



# Comparison of Effectiveness of the Mindfulness-Based Cognitive Therapy and the Metacognition Treatment on Anxiety, Depression and Stress Among Breast Cancer Patients

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## Abstract

**Background:** The present study aimed to compare the effectiveness the metacognition treatment (MCT) and mindfulness-based cognitive therapy (MBCT) on anxiety, depression, and stress in the females with breast cancer.

**Methods:** The planning of this study is through a quasi-experimental method of pretest and posttest type with control group. The target society of the research included every cancer patient who admitted to Tehran hospitals for breast cancer. Through assigned randomly, 12 patients were selected for the MCT group and 12 patients for the MBCT group, and the other were assigned control group. The data collection tools included depression, anxiety and stress scale - 21 items (DASS-21) questionnaire. For statistical analysis, descriptive tests and repeated measures analysis of variance were performed.

**Results:** Data analysis with repeated multivariate measurements illustrated that there is a significant difference in the rate of depression, anxiety and stress, in three groups.

**Conclusion:** According to our results, MBCT was more effective compared to metacognitive therapy.

**Keywords:** Mindfulness-based cognitive therapy; Metacognition therapy; Anxiety, Depression; Stress; Breast cancer; Female.

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## Introduction

The prevalence of breast cancer has been reported to be more than 23% in 40 to 55 years old women around the world.<sup>1,2</sup> Due to medical progresses; many people are living with cancer nowadays compared to before. Despite the progressive treatments, expectations and needs of patients had often been attend.<sup>3</sup> Emotional health is one of the important aspects of health that is of psychologists' interest. Breast cancer can develop a lot of deep emotions such as depression, anxiety and emotions accompanying anxiety and depression such as feelings of worthlessness or hopelessness. Also, reactions such as denial, anger and feeling of guilt can be seen and they affect patients' general health negatively. Some patients, at the end of medical therapy, find out that the cancer has brought about negative stable psychological consequences for them.<sup>4,5</sup>

One of the treatments that their impact is clearly shown in this symptom, is metacognition therapy<sup>6</sup> not only this treatment method pay attention on changing and acceptance but also this method has short sessions.<sup>7,8</sup> Metacognition includes understanding of inner states and coping strategies<sup>9</sup> also discussing about positive and negative beliefs are emphasized.<sup>10</sup>

According to some studies, the other treatment that has been shown to have clinical benefits in the treatment of anxiety and depression is mindfulness-based cognitive therapy (MBCT) is presented by Kabat-Zinn.<sup>11,12</sup> Mindfulness is described as the use of a unique and targeted approach in the present moment without making any judgments.<sup>13-15</sup> Reducing anxiety, promoting quality of life, increasing self-acceptance are goals in this method.<sup>16-18</sup>

According to some studies, MBCT has been shown to have clinical benefits in cancer treatment.<sup>19-21</sup> Also studies about metacognition has been illustrated about impact of this treatment in depression patients,<sup>22, 23</sup> post-traumatic stress disorder<sup>24</sup> and anxiety disorders.<sup>25</sup>

Therefore, in order to address this research gap and the need to improve and reduce anxiety, depression and stress in these patients, it is necessary to conduct such a study. Consequently, the theoretical and research principles and information on the impact of metacognition treatment (MCT) and MBSR in females with breast cancer are sparse.

## Materials and Methods

The planning of this study is through a quasi-experimental method of pre-test and post-test type with control group. The target society of the research included all women who referred to the Division of Oncology and Radiotherapy of Imam Hossein hospital during March 2016 to May 2017. Among patients diagnosed of breast cancer, of which a sample of 36 patients was selected with convenient method. Through assigned randomly, 12 patients were selected for the MCT group and 12 patients for the MBCT group, and the other were assigned control group.

Inclusion criteria for this study included: Informed consent and desire to participate in the study, ability to participate in meetings and collaborate on homework, diagnosis of breast cancer and age range of 30-55 years,

minimum education level of high school and a month history of cancer (minimum).

Exclusion criteria for experimental group included: absence, unwillingness or inability to participate in meetings; receiving other treatment.

The target society of the research included every cancer patient who admitted Oncology of Imam Hossein hospital in Tehran. Two clinical psychologists did interventions also they knew about MBCT and MCT. Thirty-six patients were selected with convenient method. MBCT intervention included 8 sessions (1 session per week about 2 hours).<sup>26</sup> The MBCT protocol is presented in Table 1. The MCT protocol is presented in Table 2. The data collection tools included depression, anxiety and stress scale - 21 items (DASS-21) questionnaire.

## Sample Demographic Sheet

The sample sheet included age, sex, educational level, and marital status of the patients. It was prepared and evaluated by the researchers.

