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## Effects of psychological intervention on negative emotions and psychological resilience in breast cancer patients after radical mastectomy

Jing Wang, Dong-Xue Kang, Ai-Jun Zhang, Bing-Rui Li

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### Abstract

Breast cancer (BC) is the most common malignant tumor in women, and the treatment process not only results in physical pain but also significant psychological distress in patients. Psychological intervention (PI) has been recognized as an important approach in treating postoperative psychological disorders in BC patients. It has been proven that PI has a significant therapeutic effect on postoperative psychological disorders, improving patients' negative emotions, enhancing their psychological resilience, and effectively enhancing their quality of life and treatment compliance.

**Key Words:** Breast cancer; Psychological intervention; Negative emotions; Psychological resilience; Radical surgery

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**Core Tip:** Breast cancer (BC) has become the leading cancer worldwide. Psychological intervention has been proven to have significant therapeutic effects on postoperative psychological disorders in BC patients. It can improve patients' negative emotions, enhance their psychological resilience, effectively enhance their quality of life, and improve treatment compliance.



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## INTRODUCTION

Breast cancer (BC) is the most common cancer in women worldwide[1]. According to the Global Cancer Data 2020 report published by the International Agency for Research on Cancer[2], BC has surpassed lung cancer as the leading cancer. In 2020, there were approximately 2.3 million new cases of BC globally, accounting for 11.7% of all cancer cases[3-4]. The occurrence and metastasis of BC are associated with various factors[5-6]. The high incidence rate of BC is a global concern, and the alarming increase in the number of BC patients suggests that healthcare professionals need to pay attention to patients from multiple perspectives[7]. Due to the psychological challenges such as anxiety, pain, depression, low self-esteem, heightened sensitivity, and post-traumatic stress disorder among cancer patients, as well as the immense psychological and economic pressures faced by their families[8], psychological intervention (PI) becomes an important treatment method in clinical practice. PI has been proven to have significant therapeutic benefits for postoperative psychological disorders in BC patients, improving their quality of life and treatment compliance. This study aims to investigate the impact of PI on negative emotions and psychological resilience in BC patients after radical mastectomy, providing a reference for subsequent clinical psychological treatments.

## NEGATIVE EMOTIONS AND BREAST CANCER

Negative emotions can lead to an increased incidence of BC, and the development and prognosis of BC are also closely related to emotions[6-8] (Figure 1). Negative emotions refer to the adverse feelings that arise psychologically from undesirable events in life. Regarding the association between emotions and malignant tumors, the ancient Greek physician Galen mentioned centuries ago that women who were long-term depressed and anxious were more likely to develop BC than women who were lively and cheerful. Multiple studies have shown that negative emotions are closely associated with the occurrence of cancer[9-10]. In a study by He *et al*[11] which included 200 BC patients, it was found that patients' negative emotions, such as depression and anxiety, were significantly reduced after emotional management, and the recovery of BC patients was good. Many studies have also found that negative emotions greatly affect the incidence of BC[12-15]. In a study by Xu *et al*[12] a total of 9343 studies were screened, aiming to explore the connection between negative emotions and the incidence of BC, as well as possible risk factors. The researchers analyzed 129621 female patients with negative emotions, of whom 2080 women were diagnosed with BC. They were followed up for 4-24 years, and the results showed that negative emotions were significantly related to BC ( $P < 0.0001$ , relative risk = 1.59, 95%CI: 1.15-2.19).

