
Effect of Nursing Intervention under Nutritional Risk Screening on Recovery and Complications in Patients with Primary Breast Cancer

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Abstract: *Objective:* To explore the clinical effect of nutritional risk screening combined with nursing intervention on patients with primary breast cancer. *Methods:* 102 patients admitted from May 2023 to February 2025 were selected and randomly divided into control group and experimental group. The control group received routine care, and the experimental group received nutritional risk screening and targeted care on this basis. Rehabilitation indicators and complication rates were compared between the two groups. *Results:* The experimental group's rehabilitation indicators improved more obviously, the incidence of complications was lower, and the difference between the groups was significant ($p < 0.05$). *Conclusion:* Nursing intervention under nutritional risk screening can effectively promote patient recovery and reduce the incidence of complications, and has clinical promotion value.

Keywords: Nutritional risk screening; Primary breast cancer; Complication rate

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1. Introduction

Primary breast cancer is a common malignant tumor in women, and its incidence continues to rise around the world, seriously damaging women's lives and health. With the advancement of treatment technology, the survival probability of breast cancer patients has been significantly improved, but the recovery and complication management during treatment still face many challenges. Nutritional risks are one of the common problems for breast cancer patients. It not only affects the patient's treatment effect, but may also lead to further aggravation of complications and delay recovery progress. Screening breast cancer patients for nutritional risks and implementing targeted nursing interventions based on the screening conditions are of great significance to helping patients recover and reducing the occurrence of complications^[1,2]. This study wanted to explore the effect of nursing intervention in nutritional risk screening on the recovery and complications of primary breast cancer patients.

2. Materials and methods

2.1. Basic information

This study selected 102 patients with primary breast cancer admitted to our hospital from May 2023 to February 2025, and divided them into an observation group and a control group through the random number table method, with 51 cases in each group. The age range of the observation group was 45 to 70 years old, with an average age of (59.11 ± 2.34) years; the age range of the control group was 46 to 71 years old, with an average age of (60.33 ± 2.58) years. Statistical analysis was performed on the general information of the two groups of patients, and the results showed that there was no statistically significant difference between the groups ($p > 0.05$) and they were comparable.

2.1.1. Inclusion criteria

Patients diagnosed with primary breast cancer by histopathology, adults aged 18 years and above, patients with nutritional risks assessed using nutritional risk screening tools (such as NRS-2002), patients and their families are fully aware of the research content, and sign an informed consent form after participating voluntarily.

2.1.2. Exclusion criteria

Patients with other serious illnesses that may affect the results of the study, patients with mental disorders or unable to cooperate in completing the research tasks, patients who have recently undergone systemic nutritional intervention (for example, within 3 months), and patients who plan to use non-surgical treatments (such as radiotherapy, chemotherapy, etc.) instead of surgery.

2.2. Method

2.2.1. Control group: Routine care

Admission care: We warmly welcome patients, select comfortable wards for patients, introduce the environment, rules and regulations of the hospital and departments, as well as the doctors in charge and responsible nurses to patients, help patients adapt to the hospitalization environment as soon as possible and eliminate the unfamiliarity with the environment.

(1) Psychological care

After patients are diagnosed with breast cancer, they often develop negative moods such as anxiety, fear, and depression. Nursing staff need to actively talk to the patients to let the patients understand that active treatment of early-stage breast cancer can achieve better results, increase their confidence in defeating the disease, and recommend that the patient's family members give more care and support to the patient and create a good family style.

(2) Observation of condition

Quickly detect and deal with abnormal incidents, observe the incision carefully after surgery, and keep the incision dressing clean and dry.

(3) Postoperative basic care

Help patients adopt appropriate postures, encourage patients to get out of bed and move early, promote the recovery of gastrointestinal function, prevent thrombosis in the deep veins of the lower limbs, guide patients to perform functional exercises of the affected limb, steadily increase the amount and range of activity, and prevent edema and joint stiffness in the affected limb.

