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Effect of a Nutrition Specialist Nurse-Led Whole-Course Nutrition Management Model in Patients with Distal Cholangiocarcinoma

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Abstract: *Objective*: To study the application effects of the entire-course nutrition management model led by specialized nutrition nurses in patients with distant cholangiocarcinoma. *Methods*: Using convenience sampling, one hundred and twenty patients with distant cholangiocarcinoma admitted from April 2023 to October 2024 were selected as the experimental subjects of this study. They were grouped using a random number table method. The intervention group consisted of 60 patients with distant cholangiocarcinoma who received the entire-course nutrition management led by specialized nutrition nurses, while the observation group consisted of 60 patients who received conventional management. The intestinal function, nutritional indicators, quality of life, and satisfaction were compared between the intervention and observation groups. *Results*: After intervention, the intestinal function, nutritional indicators, quality of life, and satisfaction of patients with distant cholangiocarcinoma in the intervention group were significantly better than those in the observation group, with statistically significant differences ($P < 0.05$). *Conclusion*: The application of the entire-course nutrition management model led by specialized nutrition nurses in patients with distant cholangiocarcinoma has more prominent effects and can further improve prognosis, making it worthy of widespread clinical application.

Keywords: Entire-course nutrition management model, Distant cholangiocarcinoma, Intestinal function, Nutritional indicators, Specialized nutrition nurses

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1. Introduction

Distant cholangiocarcinoma refers to cholangiocarcinoma located outside the perihepatic portal area, that is, the primary tumor originates from the malignant biliary tract tumor in the middle and lower segments of the common bile duct [1]. Surgical treatment is currently the most active and effective means of treating distant cholangiocarcinoma, as it can completely eliminate cancer tissue and provide patients with the only possible cure

and long-term survival opportunities. Radical surgery will cause metabolic changes such as increased energy consumption, protein decomposition, and reduced muscle tissue, leading to decreased immune function and gastrointestinal dysfunction, which can aggravate malnutrition in patients. This can lead to reduced treatment tolerance, poor treatment effects, and prolonged hospital stays. Perioperative nutritional support can improve liver function and promote early recovery of gastrointestinal function in patients with distant cholangiocarcinoma [2]. To verify the application effects of the entire-course nutrition management model led by specialized nutrition nurses in patients with distant cholangiocarcinoma, this article specifically selected 120 patients with distant cholangiocarcinoma admitted from April 2023 to October 2024 as the experimental subjects of this study. They were grouped using a random number table method, and the intestinal function, nutritional indicators, quality of life, and satisfaction were compared between the intervention and observation groups.

2. Materials and methods

2.1. Basic information

This study selected 120 patients with distal cholangiocarcinoma admitted between April 2023 and October 2024. They were divided into two groups using a random number table method: an intervention group with 60 patients and an observation group with 60 patients. The intervention group received a comprehensive nutritional management model led by specialized nutritional nurses, while the observation group followed a conventional management approach. The observation group consisted of 32 male and 28 female patients, aged between 30 and 68 years, with a mean age of (54.66 ± 5.17) years. The intervention group comprised 33 male and 27 female patients, aged between 32 and 72 years, with a mean age of (55.88 ± 6.63) years. The basic characteristics of the study subjects were comparable ($P > 0.05$).

(1) Inclusion criteria: The experimental content was approved by the ethics committee. Participants met the diagnostic criteria for distal cholangiocarcinoma [3], confirmed by pathological examination, were over 18 years old, understood the experimental content, and agreed to actively cooperate with the experimental procedures.

(2) Exclusion criteria: Patients with poor language expression, severe cardiovascular and cerebrovascular diseases, cognitive dysfunction, comorbidities such as other malignancies or digestive system diseases, infectious diseases, mental illnesses, unconsciousness, or recent surgical history [4].

2.2. Methods

The observation group of 60 patients with distal cholangiocarcinoma followed the conventional management model, which included dynamic monitoring of physical indicators, regular observation of drainage fluid and volume, and timely reporting and targeted intervention in case of abnormalities.

