

Comprehensive Nursing can Relieve the Negative Emotions of Patients undergoing Breast Cancer Resection and Reduce Postoperative Complications

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To explore the effect of comprehensive nursing on adverse emotions and postoperative complications of breast cancer patients undergoing mastectomy. Altogether 180 patients who received treatment in our hospital from May 2017 to May 2019 were selected as the research participants and divided into group A and group B. Among them, 100 cases in group A received comprehensive nursing, 80 cases in group B received routine nursing. The surgical indications, upper limb function, serum NGF, TK1 and CA15-3 expression level, VAS score, SAS, SDS score, quality of life SF-36 score were detected, and the incidence rate of postoperative complications and nursing quality score were compared. Compared with group B, group A had less postoperative bed time, intraoperative blood loss, length of hospital stay, better recovery of upper limb function, lower expression levels of serum NGF, TK1 and CA15-3, lower VAS score, SAS and SDS score, higher quality of life SF-36 score, lower incidence of postoperative complications and higher nursing quality score. Comprehensive nursing can relieve the negative emotions of patients undergoing breast cancer resection and reduce the incidence of postoperative complications.

Keywords: Comprehensive nursing, breast cancer resection, SAS, SDS, SF-36, NGF, TK1, CA15-3

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INTRODUCTION

breast cancer is a common tumor among women in most countries around the world, and is showing an upward trend in recent years^{1,2}. The occurrence of breast cancer is not only influenced by heredity, but also by the decrease of the age of menophania, the late age of first pregnancy, the decrease of the number of pregnancies, the absence of breastfeeding or the shortening of time. At the same time, the irregular diet and the resulting obesity, drinking, lack of exercise and the increase in hormone use will also lead to breast cancer^{3,4}. Breast cancer has strong metastasis and is easily

Surgical resection is one of the main methods to treat breast cancer¹¹. Many patients diagnosed with breast cancer have undergone various mastectomy operations. However, good nursing has a good

transferred to distant organs such as bone, liver, lung and brain, while the earlier treatment can reduce the risk of metastasis^{5,6}. Therefore, for breast cancer, early diagnosis and treatment are of vital importance to the progression and incidence reduction⁷. Chemotherapy is generally selected for the treatment of breast cancer [8]. However, many related studies have found that chemotherapy has little effect on the overall survival rate of patients, and even is easy to have adverse effects, resulting in tumor regeneration^{9,10}. Therefore, the choice of correct treatment for breast cancer is very important for the rehabilitation of patients.

effect on the recovery of patients after nursing^{12,13}. Comprehensive nursing is such a good set of flexible nursing methods that can be adjusted according to the changes of patients' conditions. Its

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strong comprehensiveness can comprehensively improve the negative psychological state of patients brought about by surgery, and at the same time regulate and control the patients from the aspects of their dietary habits. These are very helpful to the rehabilitation of patients^{14,15}. However, in recent years, there is not much about comprehensive care after breast cancer resection. Therefore, this study will explore the effect of comprehensive nursing on breast cancer patients after nursing from patients' anxiety and depression, postoperative complications and other indicators.

MATERIALS AND METHODS

General Data

Altogether 180 patients who received treatment in our hospital from May 2017 to May 2019 were selected as the research participants and divided into group A and group B. Group A (n=100) received comprehensive care while group B (n=80) received routine care. The patient's family members were informed of the study and signed a consent form. The study was approved by the Ethics Committee.

Inclusion and Exclusion Criteria

Inclusion criteria: patients underwent breast cancer resection in our hospital; patients aged over 18 years; patients had no contraindications related to surgery; patients had no communication and understanding obstacles; patients had normal mental health. Exclusion criteria: Pregnant or lactating women; patient's willingness was not strong; patients had communication barriers; patients had mental illness; patients have recently participated in or are currently participating in other clinical tests.

