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Nursing Experience of Early Application of Nasoenteric Tube for Enteral Nutrition in Critically Ill ICU Patients

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Abstract: *Objective:* To investigate the effective nursing measures of early application of nasoenteric tube for enteral nutrition in critically ill patients in ICU, and to summarize the nursing experience. *Methods:* The study was carried out in June 2023–November 2023. 62 samples of ICU critically ill patients were selected, all of whom used enteral nutrition by mesenteric tube and were grouped into an observation group (n = 31) and a control group (n = 31) by using the numerical table randomization method. The patients in the control group were basic nursing interventions, and the patients in the observation group were comprehensive quality care, comparing the nutritional indexes, complication rates, and nursing satisfaction between the two groups. *Results:* All nutritional indicators of the observation group were higher than those of the control group after nursing intervention ($P < 0.05$); the complication rate of the observation group was lower than that of the control group ($P < 0.05$); the nursing satisfaction of the observation group was higher than that of the control group ($P < 0.05$). *Conclusion:* Comprehensive quality nursing care during the early application of a gastroenteric tube for enteral nutrition in critically ill patients in the ICU can improve nutritional indexes, reduce the incidence of complications and improve nursing satisfaction.

Keywords: ICU critically ill patients; Nasoenteric tube; Enteral nutrition; Nursing care

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1. Introduction

ICU critically ill patients are affected by the condition. The body is in a state of stress, the catabolism is accelerated, and the energy consumption is higher. To improve the nutritional status of the patient's body, enhance immunity and accelerate the recovery of the condition, it is necessary to carry out enteral nutritional support as early as possible [1]. Clinical mostly through the nasoenteric tube assisted in completing enteral nutrition support. Treatment is very easy to produce all kinds of complications, so appropriate nursing measures need to be taken [2]. In this study, 62 samples of critically ill patients in the ICU were selected to explore effective nursing programs, which are now reported as follows.

2. Information and methods

2.1. General information

The study was carried out in June 2023–November 2023. A sample of 62 ICU critically ill patients were selected, all of whom used nasoenteric tubes for enteral nutrition, and were grouped into the observation group (n = 31) and control group (n = 31) by using the numerical table randomization method. There were 18 male and 13 female cases in the observation group, with a statistical age interval range of 40–72 years old and a mean of (56.19 ± 2.75) years old, including 12 cases of respiratory failure, 11 cases of cardiovascular and cerebral vascular diseases and 8 cases of compound injuries. In the control group, there were 17 males and 14 females, with a statistical age range of 42–71 years old, average (56.25 ± 2.68) years old, including 14 cases of respiratory failure, 10 cases of cardio-cerebral and cerebral vascular diseases, and 7 cases of compound injuries, and the general information of the two groups of patients was comparable ($P > 0.05$).

Inclusion criteria: (1) Critical condition, bedridden time more than 24h; (2) Unable to eat by mouth; (3) Family members signed the consent to the study document.

Exclusion criteria: (1) Contraindication to enteral nutrition; (2) Low nursing compliance; (3) Other reasons cannot cooperate with the study.

2.2. Methods

The patients in the control group underwent basic nursing intervention. The nursing staff completes the operation of nasoenteric tube placement in a standardized way and the nutritional solution is input into the patients through the nasoenteric tube. The patients were observed to determine whether there was any adverse reaction after the input was completed, and the patients needed to be properly disposed of if they found any abnormality.

Observation group patients for comprehensive quality care, specific programmes are as follows:

(1) Psychological care.

Before inserting the nasoenteric tube, the nursing staff takes the initiative to communicate with patients and their families, explain the role of enteral nutrition support, introduce the process of inserting the nasoenteric tube and the method of co-operation, and introduce the patients to the successful cases of treatment, encourage the patients to set up confidence, guiding them to actively cooperate with the insertion of the nasoenteric tube. Some patients were nervous and anxious during the tube placement process, and their nursing compliance was low. The nursing staff patiently did a good job in explaining the process and pacified the patients' emotions through physical touch and supportive psychological counseling to make them cooperate with the completion of the tube placement operation.

(2) Enteral nutrition basic nursing.

