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Impact of combining cognitive intervention and psychological care on the mental health of patients with benign breast tumors

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Abstract: To explore the effect of cognitive intervention combined with psychological nursing on the mental health of female patients undergoing surgery for benign breast tumors. From September 2023 to September 2024, 80 patients with benign breast tumors who underwent surgery in our hospital were selected as study subjects and randomly divided into a control group and a study group using a random number table, with 40 patients in each group. The control group received routine nursing, while the study group received cognitive intervention combined with psychological nursing on the basis of the control group. The mental status, coping styles, and illness uncertainty of the two groups were observed and compared. After nursing, the self-rating anxiety scale (SAS) and self-rating depression scale (SDS) scores of the study group were lower than those of the control group ($p < 0.05$). In terms of coping styles, the simplified coping style questionnaire (SCSQ) positive coping score of the study group was significantly higher than that of the control group ($p < 0.05$), while the negative coping score of the study group was significantly lower than that of the control group ($p < 0.05$). Additionally, in terms of illness uncertainty, the study group had lower scores than the control group on the Mishel Uncertainty in Illness Scale Adult (MUISA) for uncertainty, complexity, lack of information, and unpredictability ($p < 0.05$). Implementing cognitive intervention combined with psychological nursing for female patients undergoing surgery for benign breast tumors can significantly improve their mental health, reduce their uncertainty during treatment, and prompt them to actively cope with the disease. There are also some limitations in this study. Firstly, the sample size of the study is small; secondly, the patients included in this study were benign tumor patients, so the requirements of the intervention technique do not need to be very high, which may also affect the results of the experiment.

Keywords: benign breast tumor; cognitive intervention; psychological nursing; mental health status

1 Introduction

Breast cancer has become a global health challenge[1]. The incidence has risen dramatically in recent years, and the disease burden is increasing [2]. In China, breast cancer is also the highest incidence of cancer in women, with an incidence rate of 21.6/100,000, ranking sixth in cancer deaths, and with the change of lifestyle, the age of diagnosis of breast cancer is also gradually tends to be younger[3]. The diagnosis and treatment of breast cancer bring a series of negative emotional reactions to patients, which may affect the quality of life of cancer patients [4]. Currently, surgery,

chemotherapy, radiotherapy, targeted therapy and immunotherapy are the main means of treatment for breast cancer. Although targeted therapy and immunotherapy have become the favorites of cancer treatment in the new era, surgery and chemotherapy are still the most important ways of breast cancer treatment. Especially for patients who have undergone radical mastectomy, they will have low self-esteem due to the change of their own image, resulting in excessive mental pressure, in addition to the long cycle of chemotherapy and the high side effects of drugs will cause great physical and mental damage to patients with breast cancer. Due to the high heterogeneity of breast cancer, the individualized treatment of this disease has received increasing attention. During breast cancer treatment, about one third of women experience substantial psychological distress, mainly depression and anxiety[5,6], which can persist for several years [7–9]. These psychological disorders can increase the burden of symptoms and seriously affect health-related quality of life [10]. Cancer-related fatigue is another important symptom that interferes with usual functioning[11,12]. Up to 90% of women with breast cancer experience fatigue during chemotherapy [13] that may endure for several year[14,15]. Sleep disturbances are highly prevalent among women with breast cancer before surgery, during subsequent chemotherapy [16] and during antihormonal treatment [17].

Cancer patients will be in a state of high pressure and negative emotions for a long time due to physiological pain and uncertainty about the disease, which is not only detrimental to the treatment and recovery of the disease, but also accelerates the deterioration and metastasis of the tumor and reduces the quality of life of the patients. Therefore, in the process of breast cancer treatment, medical personnel should understand the psychological activities of patients in time, do a good job in psychological care, and improve the psychological problems of patients from different perspectives to improve their quality of life.

Although the incidence rate and mortality of breast cancer are high, most palpable breast masses and lesions are benign, and most female patients with breast discomfort are diagnosed with benign breast disease (BBD) [18]. Therefore, BBD is a common disease characterized by changes in breast tissue, including several histological subtypes. Unlike cancer, BBD is non-malignant and does not pose a threat to life. However, in some cases, BBD may develop into breast cancer [19]. The existing reports on the mental health issues of BBD women have confirmed that BBD women experience high levels of psychological distress before, during, and even after the diagnostic process[20,21]. The severe psychological distress of BBD women mentioned earlier in 17–19 is partly due to the uncertainty of prognosis and the high risk of further development of breast cancer [22]. Although the progress of medical treatment nowadays has improved the survival rate of cancer patients, patients still face huge economic losses and disease burdens. Diagnosis and treatment of breast cancer bring patients not only physical pain but also mental and psychological pain, and the aggravation of the disease burden has a long-term impact on patients' mental health. At the same time, psychological distress and negative emotions can cause serious damage to the quality of life, not only in the treatment phase but also in the post-treatment phase. For this reason, the quality of life of this group of people has gradually received attention from society. The treatment for breast cancer patients is

