

# Influence of Perioperative Nutritional Support Nursing on Gastrointestinal Function Recovery in Patients with Acute Pancreatitis

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**Abstract:** *Objective:* This study aimed to investigate the impact of perioperative nutritional support nursing on gastrointestinal function recovery in patients with acute pancreatitis. *Methods:* A total of 100 patients with acute pancreatitis were selected and randomly divided into an observation group and a control group using a random number table, with 50 patients in each group. The observation group received comprehensive nutritional support measures both preoperatively and postoperatively, while the control group received routine care. *Results:* After the overall treatment, the total scores for TPN ( $70.51 \pm 4.32$ ), EN ( $82.35 \pm 5.86$ ), and TEN ( $87.26 \pm 6.59$ ) in the observation group were significantly higher than those in the control group ( $49.52 \pm 3.65$ ,  $61.23 \pm 5.32$ ,  $64.25 \pm 6.81$ , respectively). The *P*-values from the t-test were all less than 0.01. Furthermore, the nursing satisfaction rate in the observation group (total satisfaction rate 96%) was significantly higher than that in the control group (total satisfaction rate 42%), with a  $\chi^2$  test *P* = 0.033. Regarding complications, none were recorded in the observation group, whereas 4 cases occurred in the control group, with a  $\chi^2$  test *P* = 0.043. *Conclusion:* Comprehensive perioperative nutritional support nursing for patients with acute pancreatitis can significantly improve gastrointestinal function recovery, enhance patient satisfaction with nursing care, and prevent complications. Therefore, this nursing model should be widely promoted in the clinical treatment of acute pancreatitis.

**Keywords:** Acute pancreatitis; Perioperative period; Nutritional support nursing; Gastrointestinal function recovery; Satisfaction and complications

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## 1. Introduction

Acute pancreatitis is a common and severe acute abdominal condition, for which perioperative management during clinical treatment is particularly crucial. In the treatment of acute pancreatitis, nutritional support is not merely a supplementary therapy but a critical factor influencing patient prognosis. Patients with pancreatitis often experience malnutrition due to gastrointestinal dysfunction, metabolic disturbances, and the body's response to stress, which can directly affect disease recovery. Poor nutritional status may also increase the risk of infection, prolong hospital stays, and even elevate mortality rates. Especially during the perioperative period, and particularly during gastrointestinal function recovery, nutritional support nursing plays an extremely important role. Traditional treatment methods often focus more on pathological

condition control and complication management. With the evolution of medical models, an increasing number of studies are emphasizing holistic patient management, which includes nutritional support<sup>[1]</sup>. Optimized nutritional support strategies can significantly improve the speed of gastrointestinal function recovery and shorten the patient's rehabilitation period. The purpose of this study is to conduct an in-depth investigation through a randomized controlled trial into the gastrointestinal function recovery, as well as related satisfaction and complication rates, in patients with acute pancreatitis receiving perioperative nutritional support nursing, thereby providing more precise treatment references for clinical practice. By observing and analyzing data from 100 patients, this study attempts to reveal the efficacy and importance of comprehensive nutritional support nursing in the treatment of acute pancreatitis.

## **2. Materials and methods**

### **2.1. General information**

A total of 100 patients with acute pancreatitis who underwent surgical treatment in our hospital from June 2022 to December 2022 were selected as study subjects. Using computer-based random allocation, the patients were divided into an observation group and a control group, with 50 patients in each group. In the observation group, there were 30 males and 20 females, aged 57 to 80 years OLD, with a mean age of  $70.13 \pm 3.8$  years OLD. In the control group, there were 28 males and 22 females, aged 58 to 79 years, with a mean age of  $70.8 \pm 3.2$  years old. Statistical analysis showed no significant differences in basic information, such as age and gender, between the two groups ( $P > 0.05$ ), indicating comparability.

During the research process, all patients received treatment according to our hospital's standard protocols for acute pancreatitis treatment and care. Patients in the observation group received a specialized perioperative nutritional support care plan in addition to routine treatment. Patients in the control group received only routine surgical treatment and postoperative rehabilitation guidance<sup>[2]</sup>. Data recording and follow-up for all patients were managed by dedicated research personnel to ensure accuracy and completeness. The study strictly adhered to relevant ethical and medical standards, obtained approval from the hospital's ethics committee before initiation, and all patients provided signed informed consent.

### **2.2. Methods**

The study subjects were divided into an observation group and a control group, each containing 50 patients with acute pancreatitis. Patients in the control group received standard perioperative nutritional support therapy, encompassing basic support with total parenteral nutrition (TPN) and enteral nutrition (EN). Specific measures included adjusting the intravenous nutrition formula based on the patient's specific condition to ensure adequate caloric supply. Enteral nutrition was initiated gradually based on the patient's gastrointestinal function, starting with low volume and low concentration, and progressively increasing to meet routine requirements according to patient tolerance.

