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Supportive Approaches to Stress Management in Patients With Breast Cancer: A Systematic Review

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ABSTRACT

Background: Stress is a reaction to physical, psychological, and emotional events. Compared with other chronic diseases, breast cancer (BC) is a dire stressful situation greatly disheartening the patients. Therefore, patients with BC need long-lasting physical and emotional support to cope with stress. The purpose of this study was to systematically review the studies using supportive stress management interventions in patients with BC.

Methods: A literature search was performed in scientific databases including Google Scholar, Scientific Information Database, Magiran, Irandoc, Web of Science, Science Direct, PubMed [including Medline], and Elsevier. The keywords were retrieved from Medical Subject Headings (Mesh). The articles published from 1997 to 2017 were included. Database search returned 440 records. Title and abstract screening identified 152 potentially eligible articles. Finally, 18 articles were included in the synthesis of the review.

Results: All the included studies had an interventional design focusing on stress management approaches and their related covariates in women with BC. The findings were assessed regarding two distinct approaches. First, the studies assessing stress management interventions were scrutinized. Next, the impact of intervention duration, the number of the participants, and the contents of sessions were explored. Of the selected articles, 6 had used a mindfulness-based approach, 2 had utilized relaxation techniques, and 7 had employed stress-related cognitive-behavioral therapy. In addition, one study was related to resilience training and 2 studies investigated problem-based approaches.

Conclusion: Stress management interventions can be helpful in reducing stress in BC patients. Therefore, it is advisable to incorporate stress management strategies along with routine pharmaceutical therapies in these patients.

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Introduction

Breast cancer (BC) is among the most common cancers in women around the world.¹ Patients with BC encounter with adverse outcomes affecting their physical, sexual, and psychological health.^{2,3,4,5}