comprehensive, mainly adopting surgery as the main treatment, supplemented by radiotherapy, chemotherapy and endocrine therapy, etc. It is a kind of psychosomatic disease integrating physiological-psychological-social environment patterns, and its diagnosis and treatment process bring great challenges to the patients' psychosomatic health. Since surgery changes the original breast shape, patients need to overcome psychological pressure before surgery, and the surgery is traumatic, which has a serious impact on the appearance of the breast and life after surgery, i.e., surgery destroys the autoimmune function and self-image, and reduces the quality of life of patients, and radiotherapy causes side effects such as nausea and vomiting, hair loss and fatigue, etc., which lead to fear and pessimism of the patients in the process of the disease and negative emotions for the patients' lives. These will lead to negative emotions such as fear and pessimism, which will pose a great threat to the quality of life of patients [23]. Although benign breast tumors are less harmful, they can still cause different degrees of pain, affecting patients' physical and psychological health. Physical and psychological health, and need active treatment. Although traditional surgical methods can completely remove the lesion, they are more traumatic and prone to scarring, which affects aesthetics. If the lesion cannot be completely removed, it will increase the probability of recurrence. With the development and advancement of medical technology, minimally invasive rotational excision has been introduced into the clinic, which effectively solves the drawbacks existing in the traditional surgical methods and is widely used in the treatment of benign breast tumors. Due to the lack of surgical and disease awareness, patients are prone to different degrees of negative emotions during the treatment process, which not only affects the patient's surgical cooperation but also has an impact on the vegetative nervous system, leading to intraoperative hemodynamic fluctuations and decreasing the safety of the surgery.

Disease uncertainty, defined as the inability to attribute meaning to events related to the disease, occurs when the disease causes relevant stimuli, and patients attribute and perceive the composition of the stimuli and their meaning [24]. Uncertainty about cancer-related symptoms, symptom management, diagnosis, prognosis, and treatment all contribute to reports of worse quality of life [25,26]. A longitudinal study explored uncertainty and anxiety and predictors of uncertainty in women with suspected breast cancer. The study collected data on participants' uncertainty (Disease Uncertainty Scale) and anxiety (State Anxiety Scale) at three time periods: after breast biopsy notification, before biopsy, and after diagnosis. Results showed significantly higher levels for uncertainty and anxiety pre-diagnosis than post-diagnosis. Uncertainty and anxiety were significantly lower in participants diagnosed with benign tumors than in those diagnosed with malignant tumors at the 3 data collection times. Uncertainty and anxiety were moderately positively correlated. Nursing professionals should be aware of changes in uncertainty and anxiety and the impact of personal attributes on women with suspected breast cancer during the diagnosis period and provide nursing programs to reduce their psychological distress [27]. The researchers comprehensively compared couples' adaptations at the time of diagnosis of benign (73 pairs) and malignant (58 pairs) breast disease, as well as at the time of two follow-up assessments at 60 days and 1 year. Significant differences in resources, assessment and adaptation patterns were found between couples in the benign and malignant groups. Couples

facing breast cancer had greater declines in marital and family functioning, more uncertain evaluations of the disease, and more disease-related adjustment problems. The benign group, on the other hand, had similar problems. Couples who reported high levels of distress or more role problems were likely to remain highly distressed 60 days and 1 year later. The findings suggest that it is important to help not only the patient but also the couple cope with adjustment difficulties associated with benign or malignant symptoms [28]. The consequence of uncertainty about one's illness might include decisional regret about a treatment plan and rumination, both of which can cause significant psychological distress [29]. For example, higher uncertainty has been associated with fewer self-care behaviors for current patients [30] and with worse mood and more thoughts about recurrence for former patients. In addition to symptom uncertainty, the burden of physical symptoms also contributes to worse psychological adjustment. Patients with higher levels of symptom burden also report higher levels of symptom uncertainty, highlighting the relationship between uncertainty and adjustment described above [31]. Thus, improvement of uncertainty and psychological symptoms of the disease is a crucial part of the process and contributes to faster recovery. The Stress and Coping Theory Model states that individuals who face stress, frustration, and stressful events from specific events will adopt certain coping styles to reduce or alleviate such stress [32]. The stress correlation model views coping as a dynamic process in which an individual deals with the actions he or she takes to alleviate pain and stress, often in a variety of ways and means [33]. Positive coping refers to individuals actively seeking treatment and actively participating in disease decision-making and related self-management behaviors, while negative coping refers to individuals who are unwilling to seek treatment, are indifferent to treatment, or pursue blind or excessive medical treatment, resulting in an increase in treatment side effects. In the face of stress, positive coping can buffer the harm caused by stressful events and promote faster recovery. To a certain extent, the different coping styles of patients also affect the effectiveness of treatment. Intervention in coping styles is also a key point for future clinical treatments.

