



The Effectiveness of Mindfulness-Based Stress Reduction Treatment on Depression and Optimism among Women with Breast Cancer during Chemotherapy

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Abstract

Background: A breast cancer diagnosis can be a disturbing and stressful time for women. This study aimed to determine the effectiveness of mindfulness-based stress reduction treatment depression and optimism during chemotherapy among women with breast cancer.

Methods: This study was a quasi-experimental one with a group of pre-test, post-test, and controls. In this study, 26 women with breast cancer detection were identified from the referring patients to the Imam Hossein hospital's oncology and radiotherapy division in Tehran, 2019-2020. Using the method of convenience sampling, the experimental (n=13) and control groups (n=13) were randomly allocated. The study group regularly engaged in mindfulness sessions for 8 weeks (each session lasting 90-120 minutes). In the BDI-II Beck Depression Inventory-II and happiness questionnaires, customers/clients in both the experimental and control groups completed. Data were analyzed by using a univariate covariance test in SPSS 23 software.

Results: According to the findings, there was a significant difference in depression and optimism among breast cancer patients, (Pvalue<0.05). Also, the mean overall depression score for women with breast cancer in the therapy session was considerably lower than the pre-test score, although optimism was significantly higher than the pre-test score (Pvalue<0.05).

Conclusions: The results of this study support the use of MBSR to minimize symptom burden in women with breast cancer. As a result, the effectiveness of MBSR in reducing depression symptoms and improving confidence has been approved.

Keywords: Mindfulness, Depression, Optimism, Women with breast cancer, Chemotherapy.

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sexuality, and self-blame.⁵ In women with breast cancer, depression is one of the most serious psychiatric illnesses.⁶ According to several studies, pessimism versus optimism can cause a slew of negative behavioral and psychological consequences, as well as severe depressive symptoms in breast cancer patients.⁷

Mohamadi rizi et al. found a significant positive relationship between hardness and confidence in Iran.⁸ These findings may show that people with a high level of optimism will feel more dedication in their lives and everyday activities because they look at and view events with a greater sense of control and a challenging attitude as an opportunity in life. In comparison, people with a low level of optimism are passive against defeats or life-threatening situations and attempt to avoid the situation or, in some cases, even lose their sense of control. Furthermore, individuals with a high degree of optimism see difficult situations as a struggle to overcome tension rather than a way to avoid or discourage it and aim to develop determination and emotional regulation to successfully overcome the challenge.^{7,8} Over the years, an increasing number of psychological treatments for cancer patients have been developed to improve their quality of life, overall well-being, and optimism.¹ Psychological interventions can assist with the emotional pain that comes with breast cancer diagnosis and care. Behavioral intervention efficacy testing, on the other hand, is characterized from a broad spectrum of therapies (e.g., cognitive or individual therapy) and effects (e.g., enhanced skills and mental health).⁹

The rapidly rising incidence of psychological disorders in breast cancer patients has recently gained more attention. Patients with breast cancer can be diagnosed and treated in several forms, and it's well known that recovery, both before and after surgery, can be stressful. It's important to move immediately to aid breast cancer patients in coping with psychosocial difficulties and alleviating depression.¹⁰

Patients with breast cancer can be given MBSR as a supportive or adjunctive treatment. Given the various challenges that breast cancer patients encounter, massive clinical trials are needed to assess the effectiveness of new

Introduction

Breast cancer is common cancer among women today and has a devastating impact on the lives of those who are affected by it including physical, economic, interpersonal, and psychiatric disorders.¹ As seen in the literature, several experiences, including depression,² anxiety,³ exhaustion, pain,⁴ difficulty concentrating, social alienation, worries about

treatments that may benefit these patients. In breast cancer patients, MBSR (Mindfulness-based stress reduction) is an effective means of mitigating depression, anxiety, and stress.¹¹ In one meta-analysis study, MBSR has significant effects on physiological function, fatigue, mental health, anxiety, depression, frustration, pain, and mindfulness. Statistical significance was not reached due to a lack of data, despite the positive effects on pain, sleep quality, and general depressive symptoms.⁴