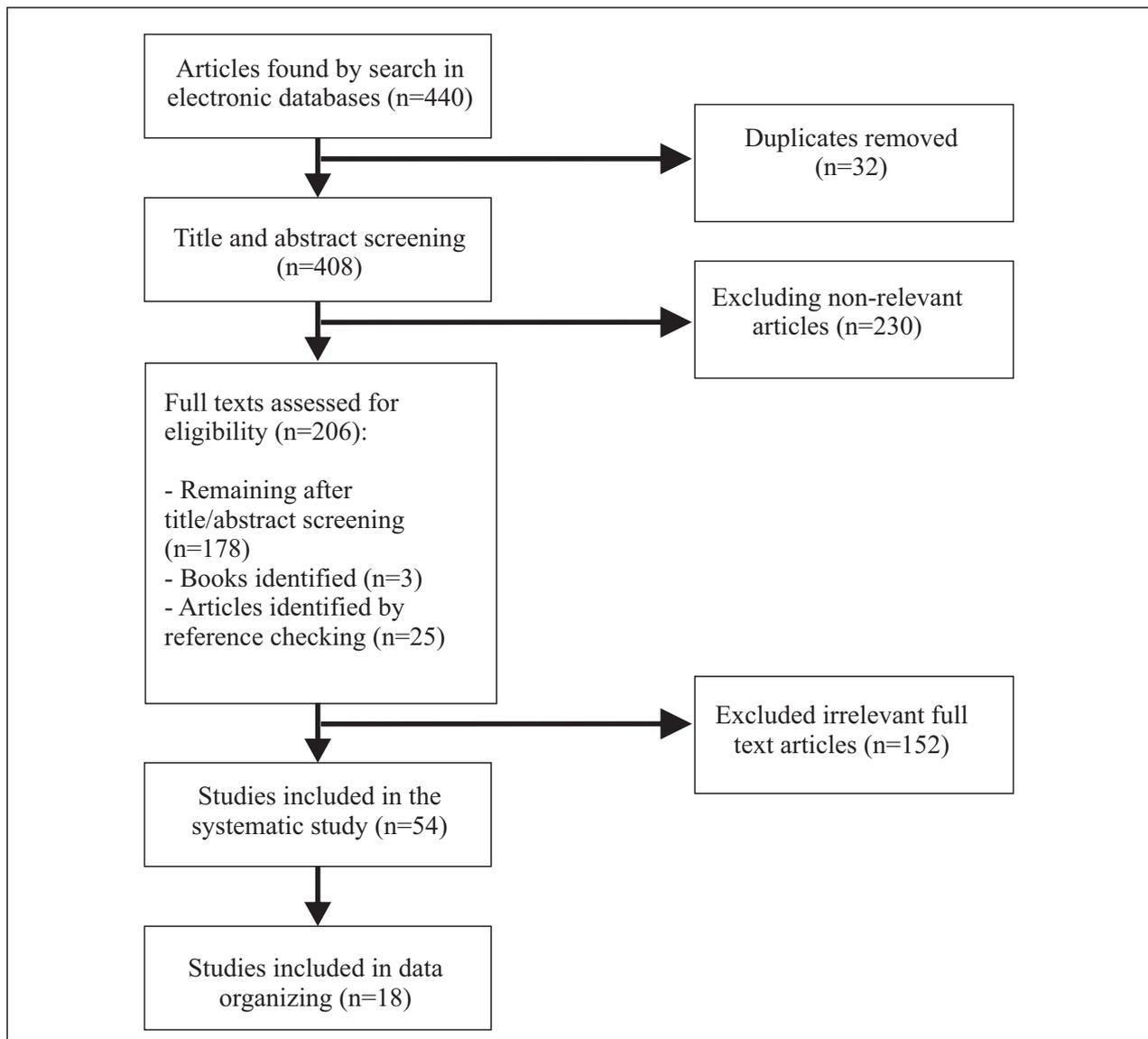


Figure 1. Search strategy in the study

In addition, psychological disorders, i.e., stress, depression, and anxiety, may further complicate the clinical course and treatment of the disease leading to a life-threatening crisis.⁶⁻¹⁰

Stress is defined as a nonspecific biological response to environmental demands and conditions. Chronic diseases such as BC are important environmental factors leading to stress. BC patients tend to counteract the situation by resorting to nonproductive methods such as excessive sleep, drinking, avoidance, and denial.^{7,11} Studies have shown that 31% to 54% of newly diagnosed BC cases reported sleep problems up to 6 months following the diagnosis. Persistent insomnia (up to 2-6 years following the diagnosis) heralds a serious and urgent problem in cancer patients.¹² In this regards, it has been noted that sleep and stress are interrelated modalities,¹³ with stress being a major contributor to sleep problems.¹⁴ On the other hand, stress also

contributes to depression, paving the road for emotional, functional, and communicational disturbances as well as reduced life satisfaction.¹⁵ Some of the factors leading to patients' stress and anxiety include advanced disease,¹⁶ time elapsed from the diagnosis, disease recurrence,¹² physical weakness,¹⁷ surgical therapies,¹⁰ and finally the fear of loneliness and death.^{7,18,19}

The stress inflicts detrimental effects on health and body organs. The response to stress negatively affects emotional, cognitive, behavioral, physical, and social aspects of the patients' health, subsequently leading to problems in personal and interpersonal relationships.^{15,17} A viable option to tackle stress is to implement stress management strategies.¹³ Some of the strategies assisting in stress management include face-to-face and phone-based counseling sessions,²⁰ group discussions,^{21,22} telephone interventions,²³ peer counseling,^{24,25} relaxation exercises,²⁶ supportive counseling,^{27,28} support groups,²⁹ and mindfulness.¹³



Since stress reduction interventions are designed based on a strategic plan, they can assist physicians and psychologists to diagnose mental disorders in patients. However, systematic studies focusing on stress management strategies are limited.³² Therefore, this study aimed to systematically review the studies that had implemented stress management strategies in patients with BC.

Methods

In the present review, we searched for English- and Persian-language papers published from 1997 to November 2017 according to the following protocol:

1. Developing the research question;
2. Designing the search strategy;
3. Study selection;
4. Presenting the data.³¹

Developing the Research Question

The research question was formulated, using the PICOD framework, as “interventional strategies for managing stress in patients with breast cancer” (population (P): women with BC, intervention (I): stress management strategies, comparison (C): women with BC receiving no intervention for stress management, outcome (O): the severity of stress postintervention, and study design (D): all controlled trials.

Search Strategy in Scientific Databases

The literature search was performed in Google Scholar, Scientific Information Database (SID), Magiran, Irandoc, Barakat Knowledge Network System, Web of Science, Science Direct, Cochrane Library, ProQuest, PubMed [including Medline], Springer, and Elsevier databases using the Medical Subject Heading (MeSH) terms. Keywords included “breast cancer,” “supportive program,” “stress management,” “intervention,” “relaxation,” “meditation,” “problem-solving,” “mental therapy,” and “psychotherapy.” Boolean operators were applied to conduct combined searches as follows: “breast cancer OR breast neoplasm AND supportive program,” “breast cancer AND stress management,” “breast cancer AND stress management AND interventions,” and, finally, “breast cancer AND relaxation.”