Although benign breast tumors are less harmful, they can still cause varying degrees of pain, affecting patients' physiological and mental health, and thus require timely treatment. However, due to patients' lack of knowledge about surgery and the disease, they are prone to varying degrees of negative emotions during treatment, which can not only affect their surgical cooperation but also impact the vegetative nervous system, leading to intraoperative hemodynamic fluctuations and reducing surgical safety. Therefore, clinical interventions in cognition and psychology are recommended to improve patients' cognitive levels and mental health, enabling them to undergo treatment in the best possible condition and actively engage in rehabilitation training postoperatively to return to normal social life as soon as possible [34]. In this study, 80 female patients with benign breast tumors who underwent surgical treatment were taken as research subjects to investigate the effects of cognitive intervention combined with psychological care on patients' uncertainty about their disease as well as their symptoms and coping styles. This study hypothesized that the intervention would be effective in improving patients' anxiety

and depression and reducing their feelings of uncertainty about their illness while enhancing their positive coping styles.

2 Materials and methods

2.1 Sample size calculation

Sample size calculations were performed using G*Power 3.1.9.2 software, set up as a repeated measures ANOVA with a medium effect size of $f = 0.25$ and $\alpha = 0.05$, which showed that a total of 66 subjects were needed to achieve a statistical test power of 0.8.

2.2 Subject selection

Eighty patients were finally included in this study as subjects, and a randomized numerical table was used to categorize them into intervention and control groups. with 40 patients in each group. In the control group, ages ranged from 20 to 48 years, with a mean age of (32.27 ± 3.42) years; disease duration ranged from 1 to 11 years, with a mean duration of (5.84 ± 1.03) years; there were 26 cases of single lesions and 14 cases of multiple lesions; disease types included 24 cases of fibroadenoma, 12 cases of breast cysts, 3 cases of intraductal papilloma, and 1 case of other tumors. In the study group, ages ranged from 21 to 49 years, with a mean age of (32.21 ± 3.35) years; disease duration ranged from 1 to 12 years, with a mean duration of (5.81 ± 0.99) years; there were 25 cases of single lesions and 15 cases of multiple lesions; disease types included 23 cases of fibroadenoma, 13 cases of breast cysts, 3 cases of intraductal papilloma, and 1 case of other tumors. A comparison of general information between the two groups showed no statistically significant difference ($p > 0.05$). This study was approved by the Anhui University of Traditional Chinese Medicine Ethics Committee (Approval No. 2023-99) .

2.2.1 Inclusion Criteria:

Patients were diagnosed with benign breast tumors through preoperative ultrasound and postoperative pathological examination; had a strong desire for surgery; had normal cognition and could cooperate to complete the study; and signed the informed consent form.

2.2.2 Exclusion Criteria:

Patients diagnosed with breast cancer; had abnormal coagulation function; had a history of psychological illness that could affect the study results; or were in pregnancy, lactation, or menstruation (**Figure 1**).

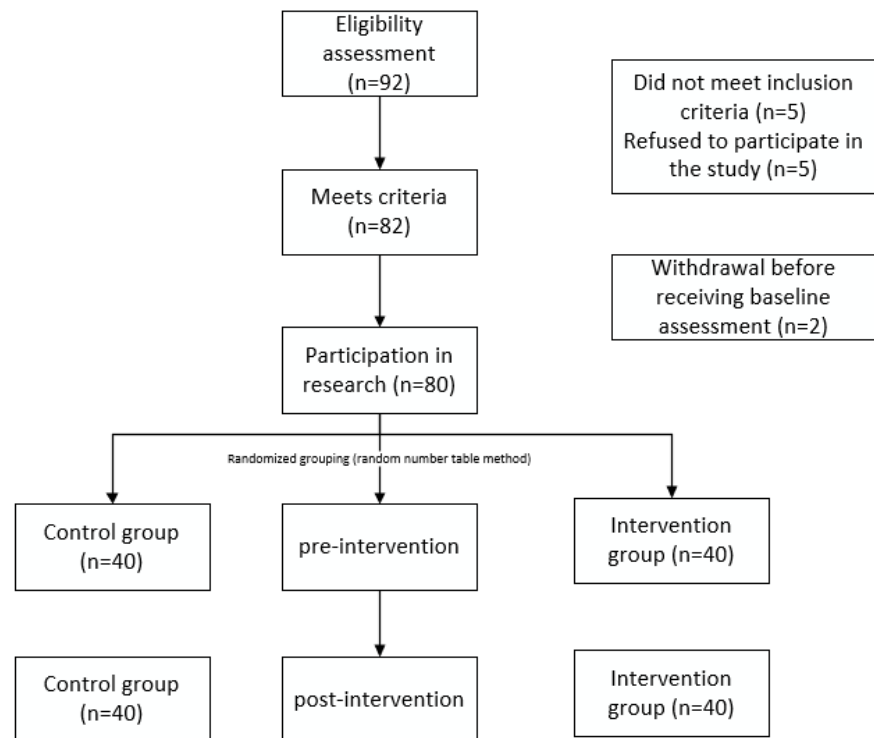


Figure 1. Subject screening and randomized assignment flowchart.

2.3 Intervention programs

All patients underwent minimally invasive rotary excision surgery. The control group received routine interventions. Nursing staff prepared for surgery, introduced the surgical process to patients, and ensured the smooth progress of the surgery. Intraoperatively, nursing staff closely monitored patients' conditions, quickly and accurately executed medical orders, ensured the successful completion of the surgery, took measures to keep patients warm, and avoided adverse events. After surgery, nursing staff implemented measures such as pain relief and complication prevention to ensure patients recovered as soon as possible.

