A Psychological Nursing Intervention for Patients with Breast Cancer on Inflammatory Factors, Negative Emotions and Quality of Life

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Abstract

Background: We aimed to evaluate the effect of a psychological nursing intervention on inflammatory factors, negative emotions and quality of life in patients with breast cancer.

Methods: Patients at the Cancer Hospital of China Medical University from January 2017 to January 2020 were stratified into two groups based on the way of nursing. Patients in the control group received routine care, and the experimental group received appropriate psychological care interventions in addition to routine care. We compared the inflammatory factors (interleukin-6 (IL-6) and C reactive protein (CRP)), negative emotions **(**self-rating depression scale (SDS) and self-rating anxiety scale (SAS)) and quality of Life (short form-36 survey (SF-36)) between two groups.

Results: A total of 226 patients with breast cancer were enrolled in this study. Before the intervention, the CRP, IL-6, SAS and SDS between two groups were not significantly different (t=0.205, 0.971, 0.590, 1.579; P=0.838, 0.332, 0.556, 0.116). After the intervention, the CRP, IL-6, SAS and SDS between two groups were decreased and significantly different (t=-17.648, -18.079,-18.267,-18.613; $P<0.05$)

Besides, the social function , physiological function, mental health, physical pain, physical limitation, vitality, emotional functions and overall health were improved and significantly different between two groups after intervention ($P<0.05$).

Conclusion: A psychological nursing Intervention has the beneficial effect on the inflammatory factors, negative emotions and quality of life in patients with breast cancer.

Keywords: Breast cancer; Psychology; Nursing; Inflammatory factors; Anxiety; Depression

Introduction

Breast cancer is one of the most common cancer type among females worldwide, as 1 in 8 women will be diagnosed with the disease in their lifetime (1-3). Having breast cancer or receiving treatment has been seen as a traumatic experience to women due to its impacts on their self-image and sex-ual relationship, so most of the breast cancer patients have psychological reactions such as experience fatigue (4), depression (5), and/or anxiety (6) months to years after their breast cancer diagnosis with these symptoms being associated with greater disability and a poorer quality of life (7).

Recently, psychological intervention is gradually applied in clinical oncology. It can improve decrease the level of inflammatory factors, relieve patients' depression symptoms and increase social support. In addition, psychological intervention can improve patients' cognitive ability, stress coping ability and adaptability, mobilize enthusiasm, and tap the potential of rehabilitation. Therefore, psychological intervention is of great significance to improve the quality of life and survival rate of patients. Psychological intervention nursing is a model that integrates holistic nursing into rehabilitation. It is completed by nurses in the department.

We explored the effect of psychological intervention nursing on anxiety, depression and other negative emotions and quality of life in patients after breast cancer surgery. It can help improve the postoperative status in patients with breast cancer. Thus, our study was to explore the effect of psychological nursing intervention for patients with breast cancer, providing a theoretical basis for postoperative nursing of breast cancer.

Methods

Patients
This study was a retrospective analysis. Patients who were diagnosed with breast cancer at the Cancer Hospital of China Medical University from January 2017 to January 2020 were included. The criteria of inclusion into the study were 1) age > 18 years; 2) diagnosis of breast cancer according to the breast guideline from the American Cancer Society (8). The exclusion criteria for the study were: 1) people with the intellectual and cognitive impairment (behavioral-cognitive intervention; 2) patients refused to participate in this study.

All participants provided written informed. This study was consistent with the Declaration of Helsinki, and was approved by our hospital Ethics Committee.

Psychological Nursing Intervention
Patients in the control group received routine care, and the psychological intervention group received appropriate psychological care interventions in addition to routine care. The contents of the psychological nursing intervention are listed as follows:

1) Nurse-patient communication: During the perioperative period, it is necessary to fully communicate with the patients, especially during the admission period, it is necessary to actively communicate with the patients in language, and to introduce the hospital environment, rules and regulations, ward patients and medical staff and other relevant conditions, so as to relieve their unfamiliar feeling and loneliness after admission as soon as possible. By communicating and grasping the patient's condition and evaluating their psychological state, we can understand the cause of the patient's negative emotions such as anxiety, and analyze and discuss with the patient. On this basis, we formulate a targeted psychological care plan. When providing various nursing services to patients, pay attention to the kindness and kindness of language and attitude and the gentleness and gentleness of actions, give patients full tolerance and care, and then relieve patients from the nursing staff, to build a harmonious and good nurse-patient relationship as soon as possible, and gain the understanding and trust of patients.