Studies Selection

After the primary search, records were screened by title. Out of 440 retrieved records, 32 studies were excluded for being duplicate or irrelevant or lacking the inclusion criteria. In the second screening stage

of the remaining 408 articles, an additional 230 articles were omitted after reading abstracts. The reasons were inconsistency with the inclusion criteria, full text unavailability, and publication in languages other than English or Farsi. After that, the full text of the 178 remaining articles was read. Checking the reference lists of these articles, we identified an additional 25 articles and 3 textbooks. After reading full texts, 152 articles were excluded as they did not meet the inclusion criteria. Finally, 54 research items (including the 3 textbooks) were selected. Among these, 18 articles were related to stress management (Figure 1).

Inclusion and Exclusion Criteria.

Articles addressing stress management in women with BC were included. Articles that considered other cancers or other factors such as quality of life, anxiety, depression, or non-stress factors were excluded.

Data Collection

Considering our inclusion and exclusion criteria, the titles, abstracts, and full texts of the articles were evaluated and organized in different subclasses (Table 1).

Results

Descriptive Findings

Of the 18 interventional studies included, 6 studies had used mindfulness approaches, 2 applied relaxation techniques, and 7 had employed stress-related cognitive-behavioral therapy. Stress management using resilience training was evaluated in one report. Another two articles scrutinized the coping and problem-based approaches. The primary outcome in most of the studies was to improve stress in the patients.

The interventional strategies performed in different studies included cognitive-behavioral therapy based on stress management, knowledge of the mind for stress reduction, and stress management by problem-solving, emotion-centered and problem-oriented copings styles. The majority of the studies had been conducted in group-based settings.

The results were classified into primary (stress management interventions) and secondary (impact of the duration as well as the content of the sessions, and the number of participants on stress) outcomes. In all the assessed studies, stress management interventions led to stress reduction in patients.



Mindfulness-Based Stress Reduction

Six studies examined the effectiveness of mindfulness-based stress reduction strategies in patients with BC. The number of sessions varied from 6 to 8.^{33-36,13} The interventions were effective in reducing patients' stress. These studies also showed that patients educated about mindfulness were less likely to experience stress and symptoms associated with mental disorders.³⁶ In comparison with patients in intervention groups, the patients in control groups, who did not receive any intervention, were significantly more vulnerable to stress, digestive problems, cardiovascular diseases, behavioral disorders, depression, and irritability.³⁷

Relaxation

Two studies examined the effects of relaxation on stress in patients with BC. Aghabarari *et al.* and Lechner *et al.*, conducted 9 and 10 relaxation sessions, respectively. The mean postintervention stress levels were significantly reduced compared with the preintervention state in both studies, while the mean and percentage of stress significantly increased in the control group.³⁸

Cognitive-Behavioral Stress Management

Cognitive-behavioral stress management (CBSM) method considers both patients' behavior and emotions in stress management procedures. The content of this program includes training anxiety reduction skills, informing about stress resources and stress indicators, learning and replacing negative thoughts, and teaching cognitive and interpersonal stress coping skills. During CBSM sessions, the patients learn how to use these skills to change their perceptions toward stressful conditions and cope with stress.^{8,9,40-44} Breast cancer has been identified as a major source of stress, anxiety, and difficulties in interpersonal interactions. Therefore, CBSM interventions actually aim to overcome these problems by providing a platform for stress relief. Overall, 7 articles reported that stress was reduced in patients receiving CBSM-based educations and skills.^{8,42-47} In these studies, the number of sessions varied from 5 to 10, depending on the patients' perception and their conditions. The higher number of sessions led to a more effective education and training skills. These interventions included discussion-based sessions and information exchange that consequently had a positive impact on stress reduction. A common feature of the studies using this style was focusing on stress management through

relaxation and change of attitudes.