The literature review revealed 14 publications that included ten research with a total of 1709 participants. Important post-intervention benefits of MBSR/MBCT have been documented in terms of health-related quality of life, exhaustion, sleep, stress, anxiety, and depression as compared to standard treatment.¹² Another study discovered that people with cancer who maintain a high level of sustained optimism do better than those who are pessimistic.¹³ This research aims to look at the effects of therapeutic therapies and how they work in the cancer population, to change the wellness habits of cancer patients, their families, and friends.

Materials and Methods

A quasi-experimental sample with a pre-test, post-test, and control group was used in this study. In this research, 26 women with breast cancer were chosen from patients who were referred to Imam Hossein hospital's division of oncology and radiotherapy in Tehran in the years 2019-2020. The experimental (n=13) and control (n=13) groups were randomly allocated using the convenience sampling process. The patients were given mindfulness-based stress reduction as an intervention. Each of the eight sessions (90-120 minutes, once a week) was conducted independently and according to the treatment plan.¹⁴ Patients had to be between the ages of 20 and 50, have a high school diploma, have no major physical or psychological problems in the past six months, non-administration of psychiatric drugs by patients, and diagnosis of stage II or III breast cancer in patients who had received routine chemotherapy therapy. The conditions for exclusion were having a history of mental disorders, bipolar disorder, extreme personality disorders, or other cancers; engaging concurrently in other psychological courses; absence of psychoactive substance use, drug or alcohol addiction; and absence of more than two sessions. The convenient screening was used to include all participating patients in the sample. Ten patients out of 36 who were qualified declined to take part in the study. Finally, the trial was done by 26 patients (13 participants per group; figure 1).

According to a previous report (anxiety score: $x_1=47.53$; $S_1=4.18$, and $x_2=43.06$; $S_2=4.39$), the sample size for each group was 22 individuals.¹⁵ The measured strength is 90 percent and the confidence coefficient is 95 percent. Owing to the probability of sample depletion, only 26 people were selected for this study. Until

attending, all participants were briefed about the study's intent and signed written informed consents. The hospital authorities granted permission, and all participants were informed of the study's intent. The confidentiality of the data was still preserved, and all questionnaires were encrypted. The collected data were analyzed using the SPSS-23. Descriptive statistics were used, including mean and standard deviation and empirical statistical measures, including Levene's test homogeneity and covariance analysis (ANCOVA). Significant level was set at 0.05.

The Beck depression questionnaire, the second edition (BDI-II): This is a new version of the Beck depression inventory, which was created to assess the seriousness of depression.¹⁶ This tool also has 21 objects that are scored on a four-point Likert scale (0=not at all to 3=very severe), with a score range of 0 to 63. The cumulative number of points ranges from 0 to 63. The level of depression is shown by higher scores on the scale. Mild depression is scored 14-19, moderate depression is scored 20-28, and extreme depression is scored 29-63 on Beck's inventory. The score of this tool is obtained by summing the score of the items and a higher score means more depression. Beck and Clark reported its reliability by Cronbach's alpha method of 0.89.¹⁷ The internal consistency of this questionnaire was also reported to be 0.91.¹⁶ Also, its internal consistency in Iran by Cronbach's alpha method is 0.94.¹⁸ In the present study, Cronbach's alpha reliability coefficients for this questionnaire were calculated to be 0.89.