Patients in the observation group received customized nutritional support and nursing measures in addition to the same basic treatment as the control group. This included a comprehensive assessment of each patient's nutritional status and risks, and the formulation of personalized nutritional support plans. Specific measures involved adding combined nutritional support (TEN) on the basis of TPN and EN, meaning the use of both TPN and EN, and adjusting nutrient proportions and total volume according to the patient's specific needs to ensure adequate nutrient supply and reduce complications. In terms of enteral nutrition, based on the recovery of intestinal function, adjustments were made gradually from low concentration and low volume to personalized optimal nutritional targets. More detailed and frequent monitoring was provided to assess patient response to nutritional support, and nutritional support strategies were adjusted to improve efficacy. Throughout the treatment process for all patients, nursing staff closely monitored patients' intestinal function recovery and overall condition, adjusted treatment measures promptly, ensured patients' psychological needs were met, and guaranteed that nutritional support therapy was implemented in a safe and comfortable environment.

### 2.3. Evaluation indicators and criteria

Evaluation indicators and criteria are important bases for assessing the effectiveness of gastrointestinal function recovery in the two groups of acute pancreatitis patients after receiving perioperative nutritional support. The rehabilitation status of the two groups was evaluated and compared from the following aspects:

The health improvement of patients in both groups before and after care was evaluated using three total scores: TPN (Total Parenteral Nutrition), EN (Enteral Nutrition), and TEN (Total Enteral and Parenteral Nutrition). The impact of each nutritional method on patient health status before and after care was quantified numerically, with a score range of 0-100. Higher scores indicate better health improvement.

Nursing satisfaction was assessed using a questionnaire, divided into four levels: very satisfied, satisfied, generally satisfied, and dissatisfied. By counting the number of patients at each level, the total satisfaction rate (sum of very satisfied and satisfied) was calculated to evaluate the recognition of nutritional support nursing and patients' personal satisfaction.

The incidence of complications in the two groups after receiving different care was compared, serving as one of the important indicators for evaluating care effectiveness. Special attention was paid to the incidence rates of three complications: pancreatic abscess, pancreatic pseudocyst, and pancreatic cyst. The presence and frequency of these symptoms directly reflect the effectiveness of different nutritional support methods in controlling potential risks during patient recovery.

### 2.4. Statistical methods

SPSS 22.0 software was used for statistical analysis. For normally distributed continuous data, the t-test and mean  $\pm$  standard deviation (SD) were used for representation; for categorical data, the chi-square test and percentages were used. Typically, a *P*-value less than 0.05 was considered statistically significant<sup>[3]</sup>.

## 3. Results

### 3.1. Comparison of basic patient information

There were no statistically significant differences between the observation group and the control group in terms of gender, age, and other general information, ensuring comparability in basic conditions ( $P > 0.05$ ). See **Table 1**.

**Table 1.** Comparison of general patient information

Group	Number	Male	Female	Age Range	Mean Age
Observation group	50	30	20	57–80	70.13 $\pm$ 3.8
Control group	50	28	22	58–79	70.8 $\pm$ 3.2
<i>t</i> / $\chi^2$		0.362		0.190	
<i>P</i>		0.553		0.823	

### 3.2. Comparison of health improvement between the two groups

In the study on perioperative nutritional support nursing for acute pancreatitis patients, the observation group surpassed the control group in the total scores for TPN, EN, and TEN, indicating excellent gastrointestinal function improvement in the observation group. Statistical data showed that these differences in scores were statistically significant ( $P < 0.05$ ), fully confirming the important role of perioperative nutritional support nursing in enhancing patient health status. See **Table 2**.

**Table 2.** Comparison of Health Improvement Between the Two Groups (mean  $\pm$  SD, points)

Group	Number	Before Care	TPN Total Score	EN Total Score	TEN Total Score
Observation Group	50	42.26 $\pm$ 3.57	70.51 $\pm$ 4.32	82.35 $\pm$ 5.86	87.26 $\pm$ 6.59
Control Group	50	42.82 $\pm$ 3.95	49.52 $\pm$ 3.65	61.23 $\pm$ 5.32	64.25 $\pm$ 6.81
<i>t</i>		0.873	11.283	10.253	11.673
<i>P</i>		0.963	0.003	0.003	0.003

### 3.3. Comparison of nursing satisfaction between the two groups

Regarding nursing satisfaction, the total satisfaction rate in the observation group was significantly higher than that in the control group, reaching 96.00%, compared to only 42.00% in the control group. In the observation group, 52.00% of patients were very satisfied, whereas only 20.00% expressed the same opinion in the control group. This indicates that the perioperative nutritional support nursing in the observation group provided higher patient satisfaction, with a statistically significant difference ( $P = 0.033$ ). See **Table 3**.