Stress Management and Resilience Training Program

This strategy is a structured method of reducing stress and enhancing flexibility. Since humans tend to exaggerate their deficiencies, efforts to cope with such deficiencies are associated with stress. In this method, exercises such as relaxation, diaphragmatic breathing exercises, and attention to workouts help to reduce stress by focusing on remote memories. This can increase the patients' flexibility in coping with stress. Studies have shown the effectiveness of this stress management method in alleviating stress in patients with BC. Scheduled meetings included 12 ninety-minute sessions.⁴⁸

Active and Passive Coping Approach

Kornblith *et al.* studied the buffering effect of social support against the psychological impacts of stressful life events in women with BC. They showed that emotional support can eliminate stressors, relieving mental stress in patients with BC.⁴⁹ In fact, seeking emotional support is an essential part of active stress-coping styles. Accordingly, emotional support was a positive predictive factor for improving psychological stress.⁴⁹

Problem-Centered and Emotion-Centered Approaches

In this stress management style, coping approaches are divided into problem- or emotion-based categories. Problem-based coping styles use methods such as problem-solving, decision-making, conflict resolution, information seeking, counseling, and goal setting to resolve a problem or a stressful situation.

In emotion-based style, emotional responses and stressful events are characterized first. Then, methods such as rehabilitation and cognitive reassessment, emotional expressions, behavioral changes (performing pleasant activities), and reducing physical stress (exercise, relaxation, and deep breathing) are applied to cope with stress. Problem-solving is a method of analyzing the problem and adopting the best coping strategies. Allen *et al.* provided BC patients a telephone-based training on the principles of problem-solving stress management style including problem orientation, problem definition and analysis, alternative creation, decision-making and evaluation process, and implementation and validation of the solution. The

**Table 1. Summary of the studies**

First Author (Year)	Country/ state/cities	Type of intervention (Group/Individual)	Sample size (case/control)	Duration/ No. of sessions	Outcome	Intervention content	Finding
Antoni ⁹ (2006)	USA	Stress management on behavioral processes in breast cancer patients (Group)	199	10 weeks	Stress management	Relaxation/ anxiety reduction, cognitive reconstruction, and teaching effective interactions and interpersonal skills.	Impact of interventional programs on reducing stress and reducing tumor progression
Groarke ⁴³ (2013)	Ireland	Cognitive-behavioral stress management (Group)	178/ 177	5 sessions	Stress management	Stress management, fatigue reduction, adaptive coping through relaxation training, guided imagery, and cognitive restructuring.	Effectiveness of CBSM in reducing stress
Stagl ⁴⁷ (2015)	Miami (USA)	Cognitive-behavioral stress management (Group)	120/ 120	10 weeks	Stress management	Cognitive reframing, effective coping skills training, assertiveness training, anger management, and relaxation training (e.g. progressive muscle relaxation, guided visual imagery, and diaphragmatic breathing).	CBSM improved physical and emotional well-being
Khatiban ⁴⁴ (2014)	Ahvaz (Iran)	Cognitive-behavioral interventional (Group)	12/ 12	10 sessions	Stress management	Explaining the concepts of depression, anxiety, and stress and their effects on breast cancer; expressing the physical and psychological consequences of depression, anxiety and stress for patients with breast cancer; describing negative self-conscious thoughts associated with depression, anxiety, and stress during breast cancer; expressing thoughts of self-efficacy; negative self-esteem, negative self-defense coping strategies, possible responses to these thoughts and how to replace these thoughts with positive ones.	Effect of cognitive group therapy on reducing stress
Lechner ³⁹ (2014)	Miami (USA)	Community-based stress management intervention (CBSM) (Group)	52/ 56	10 weeks	Stress management	Progressive muscle relaxation, visualization, deep breathing, meditation, providing coping skills training, and building interpersonal skills.	Stress management after stress management intervention
Antoni ⁴⁵ (2003)	Miami (USA)	Cognitive behavioral stress management (Group)	63/ 56	10 weeks	Stress management	Didactic explanations, in-session experiential exercises (role-playing) and out-of-session assignments (e.g., practicing in relaxation and completing homework assignments examining responses to stressors encountered during the week), teaching stress reduction techniques such as rational thought replacement with specific modules, improving their coping strategies, interpersonal skills.	Role of interventions on reduction of behavioral disorders