The study group received cognitive intervention combined with psychological nursing on the basis of the control group's interventions, as detailed below. (1) Cognitive Intervention: Nursing staff produced promotional brochures on various benign breast tumors, covering the causes, hazards, and precautions of the disease, and distributed them to patients to ensure they had a certain cognitive foundation. Nursing staff also produced promotional videos related to the disease and surgical treatment, organized patients to watch and learn more about the disease, and assessed the effectiveness of the educational sessions after the basic education. If the results were not satisfactory, one-on-one education was conducted to enhance patients' cognitive levels and help them better understand the surgical process and related precautions. After surgery, in addition to verbal rehabilitation education, patients were sent rehabilitation knowledge through mobile apps such as Douyin and WeChat, allowing them to better engage in rehabilitation training by watching videos and recover as soon as possible. A WeChat group was created to provide long-term follow-up after patients were discharged, to answer questions they encountered in their daily lives, help them establish healthy lifestyle habits, and prevent disease recurrence. (2) Psychological

Nursing: When communicating with patients, nursing staff paid attention to their attitudes and words and deeds, showed understanding and respect for patients' fear and anxiety, jointly explored their true inner thoughts with patients, and conducted individualized counseling to help them overcome negative emotional distress. If patients were concerned about the surgical outcome, nursing staff explained the advanced nature of the surgery, cited cases of good recovery, or invited recovered patients to share their experiences to enhance patients' confidence. For patients who worried about malignant transformation of the tumor, nursing staff corrected their misconceptions through education and advised them to undergo regular check-ups in the future to effectively prevent malignant transformation. Before entering the operating room, nursing staff adjusted the indoor temperature and humidity to reduce stimulation from the adverse environment. For patients who were still nervous, necessary physical contact, such as handshakes and forehead strokes, was provided to support them and reduce the impact of negative emotions. During the recovery process, while comforting patients emotionally, family members were encouraged to spend more time with them, use positive language to encourage them, and allow patients to communicate with each other to strengthen their belief in fighting the disease, reduce inner pressure, and prompt them to more actively engage in rehabilitation training.

2.4 Observation indicators

(1) **Psychological Status:** The Self-rating Anxiety Scale (SAS) and Self-rating Depression Scale (SDS) were used to evaluate psychological status. Both SAS and SDS consist of 20 items, rated on a 4-point scale from 1 to 4. An SAS score above 50 indicates anxiety, and an SDS score above 53 indicates depression. Higher scores indicate more severe negative emotions. (2) **Coping Styles:** The Simplified Coping Style Questionnaire (SCSQ) was used to evaluate coping styles. The questionnaire includes 20 items, with 12 items for positive coping and 8 items for negative coping, all rated on a 4-point scale from 0 to 3. Scores are directly proportional to coping styles. (3) **Illness Uncertainty:** The Mishel Uncertainty in Illness Scale-Adult (MUIS-A) was used to evaluate illness uncertainty. The scale consists of 33 items, divided into four dimensions: uncertainty, complexity, lack of information, and unpredictability, rated on a 5-point scale from 1 to 5. Higher scores indicate stronger illness uncertainty.

2.5 Statistical methods

SPSS 24.0 statistical software was used for data processing. Count data were expressed as percentages and analyzed using the χ^2 test; measurement data were expressed as mean $\pm$ standard deviation (SD) and analyzed using the repeated measures ANOVA. A p -value <0.05 was considered statistically significant.

3 Results

3.1 Comparison of psychological status between the two groups

Age and educational attainment factors were analyzed as control variables; the results showed the following: Before intervention, there was no statistically significant difference in SAS and SDS scores between the two groups ($t = 0.219$, $p > 0.05$; $t =$

−0.21, $p > 0.05$). After nursing, the SAS and SDS scores of both groups decreased compared with those before nursing, and the study group had lower scores than the control group ($t = -8.723$, $p < 0.05$; $t = -9.088$, $p < 0.001$). Repeated measures ANOVA showed that the interaction between time and group was significant ($F_{(1,118)} = 8.7$, $p < 0.05$). Further simple effects analysis showed that anxiety and depression were significantly higher in the experimental group after the intervention than before the intervention ($p < 0.001$, $p < 0.001$), whereas there was no significant difference between the pre- and post-intervention levels in the control group ($p > 0.05$). See **Table 1**.

Table 1. Changes in psychological status before and after intervention in the two groups.