Radical mastectomy remains an important surgical method for treating BC in clinical practice and is widely performed in China. This surgical treatment results in various psychological and physical changes in patients. Due to removal of the breast, patients experience significant changes in their self-image and become highly sensitive to subtle changes in themselves. As a result, they often visit the hospital for multiple follow-up examinations of their physical condition[16-17]. In a study conducted by Thakur *et al*[18], it was found that successfully treated BC patients often adopt a defensive mentality and refuse further examinations and treatments. They also exhibit significant suspicion and show more resistance to terms such as "breast" and "cancer" compared to the general population. Another study by Hernández-Blanquisset *et al*[19] revealed that patients who underwent radical mastectomy believed that their romantic or marital relationships were affected, suggesting that the absence of the breast directly influences patients' lives and has a certain impact on their physical and mental well-being. Female sexual dysfunction refers to a category of diseases in which women experience disorders in one or more stages of the sexual response cycle, affecting the normal conduct of sexual activity. It includes symptoms such as vaginal dryness and decreased sexual desire[20-21]. Haris *et al*[22] discovered in their survey analysis that the frequency of sexual activity reduced after surgery in the BC patients, and some patients even reported a lack of sexual activity. This can lead to a strong sense of inferiority in patients, as they believe they have lost their feminine charm. It also results in an increased psychological burden and lower marital satisfaction. Furthermore, patients may experience varying degrees of anxiety or depression due to the side effects of chemotherapy or radiotherapy after surgery. Clinical studies have found that family conditions during the treatment process play a decisive role in influencing the patients' emotions, including the support from family members and financial support. When patients experience psychological stress and negative emotions, their anxiety and depression scores increase. In severe cases, they may develop suicidal tendencies. Relevant research data indicate that BC patients undergoing radical mastectomy are more likely to develop anxiety and depression compared to general cancer patients[22-25].

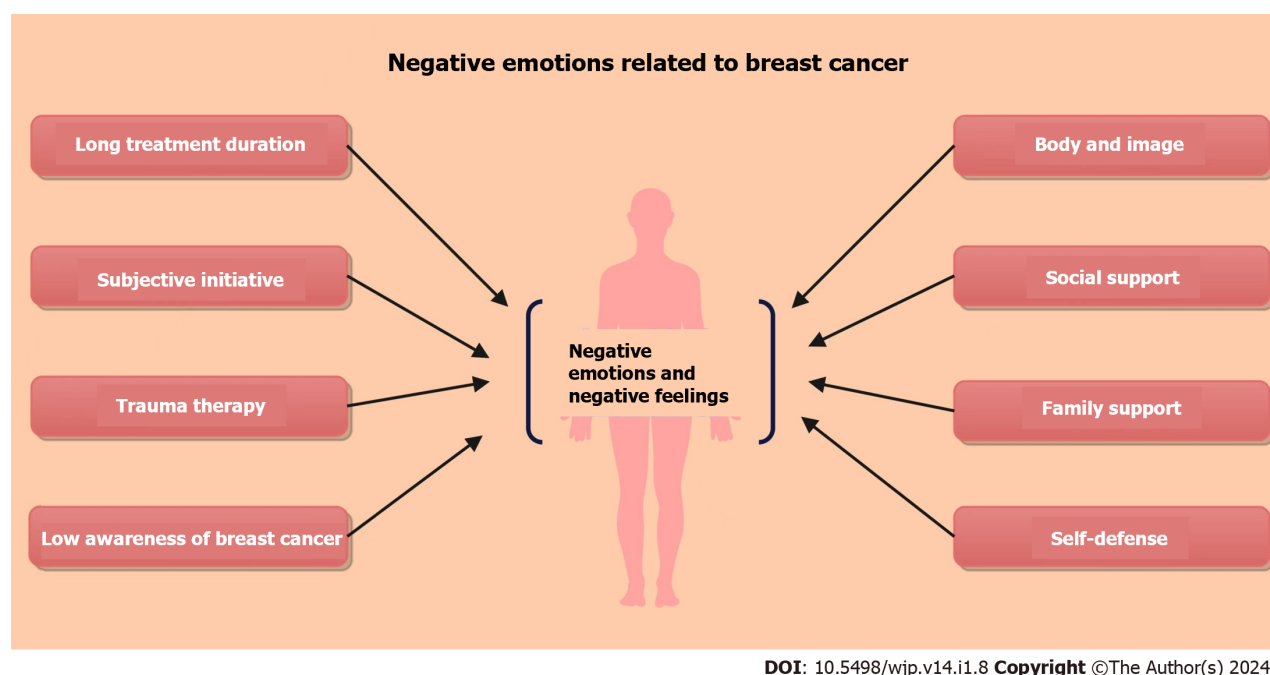


Figure 1 Negative emotions related to breast cancer.