First Author (Year)	Country/ state/cities	Type of intervention (Group/Individual)	Sample size (case/control)	Duration/ No. of sessions	Outcome	Intervention content	Finding
McGregor ⁴⁶ (2015)	USA	Cognitive-behavioral stress management (Group)	76/ 75	10 weeks	Stress management	Awareness of the effects of stress, cognitive reframing, cognitive coping skills training, assertiveness training, anger management, and various relaxation techniques (including progressive muscle relaxation, guided imagery, and mindfulness meditation).	Reduction of psychological distress
McGregor ⁴³ (2004)	USA	Cognitive-behavioral stress management (Group)	11/ 18	10 weeks	Stress management, immune function	CBSM techniques (e.g., cognitive restructuring, coping skills training, assertion training and anger management) in a didactic format incorporated with relaxation exercises (e.g., progressive muscle relaxation, guided imagery, meditation, deep breathing), emotional expression and support from group members.	Effect of cognitive behavioral therapy on stress
Rezaei Ardani ⁴² (2015)	Mashhad (Iran)	Cognitive-behavioral stress management (Group)	16/ 16	10 weeks	Quality of life negative emotions	Stress and responses, stress, musculoskeletal disorders, stress, stress and knowledge, exercise to increase knowledge of physical symptoms of stress, confusion with imaging and diaphragmatic respiratory exercise, the relationship between thoughts and sentiments, thinking exercise, negative thinking and distortion cognitive behavior, negative thoughts and behaviors, recognition of negative thoughts, difference between logical and unreasonable suggestions, steps for the replacement of rational thoughts, practice of replacing rational thoughts, defining coping, efficient coping types, inefficient coping types, discussion in the intervention of coping strategies, anger and knowledge, anger management, expressive teaching, interpersonal styles, behavioral barriers expressive, components of expressive communication, problem solving for conflicts, steps for more expressive behavior, social support, understanding social support, benefits of support social barriers to maintaining social support, stress management techniques for maintaining social support.	The Effect of cognitive behavioral therapy on stress
Loprinzi ⁴⁸ (2011)	Minnesota (USA)	Stress management and resilience training (SMART) program (Group)	12/ 12	12 weeks	Stress resiliency	Teaching the SMART program, discussed during the first session; relaxation; deep diaphragmatic breathing practice; follow-up session with a physician.	Effect of stress resiliency on stresses
Bisseling ³⁴ (2017)	Arnhem	Mindfulness-based stress reduction (Group)	64/ 64	8 weeks	Mindfulness-based stress	Sessions consisted of mindfulness practices, didactic teaching on stress, and sharing experience with one another, and psycho-education about grief.	Improvement of psychological symptoms with mindfulness



First Author (Year)	Country/ state/cities	Type of intervention (Group/Individual)	Sample size (case/control)	Duration/ No. of sessions	Outcome	Intervention content	Finding
Shapiro ¹³ (2003)	Tucson	Mindfulness-based stress reduction (Group)	26/ 28	6 weeks	Mindfulness-based stress	Meditative practices, meditation involving awareness of body sensations, thoughts, and emotions while continually returning the focus of attention to the breath, body scan, Hatha yoga, didactic material was presented on the psychological and physiological effects of stress, and cognitive-behavioral coping tools were introduced as a means to cope with stress.	Improvement of psychological symptoms with mindfulness
Lengacher ³³ (2012)	Tampa (Florida/ USA)	Mindfulness-based stress reduction (Group)	41/ 48	6 weeks	Mindfulness-based stress	Educational material related to relaxation, meditation, and the mind-body connection, meditation, group discussion, supportive interaction between group members, the formal meditative training was consisted of four types of techniques (sitting and walking meditation, body scan, and gentle Hatha yoga) that focus attention on breathing, mindfulness in everyday life, and included being aware of pleasant and unpleasant events, routine activities, and everyday events.	Improvement of psychological symptoms with mindfulness
Huang ³⁵ (2016)	Shanghai (China)	Mindfulness-based stress reduction (Group)	429/ -	8 weeks	Mindfulness-based stress	Meditations (sitting meditation, body scan, and walking meditation), gentle yoga. The training manual included weekly objectives, exercises, and programs identified below, daily diary for recording practice activities at home.	Improvement of psychological symptoms with mindfulness
Sanaei ³⁶ (2017)	Tehran (Iran)	Mindfulness-based stress reduction (Group)	20/ 20	8 weeks	Self-efficacy perceived stress life orientation	Nothing was mentioned.	Stress relief in patients with mindfulness intervention
Specia ³⁷ (2000)	Canada	Mindfulness-based stress reduction (Group)	46/ 27	7 weeks	Mindfulness-based stress	Didactic, inductive, and experiential modes, theoretical material related to relaxation, meditation, and the body-mind connection, experiential practice of meditation during the group meetings and home-based practice, group process focused on problem-solving.	Reduction of mood disturbances and stress
Allen ⁵¹ (2002)	Island	Problem-solving approach	87/ 77	12 weeks	Problem-solving	Problem orientation, problem definition, generation of alternatives, decision-making, solution implementation.	Reducing stress associated with the diagnosis and treatment
Aghabarari ³⁸ (2008)	Tehran (Iran)	Exercise program (Group)	28/ 28	9 weeks	Exercise program stress anxiety depression	Warm-up exercise, stretching exercise, motion movements, sweating movements including relaxing movements and music in each of these stages.	Reducing the stress of patients with exercise programs



results showed that the problem-solving approach was effective in reducing stress in patients with BC.⁵¹