2) Cognitive intervention: Due to the lack of a comprehensive understanding of breast cancer resection, patients are prone to be anxious, worry, and fear. Therefore, it is necessary to strengthen individualized cognitive intervention, and to relieve the patient's ideological concerns by improving the patient's cognitive level of surgery and disease. We comprehensively and meticulously explain breast cancer and breast cancer resection to patients, combined with pictures, texts, videos, etc. This method helps patients to have a deeper understanding of disease knowledge and surgical effects, thereby improving their negative emotions and obtaining the active cooperation with the doctors.

3) Relaxation therapy: We instruct the patient to remain in a supine position and play soft music with a soothing rhythm, while the patient closes his eyes and rests. Maintaining physical and men-

tal relaxation, maintain uniform breathing would promote physical muscle and emotional relaxation;

4) Respecting personal privacy: When carrying out related nursing operations, nurses pay attention to use screens to block, and explain to the patient to obtain the understanding and cooperation, to fully respect the patient's personal privacy and meet the patient's psychological needs.

5) Family supporting: Nurses explain the knowledge of surgery and diseases to family members, so that they can clarify the importance of family care for improving the effect of patients' surgery, and guide family members to provide care and care for patients, so that patients feel respected and cared for, and further improve the patient's quality of life, therapeutic confidence and life confidence.

Observation indicators and efficacy criteria

1) Interleukin-6 (IL-6) and C reactive protein (CRP) levels before and after intervention. The normal range of serum IL-6 is 5.64-15.03 pg/dl, and the normal range of CRP is <5 mg/L.

2) The self-rating depression scale (SDS) and self-rating anxiety scale (SAS) were used to identify the patient's emotional state and a lower score indicated a better mood (9).

3) Short form-36 survey (SF-36) was used to assess the quality of life of the patients, and those with high scores indicated a high quality of life (10).

Statistical analysis

Data normality was assessed via the Kolmogorov-Smirnov test, with normally and non-normally distributed continuous values being given as means with standard deviations and medians with interquartile ranges (IQRs), respectively, whereas categorical data were given as numbers (frequencies). These three data types were compared via Student's t-tests, Mann-Whitney U tests, and chi-squared tests, respectively.

Results

Demographic characteristic of patients.

The baseline data including the age, BMI, education level, marital status, employment status, TNM stage between two groups were not significantly different ($P>0.05$) (Table 1).

Table 1: Characteristics of patients with breast cancer between two groups

Variable	Experimental group (n=113)	Control group (n=113)	t/χ^2	P value
Age (yr)	57.33±9.31	55.36±9.42	1.581	0.115
BMI (kg/m²)	23.31±2.41	23.35±2.37	0.126	0.900
Education level (%)			0.222	0.638
Below high school	25 (22.12)	28 (24.78)		
High school and above	88 (77.88)	85 (75.22)		
marital status (%)				
Married	69 (61.06)	72 (63.72)	0.170	0.680
Unmarried or divorced	44 (38.94)	41 (36.28)		
Employment status (%)				
employed	54 (47.79)	50 (44.25)	0.285	0.593
Not employed/retired	59 (52.12)	63 (55.75)		
TNM stage (%)			0.443	0.506
I	9 (7.96)	11 (9.73)		
II	46 (40.71)	49 (43.36)		
III	58 (51.33)	53 (46.90)		

All values are expressed as mean ± standard deviation or n (%) or medians with interquartile ranges.
[a]Statistically significant

The comparison of IL-6 and CRP between two groups

Before the intervention, the CRP and IL-6 between two groups were not significantly different (t=0.205, P=0.838; t=0.971, P=0.332). After the intervention, the CRP and IL-6 between two groups were decreased and significantly different (t=-17.648, P=0.000; t=-18.079, P=0.001) (Table 2).

Table 2: Characteristics of patients with breast cancer between two groups

Group	Time	CRP	IL-6
Experimental group	Before intervention	19.43±3.22	43.83±7.95
(n=113)	After intervention	5.13±2.28	19.10±3.59[a]
Control group	Before intervention	19.35±2.62	42.82±7.68
(n=113)	After intervention	10.39 ±2.20	28.33±4.07

The comparison of SAS and SDS between two groups

Before the intervention, the SAS and SDS between two groups were not significantly different (t=0.590, P=0.556; t=1.579, P=0.116). After the intervention, the SAS and SDS between two groups were decreased and significantly different (t=-18.267, P=0.001; t=-18.613, P=0.001) (Table 3).

