, without any judgment, analysis and response, and only the simple detection and attention of it. Mindfulness has gradually developed into a systematic psychological intervention method, which has good effects of decompression, correction of cognition and change of behavior. Studies have found that mindfulness intervention can improve negative emotions and quality of life in patients with malignant tumors after surgery and during radiotherapy and chemotherapy, which is beneficial to the prognosis of patients. In this study, it was applied to radical gastrectomy for gastric cancer. It was found that it helps to shorten the first exhaust time, oral feeding time and hospitalization time, suggesting that self-nutrition management

combined with mindfulness intervention for radical gastrectomy for gastric cancer can promote postoperative rehabilitation. This is because mindfulness intervention can help patients maintain their mindfulness attitude and cultivate their focus. Through 'observation' and 'conscious action', the patient's thinking mode can be changed, and the patients can be guided out of the inertial mode and avoid reactions. They can consciously take actions to enhance their self-management ability, face the reality in a positive way, and cooperate with the treatment and nursing work more actively, which is conducive to the rehabilitation process¹⁶.

Nutrition status directly affects postoperative rehabilitation. Some studies suggest that malnutrition in patients with malignant tumors can affect the immune function of the body, leading to tumor escape and postoperative recurrence or metastasis. Therefore, nutritional support should be paid attention to after radical gastrectomy. This study found that self-nutrition management combined with mindfulness intervention in radical gastrectomy for gastric cancer could increase the levels of ALB, PA, TRF and other nutritional factors, and improve the nutritional status of the body. This is due to self-nutrition management interventions that help patients recognize the importance of nutrition and promote their misconceptions through lectures on nutrition management and handbooks on nutrition intervention. The individualized diet plan was formulated jointly by oncology doctors, nutritionists and patients, and revised according to the specific situation. The postoperative diet of patients was refined, and the daily records of patients were guided. It is helpful for doctors to test the effect of nutrition management in time and has good nutritional intervention effect. Mindfulness intervention helps patients to notice the color, fragrance and taste of food when eating, treat discomfort with a softer attitude, and reconnect with the current moment, so that patients can consciously increase the intake of nutrients.

In this study, SDS score and SAS score were used to evaluate the depression and anxiety of patients, and QLQ-C30 score was used to evaluate

the quality of life of patients. It was found that self-nutrition management combined with mindfulness intervention in radical gastrectomy for gastric cancer could reduce negative emotions and improve the quality of life. This is because mindfulness training helps patients to maintain physical and mental peace, enhance confidence in rehabilitation, and help patients to take a positive response to discomfort. In the process of self-nutrition management, medical staff communicate with patients regularly, relieve patients' doubts in time, help patients to enhance self-management ability, so as to reduce anxiety and depression caused by lack of knowledge.

This study also found that self-nutrition management combined with mindfulness intervention in radical gastrectomy for gastric cancer could reduce the risk of complications, which was related to the improvement of self-management ability of patients.

In summary, self-nutrition management combined with mindfulness intervention in radical gastrectomy for gastric cancer can promote postoperative rehabilitation, reduce complications and negative emotions, improve nutritional status and improve quality of life.

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Table 1
Comparison of general data between the two groups

Parameter	Control group (n=65)	Observation group (n=65)	χ^2/t	P
Gender (% , n)			0.1250	0.724
Male	35 (53.85)	37 (56.92)		
Female	30 (46.15)	28 (43.08)		
Age ($\bar{x} \pm s$, year)	56.96 \pm 12.05	57.82 \pm 11.96	0.4080	0.684
Operation method (n)			0.5290	0.467
Distal subtotal gastrectomy	43 (66.15)	39 (60.00)		
Proximal subtotal gastrectomy	22 (33.85)	26 (40.00)		
Pathological staging (n)			1.2580	0.533
Phase I	12 (18.46)	8 (12.31)		
Phase II	26 (40.00)	31 (47.69)		
Phase III	27 (41.54)	26 (40.00)		
Education (% , n)			0.8140	0.666
Junior high school and below	7 (10.77)	9 (13.85)		
Technical secondary school and senior high school	18 (27.69)	21 (32.31)		
Junior college or above	40 (61.54)	35 (53.85)		
Reimbursement (n)			1.1310	0.568
At one's own expense	12 (18.46)	8 (12.31)		
medical insurance	41 (63.08)	46 (70.77)		
Commercial insurance	12 (18.46)	11 (16.92)		