Method

Both groups of patients received breast cancer resection, but the nursing methods were different. Patients in group b were given routine care, the changes of vital signs and indexes of patients were detected, routine dietary guidance was given, and patients with mobility difficulties were assisted to recover from exercise. Meanwhile, the ward where the patients were located needed to be kept clean to make the patients had a clean environment, and patients were instructed to conduct regular re-examination when they were discharged from hospital. The patients in group A were given comprehensive care. The patient completed all examinations within 24 hours after admission. From the time the patient was admitted to hospital, the medical staff needed to make a detailed investigation and understand a series of personal related conditions of the patient, as well as the

cognition degree of the patient to breast cancer and related complications after resection, and make a nursing plan suitable for each patient according to the investigated conditions. When carrying out health education for patients, medical staff not only needed to send relevant health manuals to patients, but also needed to explain the relevant knowledge of breast to patients in detail, including how the disease occurs, how to carry out treatment, drug use, what to do if complications occur after surgery, and family nursing methods. Family members also needed to learn to contribute to nursing. Health education should be conducted once per week and 2h per time. At the same time, the number of health education should be adjusted according to the degree to which patients and their families have mastered relevant knowledge. At the same time, psychological nursing was carried out for patients. Medical staff should let patients know that negative emotions can easily worsen breast cancer. Psychological nursing should be carried out in an environment where interpersonal atmosphere and treatment are more harmonious, and patients should be given appropriate encouragement so as to establish their confidence to recover from surgery. Medical staff also needed to remind patients of some matters needing attention during surgery. For example, in health education, patients needed to be reminded to strictly abide by the instructions of medical staff during surgery, to use drug dosage strictly according to doctor's advice and not to stop drug casually. After the operation, the nursing staff should take out a period of time every day, about 10-15min/ day, to help the patient to carry out the rehabilitation exercise of the upper limb, and slowly carry out effective rehabilitation training on the hand, forearm, elbow, shoulder, upper arm and neck. At the same time, before, during and after the operation, the patients needed dietary guidance. The patients needed foods with light, balanced nutrition, high nutritional value, and needed to avoid drinking, smoking, greasiness, and acrimony. One day before discharge, the patients and their family members shall be given post-discharge nursing guidance, including how to take medicine, diet, exercise, and re-examination. After discharge, the patients and their family members were guided to master the basic essentials of family nursing and disinfection and isolation. After that, regular follow-up visits were conducted.

Detection Index

(1) Surgical indications

The surgical indications of the two groups of patients were detected and compared. These surgical indications included postoperative bed time, intraoperative blood loss and length of hospital stay.

(2) Upper limb function

At the time of admission and 30 days after nursing, the upper limb function of the affected side was observed. The test contents included flexion, extension, abduction and internal and external rotation. The high score was closely related to the better recovery of the patient's upper limbs.

(3) NGF, TK1 and CA15-3 in serum

At the time of admission, 5ml of fasting elbow venous blood of the patient was collected 30 days after nursing, placed in a test tube without anticoagulant, naturally agglutinated at room temperature for 20-30 min, centrifugated at 1500xg and at 4°C for 10min. The serum was then separated, placed at -20°C for testing. Serum nerve growth factor (NGF), serum thymidine kinase 1 (TK1) and carbohydrate antigen 15-3 (CA15-3) were determined by ELISA.

(4) VAS score

For the pain degree of the two groups of patients on admission and 14 days after nursing, the visual analogue scale (VAS) ¹⁶ scale was used to compare the pain degree of the two groups, ranging from 0 to 10 points. The high score was closely related to the higher pain degree.

(5) Mental health

The mental health level of the two groups of patients at admission and after 30 days of nursing was evaluated and compared. Self-rating anxiety scale (SAS) ¹⁷ and self-rating depression scale (SDS) ¹⁸ were used as evaluation criteria. The patients with worse mental health level often had higher score.

(6) Quality of life

The quality of life of the two groups of patients after nursing was evaluated. The evaluation standard was SF-36 scale ¹⁹, and the high score was closely related to the better quality of life.