Table 3: The comparison of SAS and SDS between two groups

Group	Time	SAS	SDS
Experimental group	Before intervention	67.33±5.48	65.17±4.93
(n=113)	After intervention	37.52±3.46	29.43±3.59
Control group	Before intervention	67.74±4.96	66.19±4.78
(n=113)	After intervention	45.88±3.42	38.16±3.46

The comparison of SF-36 indices between two groups

After the intervention, the social function, physiological function, mental health, physical pain, physical limitation, vitality, emotional functions and overall health were significantly different between two groups (P<0.05) (Table 4).

Table 4: The comparison of SF-36 indices between two groups

Group	Social function	Physiological function	Mental health	Physical pain
Experimental group (n=113)	87.33±3.43	84.83±5.18	88.47±4.93	90.43±7.88
Control group (n=113)	67.12±3.78	61.31±4.16	67.79±5.88	65.42±3.13
t	42.090	67.633	28.649	31.356
P	0.000	0.000	0.000	0.000
Group	Physical limitation	Vitality	Emotional functions	Overall health
Experimental group (n=113)	91.03±4.41	85.42±3.33	89.48±3.97	86.38±5.73
Control group (n=113)	68.13±3.17	65.37±3.48	71.32±4.33	67.94±4.39
t	44.821	44.250	32.861	21.156
P	0.000	0.000	0.000	0.000

Discussion

Our study found that there were beneficial effects of psychological nursing intervention in patients with breast cancer on inflammatory level, negative emotions (anxiety and depression) and quality of life. This is first study to evaluate comprehensively the effect of psychological nursing intervention in patients with breast cancer, which can provide a certain theoretical basis for the recovery of emotions and the improvement of quality of life after breast cancer surgery.

Depression and anxiety are frequent diagnoses following the diagnosis of breast cancer and efficient ways of detecting those patients who are in risk for psychological distress is vital (11-13). In the already burdened mental state after the diagnosis of breast cancer, they add to the difficulties due to both therapeutic methods such as mastectomy and chemotherapy, and a series of social and family problems that escalate this condition (14-16). Moreover, psychological distress (symptoms of depression and anxiety) has been associated with poorer physical function and high mortality risk (17). Approximately 38% of the breast cancer patients in the study were diagnosed with depression and 32% of them with anxiety based on PHQ2 (18) and GAD2 (19) questionnaires. The prevalence of depression and anxiety in patients with breast cancer of our study were similar of those in previous studies on psychiatric morbidity among breast cancer patients (20-22), although most of them are reporting more elevated symptoms of anxiety than depression. One possible explanation on that is that there are many methodological differences in the studies. In addition worth's to be mentioned that our subjects were more likely to experience anxiety and depression symptoms than other studies conducted in Greek cancer patients (23) and other countries as well (24). Mostly due to the fact that in the emotional burdens of the disease itself adds up the existing financial situation in Greece (25). In a recent study (26) the prevalence of depression and anxiety in breast cancer patients were 54.5%

and 46.8% respectively, similar finding were reported from other studies as well (27).

At present, the gradual progress in the field of medical technology and nursing has made the development of nursing work more and more concerned about how to improve the physical and mental health of patients. Psychological nursing intervention, along with clinical basic care, gradually becomes key to nursing work (28). The goals of psychological nursing intervention are to improve the patient's care environment, enhance the patient's understanding and grasp of the disease, reduce the patient's fear and tension related to the disease, enhance their self-confidence in the face of cancer, correct their incorrect perception, guide them to respond accurately, and eliminate their anxiety and depression (29). Therefore, it is indispensable to improve the negative emotions of patients with thyroid cancer by psychological nursing intervention.

However, there were some limitation in our study. A major limitation of our study is its retrospective design, which has the selective bias. Future studies in a prospective setting are warranted to explore the effect of psychological nursing Intervention for patients with breast Cancer on inflammatory factors, negative emotions and quality of life.

Conclusion

A psychological nursing Intervention has the beneficial effect on the inflammatory factors, negative emotions and quality of life in patients with breast cancer.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of interest

The authors declare that there is no conflict of interest.

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