Table 2
Comparison of postoperative rehabilitation indexes between the two groups

Group	Number of cases	First exhaust time (d)	Oral feeding time (d)	Length of stay (d)	Hospitalization expenses (yuan)
Control group	65	3.52±1.02	3.75±0.96	9.85±2.06	42258.36±9852.32
Observation group	65	2.98±0.88	3.15±0.81	8.78±1.56	43051.52±9654.63
t		3.232	3.851	3.338	0.464
P		0.000	0.000	0.001	0.644

Table 3
Comparison of nutritional indexes between the two groups ($\bar{x} \pm s$)

Group	Number of cases	ALB (g/L)		PA (mg/L)		TRF (mg/L)	
		Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Control group	65	32.02±2.85	35.98±2.14*	205.36±25.11	271.23±23.27*	132.55±20.35	150.36±18.75*
Observation group	65	31.74±3.11	37.84±2.36*	201.36±28.63	305.26±28.46*	135.14±18.56	168.32±24.04*
t		0.535	4.707	0.847	7.463	0.758	4.749
P		0.593	0.000	0.399	0.000	0.450	0.000

Note: Compared to this intervention, * P< 0.05.

Table 4
Comparison of negative emotion scores between the two groups ($\bar{x} \pm s$, Minute)

Group	Number of cases	SDS score		SAS score	
		Before intervention	After intervention	Before intervention	After intervention
Control group	65	51.36±4.02	46.02±3.74*	48.65±4.74	42.23±3.36*
Observation group	65	51.51±3.85	41.65±3.26*	48.11±4.63	37.58±3.05*
t		0.214	7.101	0.657	8.262
P		0.828	0.000	0.512	0.000

Note: Compared to this intervention, * P< 0.05.

Table 5
Comparison of QLQ-C30 scores between the two groups ($\bar{x} \pm s$, Minute)

领域	Control group (n=65)		Observation group (n=65)	
	Before intervention	After intervention	Before intervention	After intervention
Areas of general health	48.63±8.23	54.23±6.59*	49.01±9.11	61.02±4.89*#
Functional areas				
Somatic function	65.69±6.36	72.68±8.11*	64.85±7.02	82.12±7.64*#
Role function	59.63±5.14	65.33±4.89*	60.12±4.93	71.05±5.23*#
Emotional function	65.28±6.17	71.05±4.65*	63.97±8.11	77.45±5.61*#
Cognitive function	69.36±5.85	71.23±6.23	70.55±6.14	73.02±5.74
Social function	58.36±4.23	64.78±5.18*	59.01±5.22	70.85±4.51*#
Symptom domain				
Tired	32.63±4.23	27.42±3.16*	32.69±4.71	23.02±2.89*#
Pain	22.03±5.63	21.42±4.88	21.42±4.96	19.36±4.12*#
Nausea and vomiting	20.12±8.36	19.89±7.56	20.36±6.96	19.56±7.82
Shortness of breath	20.23±4.13	20.05±3.98	20.34±4.82	15.89±3.54*#
insomnia	35.63±5.96	27.52±4.32*	36.02±7.14	20.14±4.13*#
Loss of appetite	30.12±6.96	25.32±4.17*	29.87±7.11	21.08±3.89*#
Constipation	26.56±8.23	25.88±7.45	26.51±7.82	26.01±6.97
Diarrhea	14.56±4.89	15.02±4.53	14.69±5.02	14.39±6.78
Economic difficulties	32.12±4.52	34.85±5.02*	31.98±5.02	34.69±4.85*

Note: Compared to this intervention, * P< 0.05.

Table 6
Comparison of complications between the two groups [n (%)]

Group	Number of cases	Pulmonary infection	Incision infection	Gastrointestinal fistula	Lack of gastric motility	Hemorrhage	Total
Control group	65	2 (3.08)	3 (4.90)	2 (3.08)	4 (6.15)	1 (1.54)	12 (18.46)
Observation group	65	1 (1.54)	0 (0.00)	1 (1.54)	2 (3.08)	0 (0.00)	4 (6.15)
χ^2							4.561
<i>P</i>							0.033