The intervention group of 60 patients received a comprehensive nutritional management model led by specialized nutritional nurses. This model involved the following steps: First, assessing the patient's nutritional status by collaborating with a multidisciplinary team, including physicians, pharmacists, and rehabilitation specialists to develop a personalized nutritional plan. This assessment considered the patient's nutritional needs, dietary habits, height and weight measurements, and relevant biochemical indicators. Second, formulating a nutritional plan based on the assessment results, specifying daily intake of calories, vitamins, minerals, and proteins, correcting unhealthy eating habits, and strengthening supplement management. Third, conducting

nutritional education through regular courses, one-on-one consultations, or lectures to raise awareness among patients about the importance of a balanced diet and teach them how to improve their dietary plans based on their conditions. Finally, monitoring patients' blood glucose, lipid profiles, prealbumin, total protein, and albumin levels to continuously refine the nutritional plan and ensure the effectiveness of nutritional support.

2.3. Evaluation indicators

(1) Evaluate intestinal function using a daily record form, accurately recording the patient's first defecation time, first exhaust time, and recovery time of bowel sounds. A shorter time indicates faster recovery of intestinal function [5].

(2) Use blood tests to evaluate nutritional indicators, recording prealbumin, total protein, and albumin levels in detail. Higher nutritional indicators suggest better nutritional status of the body [6].

(3) Use the SF-36 scoring scale to evaluate quality of life, including four aspects. The scoring range for each aspect is 1–100, and a higher score indicates better quality of life [7].

(4) Use a self-made questionnaire to evaluate nursing satisfaction, with independent scoring by the patient. The total score is 100 points, with satisfaction defined as greater than 75 points, partial satisfaction as scores between 60–75, and dissatisfaction as less than 60 points. The total satisfaction rate is calculated as the total number of satisfied cases divided by the total number of cases, multiplied by 100% [8, 9].

2.4. Statistical methods

SPSS 26.0 system was applied. Count data were expressed as (n,%) and analyzed using chi-square test. Measurement data were expressed as mean ± standard deviation (±s) and analyzed using t-test. Statistical significance was indicated by $P < 0.05$.

3. Results

3.1. Comparison of intestinal function between the intervention group and the observation group

There were significant differences in the first defecation time, first exhaust time, and recovery time of bowel sounds between the intervention group and the observation group. The intestinal function of the intervention group was significantly better than that of the observation group, with statistical significance ($P < 0.05$), as shown in **Table 1**.

Table 1. Comparison of intestinal function between intervention group and observation group ($\bar{x}$ ±s, h)

Group / Number of cases	First defecation time (h)	First flatus time (h)	Bowel sound recovery time (h)
Intervention group (n=60)	51.38 ± 12.54	26.39 ± 6.73	36.51 ± 10.28
Observation group (n=60)	62.12 ± 13.27	31.26 ± 7.61	44.83 ± 11.39
t-value	3.506	2.492	2.055
p-value	< 0.05	< 0.05	< 0.05

3.2. Comparison of nutritional indicators between the intervention group and the observation group

Before the intervention, there was little difference in nutritional indicators between the intervention group and the observation group ($P > 0.05$). After the intervention, the nutritional indicators of both groups improved, but there were significant differences in prealbumin, total protein, and albumin levels between the intervention group and the observation group. The observation group had higher levels, which was statistically significant ($P < 0.05$), as shown in **Table 2**.

Table 2. Comparison of nutritional indicators between intervention group and observation group ($\bar{x} \pm s$)

Group / Number of cases	Prealbumin (mg/L)		Total protein (g/L)		Albumin (g/L)	
	Pre	Post	Pre	Post	Pre	Post
Intervention group (n=60)	223.52 ± 31.37	321.55 ± 28.48	51.68 ± 4.29	76.58 ± 3.39	28.39 ± 3.35	42.47 ± 2.58
Observation group (n=60)	223.62 ± 31.16	295.73 ± 28.35	52.94 ± 4.43	58.26 ± 3.17	28.56 ± 3.27	36.25 ± 2.26
t-value	0.005	4.164	0.548	16.264	0.276	10.047
p-value	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05

3.3. Comparison of quality of life between the observation group and the intervention group

Before the intervention, there was a small difference in SF-36 scores between the observation group and the intervention group ($P > 0.05$). After the intervention, the SF-36 scores of both groups improved, but there was a significant difference between the intervention group and the observation group, with the intervention group scoring higher, which was statistically significant ($P < 0.05$), as shown in **Table 3**.