## PSYCHOLOGICAL RESILIENCE AND BREAST CANCER

BC is a common malignancy that imposes significant stress on patients during the diagnosis and treatment process. Patients with higher psychological resilience are better able to cope with stress, actively participate in treatment, and achieve better treatment outcomes. Simultaneously, these patients experience faster postoperative recovery, and have lower rates of tumor recurrence and mortality. Psychological resilience refers to the psychological and behavioral response of the body to external environments and various stimuli. It is a dynamic state with a certain level of flexibility that changes with the environment and allows for dynamic regulation and adaptation. Individuals with higher psychological resilience recover faster after experiencing stressful events[26-27]. The level of psychological resilience in BC patients is influenced by factors such as gender, age, education level, and disease severity. Studies have shown that males tend to have higher levels of psychological resilience compared to females, and that psychological resilience is positively correlated with age. Additionally, patients with higher levels of education generally exhibit better psychological resilience. The stage and prognosis of BC also have an impact on the psychological resilience of patients. Psychological resilience is gaining increasing attention as a research area within positive psychology. Theoretical frameworks for psychological resilience intervention include cognitive-behavioral theory, mindfulness theory, and the adolescent resilience model[27]. Currently, the primary tools for measuring psychological resilience are the Connor-Davidson Resilience Scale (CD-RISC) and the Resilience Scale for Adults[28]. Several clinical studies have demonstrated that targeted intervention measures can effectively reduce negative emotions, enhance psychological resilience, and promote recovery and growth in postoperative BC patients. In Liu *et al*[29], it was found that incentive-based interventions can better implement the concept of humanistic care and achieve targeted and diversified approaches. By educating and guiding family members to actively participate in the postoperative care of patients, they can provide maximum family care and support, drawing strength from love and positively motivating patients to inspire their confidence in treatment and recovery. Through sincere communication, showing care, and other methods, patients can experience respectful, understanding, and unique clinical care, which fills them with strength, effectively guides and eliminates pessimistic emotions, and maintains an optimistic mindset, leading to improved psychological resilience. Zhang *et al*[30] utilized the CD-RISC to assess the psychological resilience of patients and found that psychological resilience is an important indicator of subjective initiative and emotion regulation. Intervention measures can alleviate the fear of disease progression in BC patients after radical surgery, improve psychological resilience, and reduce the occurrence of complications.

## PSYCHOLOGICAL INTERVENTION

With the development of the bio-psycho-social medical model, PIs and social support have become highly valued aspects of cancer treatment[31]. There is a close relationship between psychological status, immune function, and the occurrence and progression of tumors[32]. Studying the relationship between PI, psychological stress, immune function, and tumor progression is of great significance for the clinical treatment of BC. PI refers to the systematic and planned influence on the psychological activities or issues of a specific target guided by psychological theories, in order to promote desired

changes in the target[33]. PI is now widely applied in various clinical departments and primarily involves three aspects: cognitive reconstruction, psychological regulation, and physical behavioral training. Specific intervention measures include cognitive-behavioral therapy (CBT), music therapy, group interventions, yoga exercises, and comprehensive intervention methods, among others[34-35]. Traditional PI focuses on alleviating or reducing patients' negative emotions, while neglecting the stimulation and cultivation of various positive qualities and strengths. Positive psychology emphasizes problem-solving with an optimistic attitude, helping individuals unleash their potential, and enabling them to better cope with illness and life challenges[36-37]. Patients who have undergone radical surgery for BC can experience positive emotional changes through emotional and psychological adaptation. Psychological therapies and supportive methods have been proven effective in managing psychological disorders in BC patients. Every BC patient should receive psychological support throughout their entire treatment period to improve their quality of life and treatment adherence (Table 1)[1,38-40].