	Time	intervention group ($n = 40$)	Control group ($n = 40$)	t	p
SAS	Pre-intervention	53.19 ± 6.48	52.15 ± 6.48	0.219	0.827
	post-intervention	36.23 ± 4.61	45.64 ± 5.21	−8.723	< 0.001
SDS	Pre-intervention	58.91 ± 6.43	58.18 ± 6.93	−0.210	0.834
	post-intervention	40.21 ± 4.73	50.52 ± 5.54	−9.088	< 0.001

3.2 Comparison of coping style scores between the two groups

Age and educational attainment factors were analyzed as control variables; the results showed the following: Before intervention, there was no statistically significant difference in SCSQ scores between the two groups ($t = 0.318$, $p > 0.05$). After nursing, significantly higher scores for positive coping in the intervention group compared to the control group ($t = 5.216$, $p < 0.001$). Scores on negative coping styles were significantly lower in the intervention group compared to the control group ($t = -9.064$, $p < 0.001$). Repeated measures ANOVA showed that the interaction between time and group was significant ($F_{(1118)} = 4.67$, $p < 0.05$). Further simple effects analysis showed that positive coping was significantly higher in the experimental group after the intervention than before the intervention, and negative coping was significantly lower in the experimental group after the intervention than before the intervention ($p < 0.001$, $p < 0.001$), whereas there was no significant difference between the pre- and post-intervention levels in the control group ($p > 0.05$). See **Table 2**.

Table 2. Changes in response style score before and after intervention in the two groups.

	Time	intervention group ($n = 40$)	Control group ($n = 40$)	t	p
Positive responses	Pre-intervention	19.57 ± 3.52	19.25 ± 3.59	0.318	0.827
	post-intervention	30.28 ± 3.79	25.56 ± 4.34	5.216	< 0.001
negative responses	Pre-intervention	18.25 ± 3.64	18.18 ± 3.12	0.282	0.779
	post-intervention	9.61 ± 1.95	13.39 ± 2.43	−9.064	< 0.001

3.3 Comparison of illness uncertainty scores between the two groups

Age and educational attainment factors were analyzed as control variables; the results showed the following: Before intervention, there were no significant differences in the four dimensions (uncertainty, complexity, lack of information, and unpredictability) of the MUIS-A scores between the two groups. ($t = 0.268$, $p > 0.05$;

$t = 0.405, p > 0.05; t = 0.433, p > 0.05; t = 0.398, p > 0.05$). After nursing, the scores for uncertainty, complexity, lack of information, and unpredictability in both groups decreased compared with those before nursing, with lower scores in the study group than in the control group ($t = -6.246, p < 0.001; t = -6.133, p < 0.001; t = -5.721, p < 0.001; t = 5.975, p < 0.001$). Repeated measures ANOVA showed that the interaction between time and group was significant ($F_{(1118)} = 110.74, p < 0.001$). Further simple effects analysis showed that the four dimensions (uncertainty, complexity, lack of information, and unpredictability) were significantly lower in the experimental group after the intervention than before the intervention ($p < 0.05; p < 0.001; p < 0.05; p < 0.001$), whereas there was no significant difference between the pre- and post-intervention levels in the control group ($p > 0.05; p > 0.05; p > 0.05; p > 0.05$). See

Table 3.

Table 3. Changes in disease uncertainty before and after intervention in the two groups.

	Time	intervention group ($n = 40$)	Control group ($n = 40$)	t	p
uncertainties	Pre-intervention	29.93 ± 5.45	30.14 ± 5.30	-0.268	0.791
	post-intervention	21.26 ± 3.82	26.45 ± 4.14	-6.246	< 0.001
complication	Pre-intervention	58.91 ± 6.43	58.18 ± 6.93	0.405	0.709
	post-intervention	40.21 ± 1.95	50.52 ± 5.54	-6.133	< 0.001
missing information	Pre-intervention	16.28 ± 3.43	16.01 ± 3.18	0.433	0.667
	post-intervention	8.16 ± 2.32	11.52 ± 2.91	-5.721	< 0.001
unpredictability	Pre-intervention	14.65 ± 2.98	14.51 ± 2.74	0.398	0.691
	post-intervention	7.78 ± 1.89	10.39 ± 2.18	-5.975	< 0.001

4 Discussion

In recent years, against the backdrop of accelerated life, increased occupational pressure, and changes in dietary structure and habits, the incidence of breast diseases has continued to climb [35,36]. Surgical excision is the definitive procedure performed for symptomatic benign breast tumors to alleviate anxiety regarding potential for growth or malignancy as well as physical discomfort [37]. Surgical incisions can form scars, and in some cases, lead to changes in the appearance of women's breasts, thus causing varying degrees of negative emotions among patients during treatment [9]. Due to their low level of awareness about the disease and surgery, patients may have inadequate cooperation abilities, which can affect surgical outcomes [38]. The purpose of cognitive intervention is to improve patients' level of awareness regarding medical behavior, mobilize their subjective initiative, and make them more actively cooperate with medical interventions. The purpose of psychological nursing is to eliminate the adverse effects of negative emotions, strengthen patients' self-efficacy, and make patients have stronger confidence in medical measures, thereby achieving more ideal medical outcomes [39].

This study showed that after intervention, the SAS and SDS scores of the study group were lower than those of the control group. The direct effect of psychological nursing is to eliminate patients' negative emotions and improve their mental health [40,41]. Throughout the perioperative period, nursing staff pay attention to patients'

psychological state. Psychological support measures before and during surgery help improve negative psychology and prepare patients psychologically for surgery. Establishing a comprehensive psychological support system after surgery enables patients to more actively engage in rehabilitation training and recover as soon as possible. Cognitive intervention helps correct patients' misconceptions, effectively eliminate their fear, and allow them to cooperate with treatment in a healthier mindset.