(4) Dietary care

The patient's gastrointestinal function has not been completely restored. Give him a liquid or semi-liquid meal, such as rice soup, rice porridge, noodles, etc., and gradually transition to a normal diet. The diet adopts a high-protein, high-calorie, high-vitamin, low-fat model. Patients are encouraged to eat more milk, eggs, lean meat, fish, vegetables, fruits and other foods to maintain a balanced level of nutrition.

(5) Medication care

Adhere to the patient's medication according to the doctor's instructions, and carefully observe the therapeutic effects and adverse phenomena of the medication. For example, patients undergoing chemotherapy need to pay close attention to adverse reactions such as nausea, vomiting, hair loss, and bone marrow suppression, and take appropriate treatment measures in a timely manner.

(6) Discharge instructions

Explain in detail to the patient and his or her family the important points to note after discharge, such as diet, rest time, frequency of medication, functional training activities for the affected limb, regular review, etc. The patient is instructed not to let the affected upper limb bear weight within 1 month after surgery, to avoid lifting heavy objects, and to prevent edema in the affected limb. Patients are guided to go to the hospital for regular review. Most reviews are conducted 1 to 3 months after surgery, and every six months thereafter to detect signs of recurrence or metastasis in a timely manner.

2.2.2. On the basis of routine care, patients in the observation group received nursing intervention based on nutritional risk screening.

The details are as follows:

(1) Nutritional risk screening

Within 48 hours from the patient's admission, professionally trained nurses will use the Nutritional Risk Screening Scale (NRS2002) to assess the patient's nutritional risk and determine the presence of nutritional risk. A score lower than 3 points will be determined as no nutritional risk. Based on the results of the screening, the patients will be divided into nutritional risk groups and non-nutritional risk groups in order to develop targeted nutritional intervention methods.

(2) Nutritional interventions

Patients without nutritional risk: implement regular dietary guidance measures, highlight the balance and diversity of diet, ensure adequate intake of calories, protein, vitamins and minerals, encourage patients to eat more foods with high-quality protein, such as eggs, milk, lean meat, various fish, etc., and eat fresh vegetables and fruits. The patient's nutritional status is assessed regularly, and the patient's weight is measured once a week to check the dynamic changes in weight.

(3) Patients with nutritional risks

Develop an individual nutrition support plan, and set targeted intervention measures through a comprehensive analysis of the patient's nutritional status, body metabolism level, disease development stage, and personal dietary preferences. Diet adjustments focus on the diversity of food selection and nutritional balance, and provide patients with meals that contain high-quality protein, vitamins, minerals, and are low in fat and sugar, and are also based on the patient's taste and the performance of digestive ability, and flexibly adjust the meal size and frequency of meals; enteral nutrition support is aimed at patients who cannot meet their nutritional needs through oral intake. Appropriate enteral nutrition preparations are accurately selected, and methods such as nasogastric feeding and gastrointestinal fistula are used to ensure that nutrients can reach the gastrointestinal smoothly and efficiently, thereby assisting patients to maintain a good nutritional status and providing sufficient energy and material support for physical recovery.

(4) Diet adjustment

Cooperate with a nutritionist to formulate an exclusive diet plan based on the patient's age, weight, condition, eating habits, etc., increase the protein and calorie intake in the diet, and add high-protein and high-calorie snacks between meals, such as milk, yogurt, protein powder, nuts, fruit salad, etc., taking into account the taste and cooking methods of the food to arouse the patient's appetite.

(5) Enteral nutrition support

For patients who still cannot meet their nutritional needs after dietary adjustment, enteral nutrition support is used.

Appropriate enteral nutrition preparations are selected, such as whole protein type and short peptide type enteral nutrition preparations. The use of nutritional preparations is determined according to the patient's condition and nutritional status. Enteral nutritional support can be implemented through oral administration, nasogastric tube or nasointestinal tube infusion according to the amount and infusion rate. During the infusion process, carefully observe whether the patient has adverse reactions such as nausea, vomiting, abdominal distension, diarrhea, etc., and adjust the infusion rate and concentration in a timely manner.