During the input of enteral nutrition solution, the nursing staff will elevate the head of the bed by 30° so that the patient maintains a semi-recumbent position, through the nasoenteric tube uniformly and slowly enter the nutritional solution with the appropriate temperature, adjust the input speed according to the patient's tolerance. After completing the nasal gavage, make the patient maintain a semi-recumbent position for about 30 minutes, observe whether there is any abnormal reaction of the patient, such as the discovery of abnormality needs to be timely and proper disposal. During the period of nasal feeding, nursing staff properly complete the oral care intervention, clean the oral environment, maintain the oral mucosa humidity, daily use water to clean the nostrils on the side of the retained nasoenteric tube and apply the appropriate amount of liquid paraffin.

(3) Nasoenteric tube care.

Nursing staff use medical 3M tape to fix the nasoenteric tube, check the fixation effect every day and

replace the tape if it is found to have insufficient adhesive force. Every time before and after the input of nutrient solution, 20–40 mL of warm water is used to flush the nasoenteric tube. During the infusion process, the nasoenteric tube is observed to be smooth, such as the discovery of the blockage of the tube needs to be disposed of in a timely manner. Nursing staff inform patients of the role of the nasoenteric tube, instruct them to protect the nasoenteric tube and not to adjust the infusion rate to avoid the nasoenteric tube falling off.

(4) Management of enteral nutrition solution.

Nursing staff should follow the doctor's instructions to choose the nutrition solution and use alcohol or iodine to sterilize the flat cap and bottle opener before opening the bottled nutrition solution. Follow the principle of aseptic operation to configure the nutrition solution. Use an enteral nutrition infuser, heating pump, and nutrition pump to infuse enteral nutrition solution at a uniform speed, and change the infuser once a day.

(5) Complications nursing intervention.

During the application of nasoenteric tube for enteral nutrition, nursing staff increase the frequency of inspection and monitor the changes of vital signs, such as patients with complications are properly disposed of in a timely manner. To prevent diarrhea, the nursing staff heated the nutritional solution to 36–38 ℃ in advance, controlled the concentration of the nutritional solution and input the nutritional solution slowly and uniformly. If the patient had diarrhea, the patient would use the intestinal astringent intervention in accordance with the doctor's instructions. If the patient is combined with abdominal pain, nursing staff reduce the input rate or stop the input of nutrient solution. To prevent constipation, nursing staff adjusted the infusion rate, controlled the total amount of input nutritional solution, and followed the doctor's instructions to replenish fluids during the treatment period reasonably. If the patient suffers from constipation, follow the doctor's instructions to use a soapy water enema or crops to intervene. If the patient is combined with hyponatremia, nursing staff follow the doctor's instructions to input potassium and sodium intervention.

2.3. Evaluation criteria

(1) Compare the nutritional indexes of the two groups before and after 7d of nursing intervention, including serum albumin, serum transferrin and body weight.

(2) Statistics on the incidence of complications in the two groups.

(3) Adopt our self-made scale to count the nursing satisfaction of the two groups.

2.4. Statistical methods

SPSS 23.0 software was used to analyze the research data and *t*-test was used for the measurement data, mean ± standard deviation (SD). χ^2 test was used for the count data %, and $P < 0.05$ was used for the existence of differences at the statistical level.

3. Results

3.1. Comparison of nutritional indicators between the two groups

As the data in **Table 1**, the nutritional indicators of the observation group after nursing intervention are higher than those of the control group ($P < 0.05$).

Table 1. Comparison of nutritional indicators between the two groups (mean ± SD)

Groups	Serum albumin (g/L)		Serum transferrin (g/L)		Weight (kg)	
	Before care	Aftercare	Before care	Aftercare	Before care	Aftercare
Observation group (n = 31)	24.18 ± 2.35	29.08 ± 2.93	1.65 ± 0.24	2.71 ± 0.45	60.35 ± 2.38	63.85 ± 1.96
Control group (n = 31)	24.26 ± 2.33	26.24 ± 1.88	1.68 ± 0.22	2.29 ± 0.23	60.29 ± 2.41	61.22 ± 1.27
t-value	0.135	4.542	0.513	4.627	0.099	6.270
P-value	0.893	0.000	0.610	0.000	0.922	0.000

3.2. Comparison of complication rates between the two groups

As the data in **Table 2**, the complication rate of the observation group is lower than that of the control group ($P < 0.05$).

Table 2. Comparison of complication rates between the two groups (n/%)

Groups	Abdominal pain	Diarrhea	Constipation	Complication rate
Observation group (n = 31)	0	1	2	3 (9.7)
Control group (n = 31)	3	4	3	10 (32.3)
χ^2-value				4.769
P-value				0.028

3.3. Comparison of nursing satisfaction between the two groups

The statistical results showed that the nursing satisfaction of the observation group (30/31) was 96.8% higher than that of the control group (23/31), which was 74.2% ($\chi^2 = 6.369$, $P = 0.011$).