(7) Postoperative complications

The incidence of postoperative complications between the two groups was compared, including upper limb edema, upper limb movement limitation and incision infection.

(8) Nursing quality score

The nursing quality scores of the two groups were compared. The scoring standard was self-made by our hospital, with a score of 0-100. The items included nursing operation and nursing attitude. The high score was closely related to the better quality of nursing.

Statistical Methods

SPSS 19.0 (Asia Analytics Formerly SPSS, China) was applied for data analysis. X² test was applied for counting data. The measurement data were represented by $\bar{X} \pm S$ and analyzed by t test. When $P < 0.05$, the difference was evident and had statistical significance.

RESULTS**General Data**

The general data of the two groups of patients, including average age, BMI, residential area, obesity, family type, employment and pathological classification were not significantly different ($P > 0.05$), see Table 1 for details.

Table 1.
General data of two groups of patients

Classification	Group A (n=100)	Group B (n=80)	t/X ²	P
Average age (years)	49.93±9.74	50.12±9.57	0.13	0.896
BMI	24.32±2.54	24.27±2.37	0.14	0.893
Obesity			0.50	0.480
Yes	81 (81.00)	68 (85.00)		
No	19 (19.00)	12 (15.00)		
Residence			0.07	0.789
Rural	47 (47.00)	36 (45.00)		
Urban	53 (53.00)	44 (55.00)		
Family type			0.01	0.903

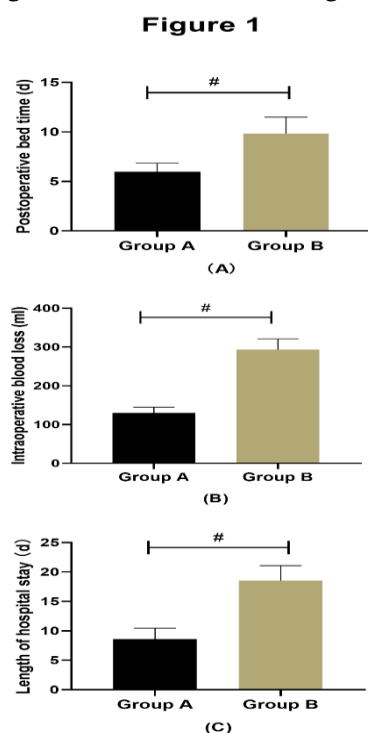
Core family		78 (78.00)	63 (78.75)		
Other		22 (22.00)	17 (21.25)		
Occupation				0.41	0.521
Yes		76 (76.00)	64 (80.00)		
No		24 (24.00)	16 (20.00)		
Pathological typing				3.67	0.160
Catheter cancer		25 (25.00)	22 (27.50)		
Invasive ductal carcinoma		60 (60.00)	38 (47.50)		
Invasive lobular carcinoma		15 (15.00)	20 (25.00)		

Indications of Group A were Higher than Group B

The postoperative bed time, intraoperative blood loss and length of hospital stay of the two groups were detected and compared. The results

showed that the bed time, intraoperative blood loss and length of hospital stay in group A were less than those in group B ($P < 0.05$). See Figure 1 for details.

Figure 1.
Various surgical indications of two groups of patients



(A) Postoperative bed time: the postoperative bed time of group A was less than that of group B ($P < 0.05$).

(B) Intraoperative blood loss: The intraoperative blood loss in group A was less than that in group B ($P < 0.05$).