(6) Nutritional status monitoring

Evaluate the patient's nutritional status on a periodic basis. Measure weight, height, body mass index (BMI), serum albumin, prealbumin, hemoglobin and other indicators once a week to check whether there are any changes in nutritional status. According to the monitoring results, nutritional intervention measures can be adjusted in a timely manner.

(7) Health education

Explain the importance of nutritional support to patients and their families, popularize breast cancer-related nutrition knowledge for patients, including the principles of reasonable diet, nutritional risk screening methods, enteral nutrition support precautions, etc., and teach patients and their families how to identify the symptoms and signs of malnutrition, such as weight loss, lack of energy, not wanting to eat, etc. If any abnormalities are found, medical staff must be informed in time.

(8) Psychological support

Most patients with nutritional risks will develop anxiety, depression and other negative emotions due to worries about disease and nutritional status. These emotions will further interfere with the patient's appetite and nutritional intake. Nursing staff should strengthen communication with the patient, understand their psychological state, provide psychological care and comfort, assist the patient to create a positive mood, and cooperate with nutritional intervention methods.

2.3. Observation indicators

(1) Shoulder joint range of motion

Abduction, posterior extension, forward flexion, and adduction.

(2) Complication rates

Subcutaneous fluid accumulation, edema of the upper limbs, and infection.

2.4. Statistical methods

This study used SPSS 20.0 statistical software to process and analyze the collected data. For measurement data, it is described in the form of mean \pm standard deviation ($\bar{x} \pm s$), and the differences between groups are statistically compared through the independent sample t test; for enumeration data, it is presented in the form of percentage (%), and the χ^2 test is used for comparative analysis of differences between groups. In all statistical tests, a p value less than 0.05 was used as the criterion for judging that differences were statistically significant.

3. Results

3.1. Comparison of rehabilitation indicators among 12 groups of patients

The performance of the experimental group in rehabilitation indicators was significantly better than that of the control group ($p < 0.05$). The specific data are shown in **Table 1**.

Table 1. Comparison of rehabilitation indicators before and after nursing (n = 51, $\bar{x} \pm s$)

Group	Outreach	Reach	Bend forward	Adduction
Experimental group	142.63 \pm 10.22	43.61 \pm 8.33	146.63 \pm 5.74	39.57 \pm 2.34
Control group	104.68 \pm 11.52	37.14 \pm 9.25	118.45 \pm 8.68	31.14 \pm 5.33
<i>t</i>	17.598	3.711	19.338	10.342
<i>p</i>	0.000	0.000	0.000	0.000

3.2. Comparison of complication rates

The incidence of complications in the experimental group was significantly lower than that in the control group ($p < 0.05$). Please see **Table 2** for detailed data.

Table 2. Comparison of the incidence of complications between the two groups of patients (%)

Group	n	Subcutaneous effusion	Edema of upper limbs	Infection	Complication
Experimental group	51	1 (1.96)	0 (0.00)	0 (0.00)	1 (1.96)
Control group	51	3 (5.88)	2 (3.92)	2 (3.92)	7 (13.73)
χ^2		1.040	2.040	2.040	4.883
<i>p</i>		0.307	0.153	0.153	0.027

4. Discussion

Primary breast cancer ranks first among female malignant tumors in the world, and its diagnosis and treatment process involves various methods such as radical surgery, radiotherapy, chemotherapy, endocrine therapy, and targeted therapy. Various intervention measures have impacted the patient's body homeostasis in multiple dimensions. When the patient is under malnutrition, the patient's lymphocyte counts decreases, and the neutrophil chemotaxis and phagocytosis efficiency weakens, resulting in a sharp increase in the incidence of complications such as postoperative incision infection and lung infection. The imbalance of colloid osmotic pressure caused by hypoalbuminemia will cause tissue edema, delayed incision recovery, prolonged hospitalization, and increased consumption of medical resources. Building a precise nutritional management system has become a key step to strengthen the effectiveness of comprehensive treatment for breast cancer patients and improve clinical prognosis^[3,4].