## DASS-21

The short form of this questionnaire with 42 questions has been examined by Leviband (1995) to assess depression, anxiety, and stress.<sup>27</sup> Confirmatory factor analysis results has confirmed the existence of the 3 factors of depression, anxiety and stress. Retest coefficient of 3 subscales of this questionnaire was mentioned with sample consisted of

**Table 1.** Protocol of MBCT Training Sessions

Session	Subject
1st	Introduction about automatic guidance system/knowledge on how to use present moment awareness of bodily sensation, thoughts and emotions to reduce stress, give assignment for next week and distributing first CDs about meditation
2nd	Examining of body workouts/ giving feedback and discussing body workout/ practicing breathing in mindfulness meditation
3rd	Sitting meditation with awareness of breathing/distributing video tape about yoga practices
4th	Seeing or hearing practice/ re-practicing sitting meditation
5th	Re- practicing breathing and sitting meditation/ identifying participants' reactions to stress
6th	Practicing knowing about sounds and thoughts
7th	Practicing mountain meditation/ writing about a list of enjoyable activities
8th	Examining body workout /reviewing and discussing programs

**Table 2.** Protocol of MCT Training Sessions

Session	Subject
1st	Introducing about this intervention/ identifying rumination periods (metacognition enhancement)/discussing about completing attention training technique (ATT) (ATT)/ practicing techniques of increasing attention/ giving homework for next session
2nd	Discussing homework, identifying rumination belief and thoughts/introducing and practicing detached mindfulness (DM)/ re- practicing ATT
3rd	Examining homework/ examining uncontrollable belief/ discussing about with uncontrollable metacognitions/giving homework for next session
4th	Re-examining uncontrollable belief /challenging with positive beliefs about rumination/ practicing ATT/ using DM and postponing the rumination.
5th	Re-examining the uncontrollable belief and re- challenging positive belief
6th	Identifying negative beliefs and discussing with negative beliefs
7th	Examining negative beliefs and useless strategies/writing new designs of recurrent fears
8th	Reviewing about all sessions, examining the other cognitive beliefs/discussing about using new program.

20 patients between 71%-81% at an interval of 2 weeks.<sup>28</sup> Reliability and validity of this questionnaire were studied on a number of subjects in England.<sup>29</sup> Retest reliability for depression, anxiety and stress are reported respectively 80%, 76% and 77% and Cronbach's alpha for them are reported respectively 81%, 79% and 78%. Validity of this scale was examined by confirmatory factor analysis and in main components method. Kaiser-Meyer-Olkin (KMO) index value was equal to 90% and in Bartlett's test,  $\chi^2$  index was equal to 3092.93 that was significant in the level of 0.0007 and it suggested adequacy of sample and selected variables for factor analysis.

**Results**

People were ranged from 38 to 49 years. Table 3 shows the mean and standard deviation in for age of patients.

Mean and standard deviation of anxiety, depression and stress in 3 groups are reported in Table 4.

Results of Table 4 show that the components of depression, anxiety and stress are almost similar between 2 groups. Comparison of the 2 experimental groups in post-test and follow-up indicates that mindfulness therapy

shows more decrease in the mean score of participants in depression, anxiety and stress components compared to metacognitive therapy.

Multivariate repeated measures model was used to compare 2 therapeutic approaches in control group to decrease depression, anxiety and stress. Therefore, firstly the assumptions of using the model were examined. The results of Mauchly's sphericity test show that the Mauchly's sphericity assumption is rejected in all dimensions but anxiety dimension. Thus, Hevin-Felt corrected values were used for comparison. The assumption of homogeneity of variances was assessed using Levene's test. The results indicate that this assumption is established.

Results of multivariate analysis showed that the time factor effect (pre-test, post-test and follow-up) was significant (Pillai's Trace = 0.946, F28, 6 = 81.15,  $P < 0.0001$ , partial eta square = 0.946). Also, time factor interaction effect  $\times$  group was significant (Pillai's Trace = 1.553, F58, 12 = 16.80,  $P < 0.0001$ , partial eta square = 0.777). Group factor effect (control, mindfulness therapy, metacognitive therapy) was also significant (Pillai's Trace = 1.651, F6, 64 = 50.41,  $P < 0.0001$ , partial eta square = 0.825). Results of comparison of intergroup effect show that there is a significant difference between experimental and control groups in depression (F2, 33 = 33.479,  $P < 0.0001$ , partial eta square = 0.670), anxiety (F2, 33 = 77.69,  $P < 0.0001$ , partial eta square = 0.825) and stress components (F2, 33 = 48.80,  $P < 0.0001$ , partial eta square = 0.747). To examine the interaction effect after experience tests with Bonferroni's adjustment was used. The results are presented in Table 5.