This study showed that after intervention, the positive coping score of the SCSQ in the study group was higher than that of the control group, and the negative coping score of the SCSQ in the study group was lower than that of the control group. In terms of illness uncertainty, after nursing, the scores for uncertainty, complexity, lack of information, and unpredictability in the MUIS-A of the study group were lower than those of the control group. The above research results demonstrate the value of cognitive intervention combined with psychological nursing. Coping style refers to an individual's response when facing stress, which is closely related to the patient's level of cognition and psychological state [42]. Uncertainty about the disease can greatly affect patients' coping styles, which can be effectively eliminated through cognitive intervention [43]. In this study, by adjusting the patients' poor cognition of the disease and then improving the patients' uncertainty about the disease, the patients' psychological state was improved on this basis, and they were more likely to adopt a positive coping style to solve the problems they encountered at the moment. In the intervention process, nursing staff take a variety of ways to help patients better understand the disease and the corresponding treatment, to more positive mindset to deal with the adverse symptoms brought about by the disease. The emergence of negative emotions can lead to negative coping behaviors in patients. Psychological care work should pay attention to the inner demands of patients, improve their negative emotions through personalized full psychological counseling, reduce the impact of adverse emotions on daily behavior, and help patients change their attitudes and cope with the disease. This not only ensures the surgical effect and promotes the patient's postoperative recovery as soon as possible, but also optimizes the patient's medical experience to a certain extent. When the individual's cognitive evaluation of the event is high, the burden of thought becomes heavier, fear of metastasis and recurrence, etc., and a greater tendency to think that the disease will bring serious consequences, so he or she will choose to yield to the response and avoid the problem or even compromise; negative coping is more likely to produce a lot of negative emotions and adverse effects on the patient, making the patient experience a higher level of psychological pain. Negative coping is more likely to produce negative emotions and adverse effects on the patient, causing the patient to experience higher levels of psychological distress and increased levels of negative cognitive appraisal. When the individual's cognitive evaluation of the traumatic event is low, he or she will have great hope for the treatment effect and survival time, and will choose to face the problem bravely and find appropriate ways and means to solve the problem or temporarily divert the attention by avoiding the problem, which can alleviate the patient's depression and anxiety, and help the patient to keep his or her mood stable. Postoperative patients may have different degrees of anxiety, depression and other negative psychology due to rehabilitation exercises and uncertainty of prognosis, etc. Patients can form

cognitive evaluation of their own situation and choose coping methods, and appropriate coping can regulate physical and mental health and promote recovery, while inappropriate coping will generate many negative emotions, prolong treatment time and delay the recovery process. Nursing staff should provide patients with stress coping strategies, guide them to adopt correct coping methods to face reality, improve positive cognitive evaluation, improve psychological conditions, and promote treatment and recovery.

This study also has some limitations. Firstly, the sample size of this study was small, which may lead to further generalization of the findings; secondly, the patients included in this study were patients with benign tumors, so the requirements for intervention techniques and personnel do not need to be high, which may also affect the accuracy of the experimental results; and lastly, this study was conducted in terms of negative emotions and coping styles as well as uncertainty of the disease, with a small number of variables, and also this study lacked follow-up to determine the efficacy of the intervention, which makes the study limited. Whereas future research could try to conduct a large sample RCT to validate the effect of the intervention, it could also be applied to patients with malignant tumors to ultimately understand the clinical effect of the intervention from multiple aspects (mood, attention, perception, etc.).

5 Conclusion

In summary, cognitive intervention combined with psychological nursing can prompt female patients with benign breast tumors to maintain a healthy mindset, improve their illness uncertainty, and ensure that patients maintain a positive coping style during the medical process, which is worthy of promotion. However, this study still has the problems of insufficient sample size and insufficiently rich research variables. Future research can try to conduct a large-sample study on multiple types of cancers to understand the clinical effects of interventions in terms of multiple psychological and physiological indicators.

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Data availability: Data generated and utilized for analyses of results presented in this manuscript are available from the corresponding author on reasonable requests

Ethics Approval: This study was approved by the Anhui University of Traditional Chinese Medicine Ethics Committee (Approval No. 2023-99).

Conflict of interest: The authors declare no conflict of interest.