4. Discussion

ICU critically ill patients' organisms are in a high catabolic state, with a large amount of energy digestion, mostly accompanied by malnutrition to improve the nutritional status of patients and enhance the immunity of the organism, effective nutritional support needs to be implemented [3]. Enteral nutrition support can meet the nutritional needs of patients and can produce a strong stimulation effect on the intestinal neuroendocrine system, accelerate the portal vein and intestinal mucosa blood flow rate, stimulate gastrointestinal peristalsis and improve the immunity and nutritional status of the body [4]. Clinical enteral nutrition support needs to be retained during the nasoenteric tube. The patient's discomfort is serious and can induce various complications, so it is necessary to take appropriate nursing measures [5].

The results of this study show that all the nutritional indicators of the observation group are higher than those of the control group after the nursing intervention, suggesting that the use of comprehensive, high-quality nursing care during the early application of nasoenteric tube for enteral nutrition in critically ill patients in ICU can improve the nutritional status of the patient's body. Analyzing the reasons, during the basic nursing process, nursing staff only implement general nursing operations such as tube placement and nutritional fluid input, and monitoring and observation of patients are not in place. Many defects in nursing measures make it easy for patients to develop feeding intolerance. Patients' negative emotions cannot be corrected, which affects the effect of enteral nutritional support. In carrying out comprehensive quality care, the nursing staff understands the

nursing needs of patients, analyzes the risk factors of enteral nutrition through nasoenteric tubes and formulates appropriate nursing programs. Before leaving the nasoenteric tube, the nursing staff communicates with patients and their families to calm their emotions and guide them to cooperate in completing the tube placement operation, which can reduce discomfort and improve the effect of tube placement [6,7].

During the period of enteral nutrition support, nursing staff standardized the completion of nasoenteric tube, and nutrient solution care, followed the principle of aseptic operation to configure the nutrient solution, prevent heating of the nutrient solution, properly fix the pipeline, keep the patient in a semirecumbent position during the infusion process, strictly control the speed and volume of infusion, and increase the frequency of monitoring, which can detect and dispose of abnormalities on time to ensure that the patient's safe and successful completion of enteral nutrition support, and to enable patients to gradually improve the nutritional state of the organism [8]. Nutritional status gradually improved [8,9]. The results of this study show that the complication rate of patients in the observation group is lower than that of the control group, suggesting that comprehensive quality care can reduce the complication rate. To analyze the reasons, when applying nasoenteric tube for enteral nutrition, the improper rate, temperature and total amount of nutritional solution input can induce complications such as abdominal discomfort.

In the process of basic nursing intervention, the nursing staff did not target the prevention of various types of complications, resulting in the incidence of complications in patients at a high level [10]. In the process of comprehensive quality nursing care, the nursing staff deeply analyzes the causes of complications and prevents all kinds of complications by adjusting the infusion speed, warming the nutritional solution, controlling the infusion volume, etc., and proper disposal after the occurrence of complications, which can significantly reduce the incidence of complications [11]. In this study, the nursing satisfaction of patients in the observation group was higher than that of the control group, suggesting that comprehensive nursing can improve nursing satisfaction. Compared with basic care, in the process of comprehensive quality care, nursing staff focus on the synergy of physical and mental care, comprehensively appease the negative emotions of patients in the process of nursing interventions, improve the nursing programme of enteral nutrition by nasoenteric tube and pay attention to the comfort degree of patients at all times, which can ensure the successful completion of enteral nutritional support, and significantly improve nursing satisfaction [12,13].

5. Conclusion

To summarize the nursing experience of early application of nasoenteric tube for enteral nutrition in critically ill patients in ICU, nursing staff need to analyze the characteristics of the patient's condition, assess the nursing risk and formulate a perfect nursing plan. Before leaving the nasoenteric tube in place, nursing staff should take the initiative to communicate with the patient to help reduce their psychological pressure so that they can correctly understand enteral nutrition support and cooperate with the completion of tube placement [14]. In the process of implementing enteral nutrition support, nursing staff need to complete the care of nutritional solution and pipeline. The key points of nutritional solution care are to be configured under aseptic conditions to ensure that the concentration and temperature are appropriate, and the key points of pipeline care are to be properly fixed and to maintain internal patency. In inputting nutrient solutions, nursing staff should focus on the comfort of patients, adjust the input rate, and monitor whether there is any abnormality. In the process of enteral nutrition support, it is very easy to produce gastrointestinal complications. The nursing staff needs to understand the triggers of various types of complications and closely monitor the patient's response during the infusion process, such as the discovery of complications that need to be timely and appropriate treatment [15].