Life orientation test-revised: Habitual optimism was tested with the LOT-R¹⁹ with three items each, along with four filler items, it consists of two subscales, optimism, and pessimism. The test was initially supposed to be a one-dimensional instrument. Each item needs a five-point Likert scale response, ranging from 0 (strongly disagree) to 4 (strongly agree) (strongly agree). For subscales, the scale ranges from 0 to 12.¹³ The life orientation test (LOT) questionnaire to measure optimism which consists of 10 items and has a five-point Likert scale ranging from 0 to 4. The scoring range is from 0 to 24. Higher scores indicate higher optimism. It is worth noting that scores higher and lower than average are considered as high and low optimism, respectively.^{20,21} Cronbach's alpha reliability coefficients for this questionnaire were determined to be 0.78 in the present analysis.

The study was performed at Imam Hossein hospital's division of oncology in Tehran by two master clinical psychologists who were familiar enough with the intervention (they have qualifications for administering this treatment) and met ethical research requirements such as informed consent and keeping participants' secrets. Participants were tested twice: once at baseline before intervention in experimental groups and again after intervention in control groups. During 8 weekly group sessions lasting 90-120 minutes, the first study client obtained therapy based on a mindfulness-based stress management protocol.¹⁴ The following is a list of guidelines for how to deliver mindfulness-based stress relief therapy sessions.