Results of paired comparison in Table 5 show that there

**Table 3.** Mean and Standard Deviation of Patients

	Group	Mean	SD
Age	Control	44.08	3.28
	Stress reduction	43.25	3.08
	Metacognitive	44.92	1.83
Age at diagnosis time	Control	43.33	3.65
	Stress reduction	42.25	3.39
	Metacognitive	43.75	1.71

**Table 4.** Mean and Standard Deviation of Anxiety, Depression, Stress in Patients

	Control (n = 12)			MCT Group (n = 12)			MBCT Group (n = 12)		
	Pre-test	Post-test	Follow-up	Pre-test	Post-test	Follow-up	Pre-test	Post-test	Follow-Up
Anxiety	14.32±1.3	14.33±1.3	15.33±1.3	19.8±1.4	17.75±1.3	19.50±1.3	12.33±1.4	11.83±1.4	16.8±1.7
Depression	25.08±1.1	21±1.4	21.16±1.58	25.08±1.1	19.50±1.5	22.16±1.1	25.08±0.9	14.91 ±1.9	17.33±2.8
Stress	23.58±0.9	23.91±0.9	24.25±0.6	19.08±1.4	19.41±0.9	24.75±1.4	17.91±2.6	16.25±1.7	25.33±2.1

**Table 5.** Paired Comparison of Depression, Anxiety and Stress Between 2 Groups

	Treatment	Treatment	Average Difference	Standard Deviation	P Value
Depression	Mindfulness	Metacognition	- 3.13	0.455	0.0001
	Mindfulness	Control	- 3.30	0.455	0.0001
	Metacognition	Control	- 0.167	0.450	1
Anxiety	Mindfulness	Metacognition	- 5.36	0.450	0.0001
	Mindfulness	Control	-1.25	0.450	0.027
	Metacognition	Control	4.11	0.450	0.0001
Stress	Mindfulness	Metacognition	-1.58	0.417	0.002
	Mindfulness	Control	- 4.08	0.417	0.0001
	Metacognition	Control	- 2.50	0.417	0.0001

is a significant difference between mindfulness therapy and metacognitive therapy in depression component in 2 experimental groups. Comparison of means indicate that mindfulness therapy is more effective. The comparison of experimental and control groups showed that there is a significant difference between experimental group receiving mindfulness therapy and control group in depression component in terms of the amount of depression but the difference between experimental group receiving metacognitive therapy and control group was not significant. The results are presented in Table 1. Comparison of mindfulness therapy and metacognitive therapy showed that there is a significant difference between 2 groups in anxiety component and comparison of means showed mindfulness therapy is more effective. Comparison of each experimental group with control group showed the effectiveness of both therapies and decrease in anxiety in experimental groups compared to control group. The results are presented in Table 2. Comparison of 2 experimental groups in terms of the amount of stress indicated that there is a significant difference between mindfulness-based therapy and metacognitive therapy and the comparison of these 2 groups to control group also indicated there is a significant difference between experimental groups and control group.

## Discussion

Studies have shown that we will have 15 million cancer patients worldwide by 2020.<sup>30</sup> Considering problems of breast cancer and its interventions, it seems that it is an important factor that we should focus on quality of patient's life.<sup>31</sup>

As the results show, anxiety, depression and stress scores decrease in experimental groups in variables and then people showed stability in follow-up. MBCT have shown effectiveness on variables in participates than MCT. This finding is consistent with results of studies conducted in Iran and the world.<sup>32</sup>

Studies showed reductions in research variables after treatments and our results show consistent with these studies.<sup>21,27</sup> In addition, MBCT intervention showed more impact in experimental group. However, positive impact of treatment was not continued in follow-up. In this regard findings have been similar with previous studies.<sup>18,33</sup>

While application of MBCT intervention has reduced side effect significantly and increased quality of life and well-being in the control group and MCT group. Therefore, several studies have supported the impact of MBCT on anxiety.<sup>18,21</sup> Carlson and Spaca have investigated not only impact of MBCT in declining anxiety, pressure and physical stress, but also enchanting mental health, quality of life and well-being.<sup>21</sup> Research investigated conscious practices and levels, medical and psychological symptoms have an important roles and effect in MBCT intervention.<sup>34</sup>

Furthermore, knowledge and understanding of mindfulness by meditation practices through MBCT can help increase in self-awareness and self-acceptance ability in patients. Therefore, MBCT is an accessible pattern to decrease pain and growth of positive quality of life; consequently, this dynamic growth improves the management of depression, anxiety and stress.<sup>17</sup> Consistent with the present findings, MBCT by using self-regulation has a valuable impact on experience patients and this treatment help cancer people to become relax and awareness.<sup>34</sup>

Based on the results of the present study, the MCT program has a role in identifying rumination periods, core belief and intermediate beliefs. In addition, this intervention uses practical techniques in order to increase attention. MCT program try to identify the rumination belief and uncontrollable thoughts, in addition to modify uncontrollable beliefs and preventing harmful coping behavior. MCT follows cognitive method.

There were some limitations for the study including small sample size per group and also since some patient were not willing to participate in the study affects the generalization of the findings to the population of the study. Therefore, it is suggested to promote the patients to participate in training and psychotherapy sessions by emphasizing the importance of mental health along with medical treatments. This study was done on patients of Imam Hossein hospital in Tehran. Therefore, researchers recommend that similar studies should be performed on specific types of cancer in samples selected from different cities.

## Conflict of Interest Disclosures

The authors declare that they have no conflict of interests.

## Ethical Statement

Not applicable.

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