CBT is a PI that focuses on the interaction between cognition, emotion, and behavior to change dysfunctional behaviors and thought patterns. It aims to correct patients' misconceptions, establish correct cognitive models, and improve their quality of life. Traditionally, CBT has been used for mental health disorders such as depression and anxiety, but its application in nursing is gaining increasing attention. In fact, it has been proven to be the most successful PI in improving cancer-related issues, with data suggesting that it may enhance the overall quality of life in cancer survivors[41-44]. In a study by Park *et al*[31], 74 BC patients were randomly divided into an intervention group and a control group for an 8-wk CBT intervention. The control group received standard treatment, while the intervention group received CBT in addition to standard treatment. The results showed significant improvements ( $P < 0.05$ ) in cognitive function, quality of life, and mental state in the intervention group compared to the control group. CBT has been shown to improve patients' health conditions, including psychological, physical, and mental domains, and these positive effects can be sustained for up to 4 wk. Following a PubMed search, Vance *et al*[45] identified 21 intervention studies on cognitive deficits and found that CBT can effectively improve cognitive deficits and enhance patients' cognitive abilities. CBT holds promise as an adjunctive therapy in medical treatments to achieve clinical therapeutic goals.

Mindfulness-based therapy (MBT), on the other hand, is a PI that combines meditation, relaxation, controlled breathing, physical stretching, and social interaction. Its core aim is to alleviate stress through mindfulness and help individuals better cope with illnesses[46-47]. This therapy typically involves 6-8 wk of mindfulness training, including practices such as mindfulness breathing, mindfulness meditation, mindfulness yoga, breathing exercises, and mindful walking[48]. Studies by Duval *et al*[49] and Shao *et al*[50] have demonstrated the effectiveness of MBT in improving patients' cognitive abilities and reducing cancer-related concerns. Zheng *et al*[51] conducted a systematic search across multiple databases to study the application and effects of mindfulness-based stress reduction (MBSR) therapy in BC patients. The results indicated that MBSR therapy can improve anxiety, depression, fatigue, and stress to varying degrees, with significant short-term effects. However, studies also pointed out that the long-term effects of this therapy are uncertain, and further research with high-quality and large sample sizes is needed for validation. In a study by Luo *et al* [52], the effects of group mindfulness-based cognitive therapy on psychological resilience and self-efficacy in BC patients during chemotherapy were explored. They recruited 120 BC patients undergoing chemotherapy and randomly divided them into a study group and a control group. The control group received routine treatment and care, while the study group received group mindfulness-based cognitive therapy for a total of 4 wk. The researchers assessed psychological resilience and general self-efficacy using questionnaires. The results showed that patients in the study group exhibited better psychological resilience and self-efficacy compared to those in the control group after the intervention. This confirms that mindfulness training can enhance disease outcomes, promote positive emotions, and effectively improve quality of life in BC patients. Schellekens *et al*[53] conducted a study involving 271 BC survivors and randomly assigned them to a mindfulness-based cancer recovery (MBCR) group, a supportive expressive therapy (SET) group, or a waitlist control group. The MBCR group received mindfulness yoga and meditation practices, as well as guided group discussions on mindfulness, for 8 wk. The results showed that both MBCR and SET improved patients' emotional distress and stress symptoms, with MBCR demonstrating a more significant improvement ( $P < 0.01$ ).