References

1. L W, T G. Understanding breast cancer as a global health concern. *The British journal of radiology*. 2022;95. doi:10.1259/bjr.20211033
2. C K, I O, Hk K, S S. Breast cancer: Presentation, investigation and management. *British journal of hospital medicine (London, England : 2005)*. 2022;83. doi:10.12968/hmed.2021.0459
3. ZHENG Ying WC. The epidemic and characteristics of female breast cancer in China. *China Oncology*. 2014;23: 561–569. doi:10.3969/j.issn.1007-3969.2013.08.001
4. Steven,A. N, Javaid I, Anthony B M. Why have breast cancer mortality rates declined? *Journal of Cancer Policy*. 2015;5: 8–17. doi:10.1016/j.jcpo.2015.03.002
5. D D, J F, Rd E, L K-G, M S, V A. Anxiety and depression in cancer patients and survivors in the context of restrictions in contact and oncological care during the COVID-19 pandemic. *International journal of cancer*. 2025;156. doi:10.1002/ijc.35204
6. N R, Dg H, M H, Pv L, A N, Pe B, et al. Depressive symptom trajectories in women affected by breast cancer and their male partners: A nationwide prospective cohort study. *Journal of cancer survivorship : research and practice*. 2016;10. doi:10.1007/s11764-016-0538-3
7. P H, G S, J M, J H, Jm B. The course of anxiety and depression over 5 years of follow-up and risk factors in women with early breast cancer: Results from the UK standardisation of radiotherapy trials (START). *Breast (Edinburgh, Scotland)*. 2010;19. doi:10.1016/j.breast.2009.11.007
8. Sw M, C R, Aj B, Pf V, Gh de B. The prevalence of long-term symptoms of depression and anxiety after breast cancer treatment: A systematic review. *Maturitas*. 2015;82. doi:10.1016/j.maturitas.2015.04.010
9. Ciria-Suarez L, Jiménez-Fonseca P, Palacín-Lois M, Antoñanzas-Basa M, Fernández-Montes A, Manzano-Fernández A, et al. Breast cancer patient experiences through a journey map: A qualitative study. *PLoS One*. 2021;16: e0257680. doi:10.1371/journal.pone.0257680
10. Ms M-R, S H, I A, B de V, A R-L, T R, et al. One-year quality of life outcomes of delayed unilateral autologous breast reconstruction and associated patient factors. *JPRAS open*. 2024;43. doi:10.1016/j.jprra.2024.10.014
11. Jones JM, Olson K, Catton P, Catton CN, Fleshner NE, Krzyzanowska MK, et al. Cancer-related fatigue and associated disability in post-treatment cancer survivors. *J Cancer Surviv*. 2016;10: 51–61. doi:10.1007/s11764-015-0450-2
12. Sa R, H P, D S, Sc T, Es Z, A W, et al. Incidence of patient-reported fatigue developing on palbociclib and endocrine therapy for advanced HR+ HER2- breast cancer. *The oncologist*. 2024 [cited 21 Dec 2024]. doi:10.1093/oncolo/oyae316
13. Me S, J C-C, A V, J H, D F-J, K S. Fatigue and quality of life in breast cancer survivors: Temporal courses and long-term pattern. *Journal of cancer survivorship : research and practice*. 2012;6. doi:10.1007/s11764-011-0197-3
14. Je B, Pa G, Ka D, C B, Jh R, Be M, et al. Fatigue in long-term breast carcinoma survivors: A longitudinal investigation. *Cancer*. 2006;106. doi:10.1002/cncr.21671

15. HJg A, Mfm G, Ic S, Cahhvm V, Mm R, H K. Risk factors, prevalence, and course of severe fatigue after breast cancer treatment: A meta-analysis involving 12 327 breast cancer survivors. *Annals of oncology : official journal of the European Society for Medical Oncology*. 2016;27. doi:10.1093/annonc/mdw099
16. C VO, Ba C, K L, L D, Be A, C W, et al. Identification of distinct subgroups of breast cancer patients based on self-reported changes in sleep disturbance. *Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer*. 2012;20. doi:10.1007/s00520-012-1381-3
17. K D, Jj M, I S, A D, Q L, Sx X, et al. Prevalence and risk factors for insomnia among breast cancer patients on aromatase inhibitors. *Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer*. 2013;21. doi:10.1007/s00520-012-1490-z
18. B R, JI K. Benign breast diseases: Epidemiology, evaluation, and management. *Clinical obstetrics and gynecology*. 2011;54. doi:10.1097/GRF.0b013e318208010e
19. C F, H B, F A, J H, J D, D P. Risk factors for benign proliferative breast disease. *International journal of epidemiology*. 2000;29. doi:10.1093/ije/29.4.637
20. L W-J, S G, Hl M. Psychologic stress, reduced NK cell activity, and cytokine dysregulation in women experiencing diagnostic breast biopsy. *Psychoneuroendocrinology*. 2007;32. doi:10.1016/j.psyneuen.2006.09.011
21. Af van der S, Cm K-D, J DV, Ja R. Effect of abnormal screening mammogram on quality of life. *The British journal of surgery*. 2011;98. doi:10.1002/bjs.7371
22. Ma A, Js C, JI S, Mj C, Ll C, A B, et al. Psychological impact of benign breast biopsy: A longitudinal, comparative study. *Health psychology : official journal of the Division of Health Psychology, American Psychological Association*. 2002;21. Available: <https://pubmed.ncbi.nlm.nih.gov/12211516/>
23. Z W, X H. Clinical significance of breast-conserving surgery for early breast cancer and its impact on patient life quality of life. *Journal of BUON : official journal of the Balkan Union of Oncology*. 2019;24. Available: <https://pubmed.ncbi.nlm.nih.gov/31786853/>
24. Cc R, S P, F W, Wf C, Rs V. The lived experience during the peri-diagnostic period of breast cancer: A scoping review. *Patient education and counseling*. 2022;105. doi:10.1016/j.pec.2021.06.017
25. Pa P, F A, B F, DI U, Y L, Ja K, et al. Illness uncertainty and quality of life of patients with small renal tumors undergoing watchful waiting: A 2-year prospective study. *European urology*. 2013;63. doi:10.1016/j.eururo.2013.01.034
26. Eg E, Ah P, Pk H, N van D-B, F C, E M, et al. Disclosing the uncertainty associated with prognostic estimates in breast cancer. *Medical decision making : an international journal of the Society for Medical Decision Making*. 2017;37. doi:10.1177/0272989X16670639
27. Mn L, Mf C, Sc C, Pl C. Uncertainty and anxiety during the diagnostic period for women with suspected breast cancer. *Cancer nursing*. 2008;31. doi:10.1097/01.NCC.0000305744.64452.fe
28. Ll N, T T, D M, M O. Couples' adjustment to breast cancer and benign breast disease: A longitudinal analysis. *Psycho-oncology*. 1998;7. doi:10.1002/(SICI)1099-1611(199801/02)7:1<37::AID-PON314>3.0.CO;2-#
29. H Z, L W, X Y, Sw C, Y G, X L, et al. Effects of decisional conflict, decision regret and self-stigma on quality of life for breast cancer survivors: A cross-sectional, multisite study in China. *Journal of advanced nursing*. 2022;78. doi:10.1111/jan.15250