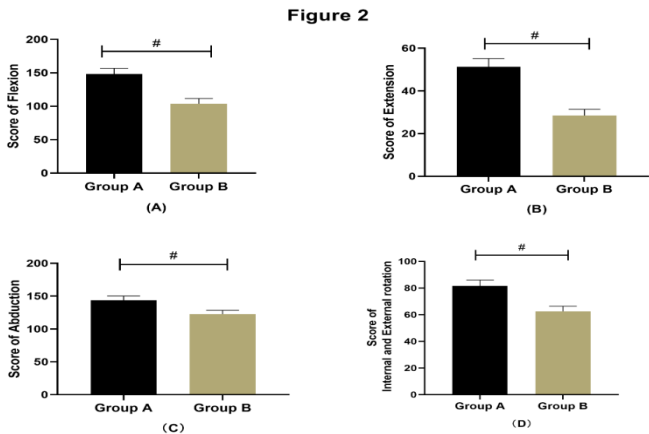
(C) Length of stay: Group A was shorter than group B ($P < 0.05$). Note: # means compared with group B, $P < 0.05$.

Upper Limb Function Recovery in Group A was Better than that in Group B

Statistics and comparisons were made between the two groups in upper limb function, including flexion, extension, abduction and internal and

external rotation. The results showed that the scores of flexion, extension, abduction and internal and external rotation in group A were higher than those in group B ($P<0.05$). See Figure 2 for details.

Figure 2.
 Upper limb function scores of two groups of patients



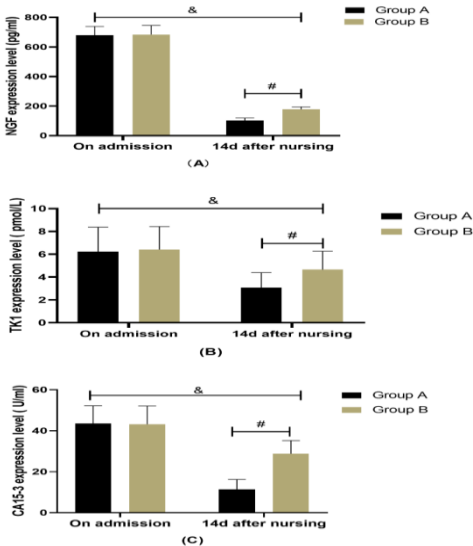
- (A) Flexion score: The flexion score of group A was higher than that of group B ($P<0.05$).
- (B) Extension score: The extension score of group A was higher than that of group B ($P<0.05$).
- (C) Abduction score: The score of group A was higher than that of group B ($P<0.05$).
- (D) Internal and external rotation score: The score of internal and external rotation in group A was higher than that in group B ($P<0.05$). Note: # means compared with group B, $P<0.05$.

The Expression Levels of NGE, TK1 and CA15-3 in Serum of Group A were Lower than that of Group B

The expression levels of NGE, TK1 and CA15-3 in the two groups of patients at the time of admission and 30 days after nursing were detected and compared. The results showed that there was

no difference in those levels between the two groups at admission ($P>0.05$). After 30 days of nursing, the expression levels in each group decreased, while the expression levels in group A were lower than that in group B ($P<0.05$). See Figure 3 for details.

Figure 3 Expression levels of NGE, TK1 and CA15-3 in two groups of patients



- (A) Expression level of NGF: Expression level of NGF in group A was significantly lower than that in group B 14 days after nursing ($P < 0.05$);
- (B) TK1 expression level: TK1 expression level in group A was significantly lower than that in group B 14 days after nursing ($P < 0.05$);
- (C) Expression level of CA15-3: Expression level of CA15-3 in group A was significantly lower than that in group B 14 days after nursing ($P < 0.05$). Note: & indicates compared with before operation, $P < 0.05$, # indicates compared with after operation, $P < 0.05$.

The VAS Score of Group A was lower than that of Group B

After investigating the VAS scores of the two groups of patients on admission and 14 days after nursing, it was found that the VAS scores of the two groups of patients had no difference before

surgery, and the scores of the two groups of patients decreased 14 days after nursing. The VAS scores of group A after nursing were significantly lower than those of group B ($P < 0.05$). Details are shown in Table 2.