In summary, it can be seen that the use of comprehensive quality care during the early application of nasoenteric tube for enteral nutrition in critically ill patients in ICU can improve nutritional indicators, reduce the incidence of complications and improve nursing satisfaction. The number of ICU critically ill patients selected in this study is relatively small, and the specific mechanism of using comprehensive quality care during the early application of enteral nutrition by nasoenteric tube still needs further research.

Disclosure statement

The authors declare no conflict of interest.

References

[1] Huang B, Lin Q, Chen H, et al., 2023, Nursing Care of 8 Children with Gastroesophageal Reflux with Indwelling Nasoenteric Tube for Enteral Nutrition. Contemporary Nurse, 30(29): 139–141.

[2] Huang X, 2023, Application and Nursing Care of Transnasal Enteral Tube Early Enteral Nutrition for Acute Severe Pancreatitis. Jilin Medical Science, 44(9): 2632–2634.

[3] Song K, Huang L, 2021, The Application of Intensive Nursing Care Combined with Blind Insertion of Nasoenteric Tube Method in Enteral Nutrition Support for Patients with Stroke Combined with Dysphagia. General Practice Nursing, 19(17): 2370–2372.

[4] Ye X, 2021, Analysis of the Causes of Enteral Nutrition Nasoenteric Tube Blockage and New Progress of Preventive Care. Health Care Guide, 2021(36): 201–202.

[5] Shu P, 2021, Impact of Intensive Nursing Care on the Nutritional Status and Prognosis of Patients with Acute Severe Pancreatitis Undergoing Enteral Nutritional Support via Nasoenteric Tube. Health Care Guide, 2021(38): 196–197.

[6] Jiang P, Liu J, 2004, Application and Nursing Care of Spiral Nasoenteric Tube in Enteral Nutrition of Patients with Acute Severe Pancreatitis. Chinese Nursing Journal, 39(5): 353–355.

[7] Xue H, Yang J, 2023, Application Effect of Intensive Nursing Care Combined with Blind Insertion of Nasoenteric Tube in Enteral Nutritional Support for Stroke Patients with Swallowing Disorders. China Medical Digest (Otolaryngology), 38(4): 176–178, 143.

[8] Li C, Niu L, Yan H, et al., 2009, Nursing Care of Gravity Hammer Nasoenteric Tube for Early Enteral Nutrition After Hepatic Tumour Resection. PLA Nursing Journal, 26(16): 62–63, 69.

[9] Chen L, Wang X, Gao Y, et al., 2023, Meta-Analysis of the Effectiveness and Safety of Enteral Nutrition via Transnasal Gastric Tube and Transnasal Enteral Tube in the Treatment of Severe Acute Pancreatitis. Evidence-Based Nursing, 9(10): 1718–1722.

[10] Ren L, 2020, Observation on the Application Effect of Intensive Nursing Intervention in Early Transnasal Enteral Tube Enteral Nutrition in Acute Severe Pancreatitis. China Medical Guide, 18(5): 191.

[11] He Y, Ma L, 2020, Nursing Effect of Inserting Spiral Nasoenteric Tube for Enteral Nutrition Under X-ray Guided Positioning. China Health Nutrition, 30(20): 253.

[12] Zhang Y, 2021, Nursing Care Status of Enteral Nutrition via Nasoenteric Tube and Gastrostomy in Critically Ill Patients. Health Care, 2021(14): 297.

[13] Li T, 2020, The Application Value of Procedural Nursing in the Implementation of Enteral Nutrition Support via Nasoenteric Tube in Critically Ill Patients Receiving Mechanical Ventilation in ICU. Contemporary Medicine Series, 18(16): 273–274.

[14] Jin O, 2010, Nursing Experience of Indwelling Enteral Nutrition Through Nasoenteric Tube After Oesophageal and Gastric Surgery. Nursing Practice and Research, 7(22): 45–46.

[15] Han M, Zhang Y, Hou C, et al., 2023, Summary of the Best Evidence for Prevention and Management of Nasoenteric Tube Occlusion in Adult Enteral Nutrition Patients. Military Nursing, 40(4): 88–92.

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