**Table 3.** Comparison of nursing satisfaction between the two groups [n (%)]

Group	Number	Very Satisfied	Satisfied	Generally Satisfied	Dissatisfied	Total Satisfaction Rate
Observation Group	50	26 (52.00)	21 (42.00)	3 (6.00)	0 (0.00)	47 (96.00)
Control Group	50	10 (20.00)	11 (22.00)	12 (24.00)	17 (34.00)	21 (42.00)
$\chi^2$						5.802
<i>P</i>						0.033

### 3.4. Comparison of complication incidence between the two groups

In the study, patients in the observation group who received nutritional support nursing before and after surgery had a significantly lower probability of complications compared to the other group. Patients in the control group experienced various issues such as pancreatic abscess and pancreatic pseudocyst. Data comparison showed a statistically significant difference ( $P = 0.043$ ), indicating that the improved nutritional support nursing effectively reduced the likelihood of complications. See **Table 4**.

**Table 4.** Comparison of Complication Incidence Between the Two Groups [n (%)]

Group	Number	Pancreatic Abscess	Pancreatic Pseudocyst	Pancreatic Cyst	Total
Observation Group	50	0	0	0	0
Control Group	50	2	1	1	4
$\chi^2$					4.093
<i>P</i>					0.043

## 4. Discussion

Acute pancreatitis is a common acute abdominal condition in medical practice, and nutritional support during its treatment is a key link in improving treatment efficacy. Perioperative nutritional support nursing plays a significant role in accelerating gastrointestinal function recovery. This study aimed to evaluate the impact of perioperative nutritional support

nursing on gastrointestinal function recovery in patients with acute pancreatitis.

The optimized nutritional support protocol used in the observation group yielded excellent results in the assessments of TPN total score, EN total score, and TEN total score, with specific data of  $70.51 \pm 4.32$ ,  $82.35 \pm 5.86$ , and  $87.26 \pm 6.59$ , respectively, far exceeding the control group's data of  $49.52 \pm 3.65$ ,  $61.23 \pm 5.32$ , and  $64.25 \pm 6.81$ . These data clearly demonstrate that the comprehensive nutritional support protocol can effectively assist patients with acute pancreatitis in improving digestive system function recovery and significantly enhance comfort and well-being. Relying on rigorous and appropriate nutritional support methods, the overall health status of patients improved significantly, a positive change fully confirmed and reflected by the substantial increase in multiple health assessment indicators. Particularly in the TPN, EN, and TEN total scores, the observation group's scores significantly surpassed those of the control group, with this difference holding analytical value ( $P < 0.05$ ). By comparing the gastrointestinal function recovery status of the observation and control groups under different nutritional support protocols, data showed that after applying TPN, EN, and TEN, gastrointestinal function recovery in the observation group was significantly better than in the control group. This provides evidence for the effectiveness of perioperative nutritional support nursing<sup>[4-6]</sup>.

Nursing satisfaction is a key factor in assessing the quality of medical services, especially in the management of chronic and acute diseases, where nursing quality directly affects patient recovery and psychological state. According to the data, in the perioperative nutritional support nursing for acute pancreatitis patients, the observation group received more standardized and proficient nutritional support nursing, leading to a significant improvement in nursing satisfaction compared to the control group. In the observation group, 52.00% of patients were very satisfied with the nursing care, whereas only 20.00% in the control group expressed similar views. Additionally, 42.00% of patients in the observation group were satisfied, compared to only 22.00% in the control group. The observed difference was effectively demonstrated through statistical methods, with a  $\chi^2$  test result of 5.802 and a  $P$ -value of 0.033, clearly indicating a scientifically based difference between the groups. This result clearly shows that professional nutritional support nursing greatly contributes to improving patient satisfaction. Nutritional support not only improves patients' physical recovery but also actively promotes their overall satisfaction with nursing services<sup>[7,8]</sup>.

By comparing the complication incidence in the observation and control groups receiving perioperative nutritional support nursing, a clear difference was found. The complication rates for pancreatic abscess, pancreatic pseudocyst, and pancreatic cyst were all 0% in the observation group. In the control group, the incidence of pancreatic abscess was 2 (4%), pancreatic pseudocyst was 1 (2%), pancreatic cyst was also 1 (2%), with an overall complication rate of 4 (8%). This result shows that perioperative nutritional support nursing in the study significantly reduced the complication rate in patients with acute pancreatitis. Perioperative nutritional support nursing positively impacts gastrointestinal function recovery, possibly by improving nutritional status and enhancing immune function, thereby reducing complication occurrence. Good nutritional status can promote wound healing and lower the risk of postoperative infection.

## 5. Conclusion

Through comparative observation, it can be concluded that nutritional support nursing holds significant clinical application value in the perioperative period for patients with acute pancreatitis. It not only effectively promotes the normal recovery of gastrointestinal function but also significantly reduces the risk of complications. This conclusion provides more treatment ideas and strategies for clinical practice and is of great significance for improving the treatment efficacy of acute pancreatitis and patient prognosis.

## Disclosure statement

The author declares no conflict of interest.

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