Nursing interventions related to nutritional risk screening are based on the characteristics of primary breast cancer patients, using scientific assessment methods to evaluate patients' nutritional status, and integrating nutritional support into the entire treatment process. This nursing model overturns the "one-size-fits-all" dietary guidance approach in traditional nursing, and formulates a nutritional support plan that meets the needs of patients with nutritional risks, from dietary modification to enteral nutrition supplementation, to fully meet the nutritional needs of patients; for patients without nutritional risk, Pay attention to maintaining and strengthening their nutritional levels, reflecting the precise control and targeted implementation of nursing care. Regular monitoring of nutritional indicators and nutritional knowledge explanations are used to strengthen patients and their families' awareness of the importance of nutrition, create good nutritional management awareness, and improve rehabilitation effects^[5,6].

The results of this study show that from the perspective of nursing effects, the nursing intervention model corresponding to nutritional risk screening has built a scientific and accurate support system for the recovery process of primary breast cancer patients, reflecting obvious clinical significance. As far as postoperative rehabilitation is concerned,

this intervention model takes evidence-based medicine as the basis, uses dynamic assessment of patients' nutritional needs and implements targeted nutritional support programs, effectively improving the body's metabolic level [7,8]. Providing adequate protein, heat and trace element supplements can provide material conditions for tissue repair, accelerate the pace of postoperative protein anabolism, and help accelerate the accumulation of collagen at the incision, thereby shortening the healing time of the incision and reducing the risk of delayed or even non-healing of the incision caused by malnutrition. Appropriate nutritional supplements can enhance the patient's physical reserves and help patients start postoperative rehabilitation exercises earlier, thereby shortening the recovery time of gastrointestinal function and reducing the length of time the patient is bedridden. Ultimately, the hospitalization period is significantly shortened, and the efficiency of medical resource utilization is effectively improved. In the field of prevention and control of complications, nursing intervention based on nutritional risk screening improves patients' nutritional status and fundamentally enhances the body's immune defense capabilities. Malnutrition is often accompanied by problems such as decreased immune cell activity and decreased immunoglobulin synthesis. Precise nutritional support can effectively correct such immune deficiencies, optimize the functional level of immune cells such as neutrophils and lymphocytes, and improve the body's ability to resist pathogens. In clinical diagnosis and treatment practice, this intervention model has significantly reduced the probability of common complications such as postoperative incision infection and lung infection. It not only alleviates the patient's pain caused by complications, but also prevents the double physical and psychological pain caused by secondary treatment due to complications, and provides a solid backing for the patient's smooth recovery. It is particularly worth emphasizing that the nursing intervention during nutritional risk screening breaks through the limitations of simple physical support and fully integrates psychological care. The dual pressure caused by cancer diagnosis and nutritional problems can easily cause patients to develop negative emotions such as anxiety and depression, and these emotions can affect gastrointestinal function and appetite through neuro-endocrine pathways, causing a vicious cycle. The nursing team relies on continuous psychological guidance, nutrition knowledge transfer and personalized care to guide patients to establish a correct understanding of disease and nutritional management and alleviate their psychological stress state. This intervention strategy that combines physiology and psychology creates a positive rehabilitation aura for patients, promotes stable control of the neuroendocrine system, further promotes the efficiency of nutrient absorption and utilization, achieves a dual vision of physical and psychological rehabilitation, and lays an important foundation for improving patients' quality of life and long-term prognosis.

In summary, nursing intervention under nutritional risk screening can effectively improve patient recovery indicators and reduce the incidence of complications. The effect is ideal and is worthy of widespread clinical promotion.

Disclosure statement

The authors declare no conflict of interest.

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