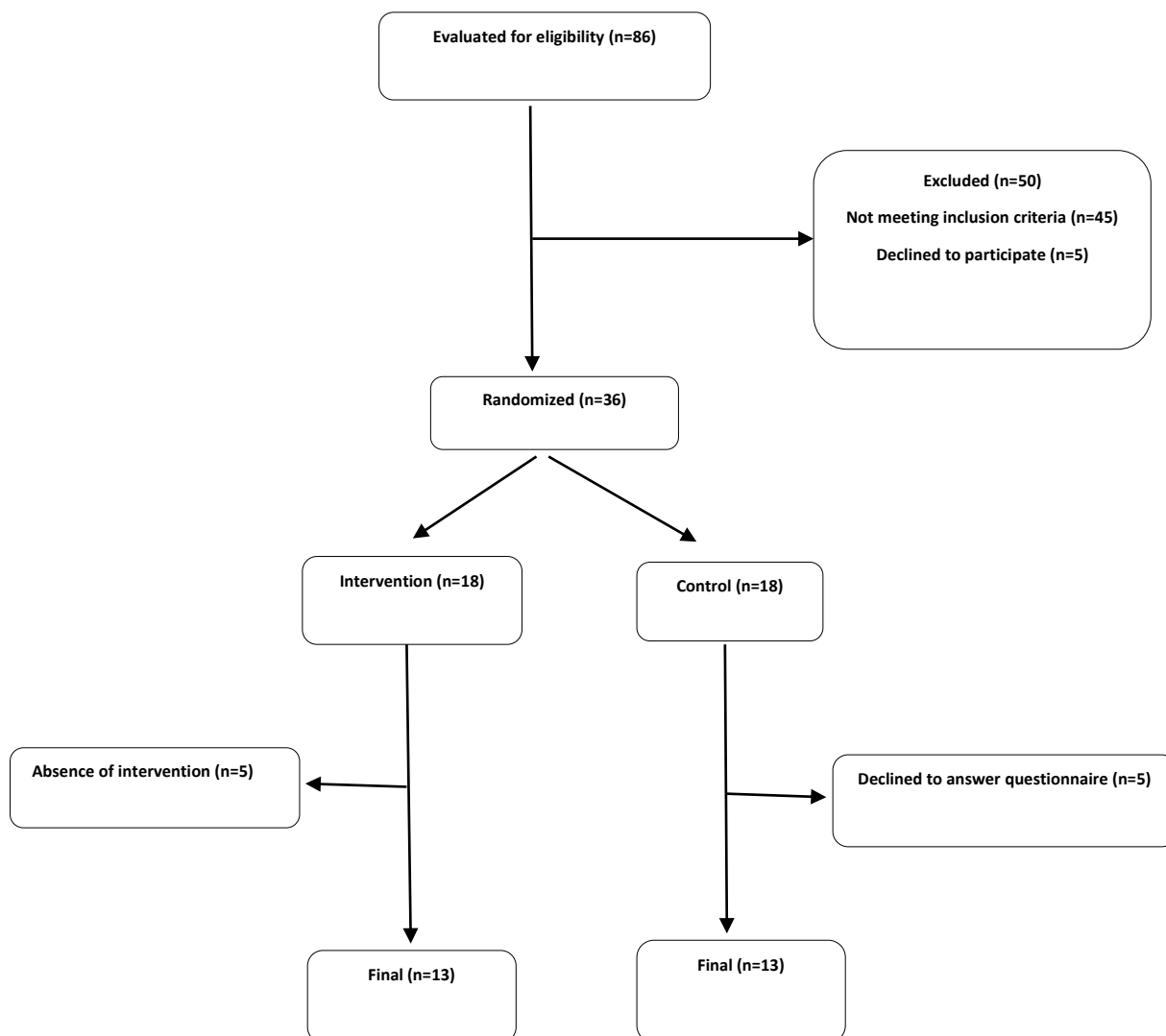


Figure 1. The flow diagram of the study

Table 1. Content and treatment sessions

Session 1: The implementation of the automated guidance system/ learning how to use present moment perception of body feelings, perceptions, and emotions in reducing stress/ eating raisins (Object attention training), providing feedback and dialog on the practice/three-minute breathing/assigning homework for the next week and handing out first-session leaflets and meditation CDs.

Session 2: Re-examination of the body/feedback and discussion of the body examination practice/breathing mindfulness meditation/yoga stretching exercise/distribution of second session leaflets and meditation CDs.

Session 3: Conscious sitting with knowledge of breathing (sitting meditation)/practicing yoga exercises (in the hospital chapel)/practicing three-minute breathing/distribution of third session leaflets and videotapes of yoga practices.

Session 4: Re-enacting the body examination/doing exercises related to conscious yoga (in the hospital chapel)/5-minute "seeing or hearing" practice/re-enacting conscious sitting with knowledge of breathing and body/distribution of fourth session leaflets and meditation CDs

Session 5: Practicing breathing/re-practicing conscious sitting (awareness of breathing, body, sounds, and emotions)/explaining tension and understanding the responses of participants/examining awareness of good and negative occurrences on feelings, thoughts, and feelings in the body/conscious yoga exercises/three-minute breathing/distribution of leaflets

Session 6: Practicing conscious yoga/doing sitting meditation (sound and thinking mindfulness)/distribution of sixth session leaflets and videotape number 4 to participants.

Session 7: Mountain meditation/sleep hygiene/repetition of previous session exercises/making a list of fun activities/distribution of seventh session leaflets

Session 8: Practice body inspections/overview of the entire program/examination and discussion of programs/meditation with mortar, beads, and marbles

Results

The distribution of age, education, and employment status of women with breast cancer in table 2 is presented. (42%) of the patients belonged to the age group of 30-40 years, 49% of the patients had a bachelor's degree and 69% were housewives.

From Table 4, it is obvious that there is a substantial gap between the two classes. In the post-test depression variable,

there is a substantial difference between the experimental and control groups ($P < 0.001$; $F = 272.926$). As a result, it can be said with 95% certainty that mindfulness reduces depression in breast cancer patients. Table 4 shows a significant disparity between the two classes. The testing and control groups have a significant confidence gap in the post-test ($P < 0.001$; $F = 42.015$). As a result, it can be said with 95 percent accuracy that mindfulness has an effect on women with breast cancer's optimism.