Table 3. Comparison of SF-36 scores between the observation group and the intervention group ($\bar{x} \pm s$, minute)

Group / n	Social function (SF)		Vitality (VT)		Physical function (PF)		Mental health (MH)	
	Pre	Post	Pre	Post	Pre	Post	Post	Post
Intervention (n=60)	68.74 ± 2.61	94.95 ± 1.48	65.85 ± 5.73	89.59 ± 7.74	69.06 ± 6.67	89.64 ± 7.06	68.06 ± 6.59	90.45 ± 2.47
Control (n=60)	68.38 ± 2.48	79.37 ± 4.69	65.84 ± 4.27	80.06 ± 6.62	70.47 ± 5.18	80.57 ± 6.18	70.63 ± 5.28	81.67 ± 3.87
t-value	0.242	3.124	0.163	3.667	0.235	2.514	0.337	2.106
p-value	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	< 0.05	> 0.05	0.05

3.4. Comparison of nursing satisfaction between the observation group and the intervention group

The satisfaction rate of the intervention group was 93.33%, while the satisfaction rate of the observation group was 76.67%. There was a significant difference in nursing satisfaction between the intervention group and the observation group, with the intervention group having higher satisfaction, which was statistically significant ($P < 0.05$), as shown in **Table 4**.

Table 4. Comparison of nursing satisfaction between the observation group and the intervention group

Group / n	Satisfied (n)	Somewhat satisfied (n)	Dissatisfied (n)	Total satisfaction rate [n(%)]
Intervention (n=60)	26	30	4	56 (93.33%)
Control (n=60)	20	26	10	46 (76.67%)
χ^2 value				4.984
p-value				< 0.05

4. Discussion

Studies have shown, that malnutrition is a risk factor for distal cholangiocarcinoma [10–12]. The nutritional status of patients becomes poorer as the disease progresses, and conversely, it improves with the remission of the disease, indicating a positive correlation between distal cholangiocarcinoma and nutritional status. Therefore, it is necessary to provide nutritional support to patients with distal cholangiocarcinoma to ensure their body's nutritional needs and control the further progression of the disease.

The whole-course nutritional management model led by specialized nurses in nutrition, as a new clinical nursing model, has been introduced into the treatment of distal cholangiocarcinoma. It can not only provide patients with nitrogen sources and calories, accelerate the synthesis of stress proteins and total proteins, improve negative oxygen balance and nutritional status, but also reduce high metabolic response and stress levels, strengthen immune function, and improve quality of life [13–15]. The results of this study are as follows: There were significant differences in the first defecation time, first exhaust time, and recovery time of bowel sounds between the intervention group and the observation group. The intestinal function of the intervention group was significantly better than that of the observation group, with statistical significance ($P < 0.05$).

Before the intervention, there was little difference in nutritional indicators between the intervention group and the observation group ($P > 0.05$). After the intervention, the nutritional indicators of both groups improved, but there were significant differences in prealbumin, total protein, and albumin levels between the intervention group and the observation group, with the observation group being higher ($P < 0.05$). Before the intervention, there was little difference in SF-36 scores between the observation group and the intervention group ($P > 0.05$).

However, after the intervention, the SF-36 scores of both groups improved, with a significant difference between the intervention group and the observation group, and the intervention group being higher ($P < 0.05$). The satisfaction rate of the intervention group was 93.33%, while that of the observation group was 76.67%. There was a significant difference in nursing satisfaction between the two groups, with the intervention group being higher ($P < 0.05$). These results fully demonstrate the effectiveness of the whole-course nutritional management model led by specialized nurses in nutrition in patients with distal cholangiocarcinoma, and also validate the value of conducting this experiment.

5. Conclusion

In summary, the application of the whole-course nutritional management model led by specialized nurses in nutrition in patients with distal cholangiocarcinoma has a more significant effect, further improving patients' intestinal function and nutritional status, and enhancing their quality of life and satisfaction. This approach should

be widely used in clinical practice.

Disclosure statement

The author declares no conflict of interest.

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