Table 2.
VAS score of two groups of patients (Points)

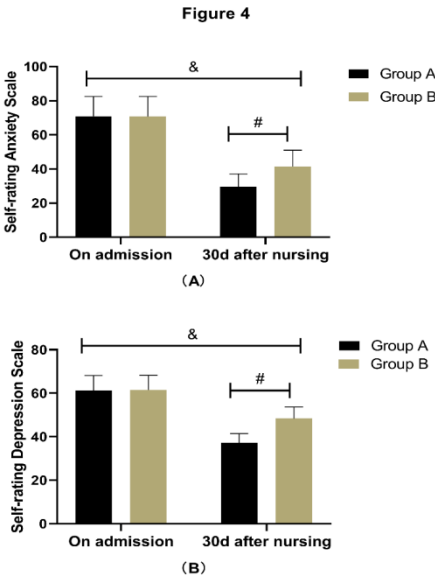
Classification	Group A (n=100)	Group B (n=80)	t	P
On admission	5.49±1.21	5.67±1.07	1.04	0.298
14 days after nursing	2.03±0.31	3.57±0.65	20.91	<0.001
t	27.70	15.00		
P	<0.001	<0.001		

Mental Health of Group A was Better than that of Group B

The SAS and SDS scores of the two groups at the time of admission and 30 days after nursing were counted and compared. The results showed that there was no difference in the score level

between the two groups at the time of admission ($P > 0.05$). After 30 days of nursing, the score of the patients in each group decreased, and the score in group A was lower than that in group B ($P < 0.05$). See Figure 4 for details.

Figure 4.
Mental health level of two groups of patients:



(A) SAS score: SAS score of group A was 4239

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significantly lower than that of group B 14 days after operation ($P < 0.05$);

(B) SDS score: SDS score in group A was significantly lower than that in group B 14 days after operation ($P < 0.05$). Note: & indicates compared with before operation, $P < 0.05$, # indicates compared with group B, $P < 0.05$.

The Quality of Life in Group A was Better than that in Group B

Comparing the SF-36 scores of the two groups of patients, the postoperative SF-36 scores of patients in group A were higher than those in group B, indicating that the quality of life recovery in group A was significantly better than that in group B ($P < 0.05$). Details are shown in Table 3.

Table 3.

Quality of life of two groups of patients (Points)

Classification	Group A (n=100)	Group B (n=100)	t	P
Physiological function	77.67±6.55	70.55±5.32	7.87	<0.001
Psychological function	75.43±4.62	68.73±4.21	10.05	<0.001
Social function	80.85±10.78	72.56±7.45	5.85	<0.001
Emotional function	79.49±5.76	70.32±4.44	11.72	<0.001

The Incidence of Postoperative Complications in Group A was Lower than that in Group B

After investigating the incidence of postoperative complications of the two groups of patients, it was found that the incidence of postoperative complications in group A was significantly lower than that in group B ($P < 0.05$). See Table 4 for details.

Table 4.

Incidence of complications in two groups of patients

Classification	Group A (n=100)	Group B (n=80)	X ²	P
Upper limb edema	0 (0.00)	2 (2.50)	-	-
Upper limb movement restriction	0 (0.00)	2 (2.50)	-	-
Incision infection	4 (0.00)	6 (7.50)	-	-
Incidence of adverse reactions (%)	4 (4.00)	10 (12.50)	4.48	0.034

The Nursing Quality Score of Group A was Lower than that of Group B

After comparing the nursing quality scores of the two groups of patients, it was found that the nursing operation and nursing attitude scores of patients in group A were significantly higher than those in group B ($P < 0.05$). Details are shown in Table 5.