Discussion

Eighteen studies aiming to manage and reduce stress in patients with BC were evaluated. Three of these studies had been conducted in Iran while 15 were related to other countries. In the present systematic study, we identified 6 groups of stress management interventions, i.e., mindfulness-based stress reduction, relaxation, CBSM, stress management and resilience training program, active and passive stress coping approaches, and problem- and emotion-based approaches. Being diagnosed with BC is a disappointing and stressful experience. In addition, therapeutic interventions (i.e., surgery and chemotherapy) impose further adverse and debilitating complications, influencing the communicative abilities of the patients. Furthermore long-term negative effects of stress can significantly interfere with patients' personal and interpersonal relationships.⁵²

The study of Hamzehgardeshi *et al.* showed that support programs can effectively improve patients' marital life. They implemented a relaxation technique to alleviate patients' stress and to provide them with a stress-free environment. During the study, the researchers continually communicated with the patients by phone calls. These interventions resulted in higher satisfaction with marital status and sex life. The results of this study were consistent with those of Jun *et al.* and Shariati *et al.*,²⁶⁻²⁸ although the latter also investigated the effects relaxation skills training on stress.²⁶

On the other hand, individuals' environmental perceptions have been noted as important stress inducers. In fact, stress may remain undiagnosed in some patients. Understanding the symptoms of stress could help to diagnose and effectively cope with this condition. Therefore, it is a necessity for both psychologists and patients to be aware of stress symptoms. This can help psychologists to recommend various stress management interventions to patients to alleviate stress symptoms. Stress is a physical, mental, and emotional tension which can be triggered by various events. Stress can affect various body organs and reduce the function of the immune system.⁵³ Therefore, methods such as cognitive-behavioral therapy which are based on stress management by providing educational contents aimed at changing patients' thoughts and perceptions are particularly effective in attenuating psychological crises.^{8,9} This

has been shown by several studies.^{8,43,46,54} It should be noted that various types of stress management interventions may not directly address the psychological problems (i.e., stress).⁴⁴

Nevertheless, it seems that considering psychological problems as a spectrum of intertwined disorders, along with giving special attention to the relationships among stress, anxiety, depression, and insomnia, may provide the best stress-coping strategy.

It should be noted that the methods of assessing problems are variable based on their characteristics. The greater the problem is, the more difficult the coping style will be. Therefore, educating patients about the features of coping and adaptation styles can help control stress and improve individuals' responses to the condition. That is why in the emotion- and problem-based stress-coping techniques, the aim is to provide a stress-free setting for the patients. Stress management is a way of enhancing the patients' abilities in fighting stress and also making them more adaptable to stressful situations. Although Behzadipor *et al.* did not directly assess stress in their study, their patients reportedly had good mental health⁵⁰ probably attributable to the implementing of these stress-coping techniques. On the other hand, patients knowledge about the physical symptoms of stress (such as anger) can augment the effectiveness of stress-reducing interventions and accelerate alleviating the problem. The findings of this study were consistent with those of Cruess *et al.* and Safarzadeh *et al.*^{40, 41} Our results also showed that stress-based interventions led to the reduction of psychological symptoms, such as stress, in patients. The positive impacts of such interventions on stress not only affected the individuals' life, but also improved personal and social communications in the patients.

The strengths of this study included a narrative approach to stress-coping interventions. The authors sought to integrate all studies related to stress management. The literature search was conducted in both Farsi and English, including Iranian and overseas studies. However, there were limitations in accessing the full text of some articles. This was a systematic study on the papers focusing on the stress management approaches in BC patients. The purpose of the study was to identify and investigate various stress management interventions in BC patients and to introduce them to health-care providers and patients to be used in clinical practice. According to the abovementioned notations and the



importance of the psychological dimensions of women with BC (as both mothers and spouses), it is recommended that these interventions be considered in parallel with pharmaceutical therapies in these patients. Conducting a systematic review or meta-analysis regarding stress management interventions is also suggested.

Conflict of Interest

The authors have no potential conflict of interest concerning the content of the present article.

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