Table 2. Comparison of sociodemographic characteristics of the patients

Variable	Groups	Training group (n=26, n (%))
Age	20-30	29
	31-40	42
	41-50	19
Job	Homemaker	69
	Employed	31
	Under- diploma	9
Education	Diploma	21
	Bachelor	49
	Master and higher	21

Table 3. Frequency, mean, standard deviation, minimum, and maximum scores obtained in pre-test and post-test

Variables	Sub-groups	Groups	Mean±SD	Min	Max
Depression	Experimental	Pre-test	24±5.8	17	34
		Post-test	17.6±5.45	16	32
	Control	Pre-test	22.7±4.520	11	29
		Post-test	22.65±4.30	17	31
Optimism	Experimental	Pre-test	15.6±3.89	9	23
		Post-test	18.25±3.99	10	21
	Control	Pre-test	16.1±3.29	12	26
		Post-test	16.2±3.33	10	21

Table 4. Results of ANCOVA test in experimental and control groups with control of pre-test effect

Variables	Source of change	Sum of square	Degree of freedom	Mean square	F	Pvalue
Depression	Pre-test	866.100	1	866.100	321.344	0.067
	Group	376.196	1	376.196	272.926	0.00
	Error	1.378	37	51.00		
Optimism	Pre-test	461.491	1	461.491	213.152	0.087
	Group	61.330	1	61.330	42.015	0.00
	Error	54.009	37	1.460		

Discussion

The present study is one of the few studies which examines the status of depression and optimism in Iranian women with breast cancer and investigates the mindfulness approach with those variables. The effects of mindfulness on depression and optimism in breast cancer patients were investigated in this research. According to the findings, mindfulness practice helps these people feel less depressed and more optimistic. Few studies have looked at the efficacy of mindfulness methods in cancer patients.^{11,21-26} Just a few studies were identified after a thorough literature review that specifically investigated the efficacy of mindfulness interventions in the cancer environment, particularly on these variables, but this still provides valuable pilot evidence.

Only a few research has looked at how effective mindfulness approaches are for cancer patients.^{11,21-26} Just a few experiments focused on the effects of mindfulness

interventions in the cancer environment, specifically on these factors, were identified after a thorough literature review, but this still provides valuable pilot evidence. Cancer diagnosis and recovery, on the other hand, are often related to physical and mental health problems. Patients with cancer often complain of pain, exhaustion, depression, and anxiety. Approximately half of all cancer patients feel exhaustion, and more than a third experienced severe psychological distress.^{4,12}

As a result, mindfulness-based stress relief is beneficial not only to patients receiving successful therapies but also to survivors once they have completed therapy. A randomized study of breast cancer survivors found that mindfulness-based stress control therapy reduced anxiety, fear of recurrence, as well as physical signs of exhaustion severity and fatigue interference.¹⁰ Long-term benefits from mindfulness-based stress reduction were seen in those suffering from cancer-related cognitive impairment, a fatigue-related symptom that hurts quality of life.^{11,22}

A systematic review analysis found a strong connection between participants' well-being immediately after diagnosis or treatment and their long-term follow-up. When it came to hoping and optimism, the findings showed that a higher level of initial optimism indicated more positive optimism and long-term follow-up well-being, which in all of the follow-up trials was one year after diagnosis or treatment.¹ Although the processes behind meditation's health effects are still unidentified, recent research indicates that it may affect structural and functional changes in the brain that regulate consciousness, mood, and self-awareness.²³

An experimental research found that mindful breathing practice resulted in greater “decentering” from internal interactions and a reduction in reactivity to repetitive thinking as compared to incremental muscle relaxing or loving-kindness meditation.²⁴ Furthermore, mindfulness-based stress mitigation may modulate the immune system and enhance cellular resilience by improving telomerase activity, a known marker of cellular aging and psychological danger, as evidenced by a decrease in the ratio of T1 proinflammatory to T2 anti-inflammatory lymphocytes.²⁵

According to the findings of this report, the healthcare team should have a detailed understanding of the personality characteristics of cancer patients, as measures such as dedication, power, and difficulty, as well as optimism, can influence a patient's response to a treatment plan or nursing care. As a result, interventional procedures such as consultation will help to alleviate cancer patients' stress and encourage their resiliency.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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