## CONCLUSION

Currently, as the incidence of cancer continues to rise, PI measures are gradually being developed. This review article focuses on PI for BC patients, exploring the relationship between negative emotions and psychological resilience and BC. The results show that negative emotions are closely associated with BC. BC patients with better psychological resilience can increase their survival rate after surgery and maintain a good psychological state. However, at present, psychological research related to BC is scarce. Studies on negative emotions and psychological resilience of BC patients after radical mastectomy are mainly cross-sectional, and in-depth longitudinal research is lacking. In clinical trials, due to budget and personnel constraints, the trial period and follow-up duration are short, and the changes in patients' negative emotions and psychological resilience are thus not fully investigated. It is suggested that future research on the negative emotions and psychological resilience of BC patients should establish a corresponding PI framework, explore the changes in negative emotions and psychological resilience of BC patients at different stages, and adopt effective intervention methods. This will provide specific theoretical and practical methods for PIs at different stages of BC.



**Table 1 Specific psychological intervention measures for postoperative breast cancer patients**

Item	Psychological intervention measures
Cognitive Behavioral Therapy	Provide disease handbooks to patients based on their specific conditions, including information on preventive measures, surgical procedures, dietary guidance, chemotherapy-related knowledge, psychological support, and other relevant topics. Ensure that key content is accompanied by detailed illustrations to enhance understanding. Engage in detailed conversations with patients to better understand their cultural background and level of comprehension. Based on this understanding, recommend books that align with their interests and preferences. Offer training in coping strategies tailored to each patient's condition. Select appropriate methods for venting emotions based on the patient's situation. Teach techniques for expressing and communicating feelings effectively. Encourage patients to confide in someone they trust about their innermost worries. Suggest activities such as watching movies they enjoy, writing journals, and maintaining contact with family or friends through WeChat, phone calls, text messages, <i>etc.</i> These activities can help patients cope with their emotions and maintain social connections during their journey
Mindfulness Therapy	Teach techniques for body scanning and guide patients to practice experiencing the interaction between their mind and body through body scanning exercises. This involves mindfully observing and being aware of one's physical sensations and discomfort without rejecting them, allowing oneself to slowly feel and become familiar with the discomfort. Provide mindfulness practices for dealing with thoughts. Teach patients to accept their thoughts with an open attitude, simply being aware of their thoughts without judgment or rejection. Introduce the A-B-C theory of cognition, helping patients identify the thoughts and beliefs that underlie their emotions. Make them aware that it is their cognition that influences their emotional reactions, rather than the events themselves. Teach patients to be mindful of their thoughts and beliefs, and guide them in making appropriate adjustments. Share personal experiences of applying mindfulness in daily life and cognitive-behavioral therapy. Discuss the benefits gained from participating in group therapy sessions
Music Therapy	Starting from admission and the first day after surgery, it is recommended that patients listen to their favorite music for 30 min each morning before 8:00 and again before bedtime at night
Aerobic Exercise	The aerobic exercise program should take into consideration the patient's individual conditions and preferences to develop a reasonable and scientific rehabilitation plan. The main exercise methods should include walking, jogging, cycling, stair climbing, and yoga. Additionally, dance exercises can be incorporated based on simple limb functional exercises. The exercise duration should be controlled at 30 min, with three aerobic exercise sessions per week. Limb exercises should be gradually introduced by nursing staff based on the patient's postoperative wound recovery conditions, with aerobic exercises generally conducted after limb exercises. The exercise content should be shared through WeChat group chats and health education manuals to ensure correct and professional aerobic exercise rehabilitation. To evaluate the effectiveness of the exercise program, detailed records of the aerobic exercises performed by the patient should be maintained. Face-to-face communication should be conducted to understand the patient's subjective feelings and address any nursing issues they may have. Patients and their families should be encouraged to self-evaluate during aerobic exercises and provide timely feedback on any problems encountered. Active cooperation during the intervention period is essential to improve exercise compliance. Due to individual differences among patients, different types of aerobic exercise programs should be developed based on their specific conditions. It is important to follow the principle of gradual progression when arranging exercise plans

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