30. Y Z, K K, M P. Uncertainty, self-efficacy, and self-care behavior in patients with breast cancer undergoing chemotherapy in China. *Cancer nursing*. 2015;38. doi:10.1097/NCC.0000000000000165
31. Mf C, Mh M, M B. Testing a model of symptoms, communication, uncertainty, and well-being, in older breast cancer survivors. *Research in nursing & health*. 2006;29. doi:10.1002/nur.20108
32. Rs L. Coping theory and research: Past, present, and future. *Psychosomatic medicine*. 1993;55. doi:10.1097/00006842-199305000-00002
33. Leger KA, Charles ST, Turiano NA, Almeida DM. Personality and stressor-related affect. *Journal of Personality and Social Psychology*. 2016;111: 917–928. doi:10.1037/pspp0000083
34. Patricia A. Ganz MD. Psychological and social aspects of breast cancer. 2008;22. Available: <https://www.cancernetwork.com/view/psychological-and-social-aspects-breast-cancer>
35. Stachs A, Stubert J, Reimer T, Hartmann S. Benign breast disease in women. *Deutsches Ärzteblatt International*. 2019;116: 565. doi:10.3238/arztebl.2019.0565
36. Huang J, Chan PS, Lok V, Chen X, Ding H, Jin Y, et al. Global incidence and mortality of breast cancer: A trend analysis. *Aging (Albany NY)*. 2021;13: 5748. doi:10.18632/aging.202502
37. Jm D, V D, J L, Js W, U C. Assessment of the acceptability of conservative management of fibroadenoma of the breast. *The British journal of surgery*. 1996;83. Available: <https://pubmed.ncbi.nlm.nih.gov/8689184/>
38. Feten Fekih-Romdhane MD, Fatma Saadallah MD, Mahdi Mbarek MD, Hatem Bouzaiene MD, Majda Cheour MD. Prevalence and correlates of hopelessness in tunisian women with benign breast disease and breast cancer. *Journal of Psychosocial Oncology*. 2022 [cited 29 Nov 2024]. Available: <https://www.tandfonline.com/doi/abs/10.1080/07347332.2021.1943103>
39. Broadbridge E, Greene K, Venetis MK, Lee LE, Banerjee SC, Saraiya B, et al. Facilitating psychological adjustment for breast cancer patients through empathic communication and uncertainty reduction. *Patient education and counseling*. 2023;114: 107791. doi:10.1016/j.pec.2023.107791
40. Ms Y, H L, Ja Y. [effects of a cognitive-behavioral nursing intervention on anxiety and depression in women with breast cancer undergoing radiotherapy]. *Journal of Korean Academy of Nursing*. 2009;39. doi:10.4040/jkan.2009.39.2.157
41. N H, T K, Ib C, S S, S D, F L, et al. Integrated moving on after breast cancer and culturally adapted cognitive behavior therapy intervention for depression and anxiety among pakistani women with breast cancer: Protocol of a randomized controlled trial. *SAGE open medicine*. 2023;11. doi:10.1177/20503121231177549
42. I S-B, Ø E, R K. Variability and stability of coping styles among breast cancer survivors: A prospective study. *Psycho-oncology*. 2021;30. doi:10.1002/pon.5587
43. Km G, Mh M, M B, B G, Ls P, M C. Benefits of the uncertainty management intervention for african American and white older breast cancer survivors: 20-month outcomes. *International journal of behavioral medicine*. 2006;13. doi:10.1207/s15327558ijbm1304_3