Table 5.
Nursing quality score of two groups of patients (Points)

Classification	Group A (n=100)	Group B (n=80)	t	P
Nursing operation	88.93±5.57	80.40±4.02	11.51	<0.001
Nursing attitude	93.37±4.81	79.32±3.75	21.43	<0.001

DISCUSSION

Upper limb pain is one of the common consequences after breast cancer surgery, which can last for a long time during the postoperative rehabilitation period and lead to a decline in quality of life²⁰. The causes of pain breast cancer resection surgery may be that the surgery destroyed lymph nodes and lymphatic drainage channels, resulting in accumulation of lymph fluid in its limbs, resulting in edema, sensitivity damage of upper limbs, and ultimately damage to the function of the upper limbs of patients. The strength of upper limbs decreased, thus leading a decrease of the range of motion. The pain caused by these swelling often lead to the reduction of the mobility of shoulders and arms. Even if the level of surgery has improved significantly nowadays, the probability of occurrence of this situation and other related complications is still high²¹⁻²³. Therefore, postoperative care is needed to relieve the pain caused by breast cancer and improve the movement state of upper limbs²⁴. In this study, the comprehensive nursing group conducted effective upper limb recovery training for patients. At the same time, health education also enables patients to avoid the pain caused by some mistakes during surgery. In contrast, the routine nursing in this experiment failed to make effective training on the improvement of patients' limb function, and health education was only limited to the distribution of manuals, and the comprehensive training group was more effective than the routine group. Therefore, this can explain why the VAS score of group A patients using comprehensive care decreased faster, the score of limb recovery function was higher, and the postoperative complications were lower than group B patients using routine care. It could also be concluded that comprehensive nursing could effectively relieve the postoperative complications of patients and was more effective on the recovery of the upper limbs.

At the same time, the related serum factors NGF, TK1 and CA15-3 of patients were also tested in this experiment. The results showed that the serum factors in group A decreased more obvious after operation. TK1 is an enzyme that plays a key role in DNA synthesis and cell proliferation. It is

highly expressed in breast cancer and is a prognostic factor for breast cancer²⁵. NGF is mainly considered as a regulator of neuronal function, which can stimulate the survival or growth of breast cancer cells through its proNGF, and can enhance the invasiveness of cells²⁶. CA15-3 is a common serological marker for breast cancer. The increase of this marker indicates that the cancer has further deteriorated, the cancer treatment is not ideal, and the sensitivity is poor²⁷. From here, we could conclude that if the level of these three factors reduced, the patient recovered better. This showed that comprehensive care was more helpful for patients to recover from cancer than routine care. According to the content of comprehensive nursing, as mentioned above, the health education of comprehensive nursing was more detailed than before, so the operation of patients was more smoothly. At the same time, combined with the anxiety and depression scores of this experiment, the SAS and SDS scores of group A patients after operation were lower. In this study, group A applied psychological counseling to the patients. Studies have found that psychological counseling can not only reduce anxiety and depression of breast cancer patients, but also improve sleep quality of patients and relieve postoperative pain and fatigue²⁸. A similar study on psychological intervention for breast cancer found that psychological counseling had a beneficial impact on some psychological outcomes, especially anxiety and depression²⁹. And comprehensive nursing was more effective than psychological intervention, which included psychological counseling, actual recovery training, and better health education. After the patient accepted this nursing, the patients were more confident, so the bad mood decreased. The reduction of bad mood also indicated better recovery, more reduction of serum markers related to surgery, better recovery of upper limbs and faster reduction of complications. Compared with the previous psychological intervention, this study also studied the postoperative quality of life of patients. The results showed that group A patients had higher SF-36 score. Analyzing the improvement and recovery of previous psychological unhealthy emotions and the reduction of complications, we found that comprehensive nursing could

effectively improve these conditions, so patients could live more comfortably. The results of nursing quality in the two groups were compared in this experiment. The nursing operation and attitude of patients in group A were higher than those in group B, indicating that comprehensive care is better. However, this result is only from the point of view of medical staff, and there is no investigation on the attitude of patients. As this is very helpful to the improvement of the nursing plan, it is needed attention in future research. At the same time, in future research, we can also monitor some targeted molecules of patients, and the influence of nursing on targeted molecules is also a good research direction.

To sum up, comprehensive nursing can effectively relieve the adverse emotions of breast cancer patients after breast cancer resection, and reduce the occurrence of postoperative complications while improving upper limb function, which is worthy of clinical promotion.

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