



Original Article

# Evaluation effectiveness of mindfulness-based cognitive therapy on quality of life and mood in women with breast cancer undergoing mastectomy

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## Abstract

**Introduction:** Breast cancer is one of the most common types of cancer. The present research has been carried out to investigate the effectiveness of mindfulness-based cognitive therapy (MBCT) on quality of life and mood in women with breast cancer undergoing mastectomy.

**Materials and Methods:** In this clinical trial (code: IRCT2017040933315N1), 50 voluntary patients who had undergone mastectomy, were screened among the patients admitted to Omid Hospital and Reza Treatment Center in Mashhad and were randomly divided into experimental group (n=25) and control group (n=25). First, both groups were evaluated in pretest phase. Then, the experimental group received group MBCT treatments during eight sessions of 120 minutes, but the control group received no treatment. At the end of treatment, both groups evaluated in post-test phase. Data collection tools included standard questionnaires temperament (POMS) and the quality of life questionnaire (SF-36). The data were analyzed based on covariance analysis using SPSS software (Version 20).

**Results:** Comparison of the mean scores of quality of life and mood showed a significant difference between the control and experimental groups after receiving the treatment ( $P < 0.01$ ).

**Conclusion:** Group mindfulness-based cognitive therapy can be considered as an effective and efficient approach to the quality of life and mood (anxiety and depression) in women with breast cancer who have undergone mastectomy.

**Keywords:** Cognitive therapy, Mindfulness, Mood, Quality of life

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## Introduction

Breast cancer is the most common cancer in women worldwide and the most common cause of death in Iranian women (1). Although the incidence of this disease in Western countries is about one-fifth, unfortunately, it is far higher mortality (1). In a study by Najafi et al. Iranian surgeons found that 81% do mastectomies as surgical treatment of breast cancer and there is limited information about the quality of their lives (2,3). Treatment and supportive care of women is done with breast cancer for reducing the psychosocial impact of cancer and improving their quality of life and it is necessary to be considered as essential part of their treatment (4,5). Quality of life

is defined as people's perception of their position in life, based on the culture and value system where they live (6). The results show that there is significant and inverse correlation between mood and quality of life patient with mastectomy (7).

The effect of breast cancer treatments, such as mastectomy on patients, including mental disorders, especially mood disorders and changes in life style (8). The results show that 70% of women with breast cancer in the first year after diagnosis have mood disorders or accept the risk of border (9,10). One recent approach to treating stress and anxiety caused by environmental factors, an approach called mindfulness-based cognitive therapy is a series of techniques through which the participants were taught how their thoughts and feelings without judgment and they accept the judgment, awareness and presence of mind to have more and broader view

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and consider their thoughts and decentralized relationship with their intellectual content (11).

In a study by Hoffman et al. the results showed that after eight sessions, participants MBSR can cause quality of life and mood in women with breast cancer is stage zero to three (12). Results of Foley showed that mindfulness-based cognitive therapy can be used in all aspects of life, including quality of life and mood improved outcome in cancer patients (13). In Godfrin and colleagues study, quality of life was observed in patients receiving MBCT (14). Clinical studies of Kathleen Flugel et al. showed that short-term intervention MBSR considerably improve the quality of life and mood disorders were improved (15). In Sharplin et al. study, they evaluated patients affected by the eight-week MBCT treatment for cancer. The results showed that stress and depression after treatment has been a dramatic reduction in the level of depression and self-consciousness (16). In the study of Barnhofer et al. patients with chronic and recurrent depression, received MBCT treatment and they showed a significant reduction in depression (17). Brotto and colleagues showed that mindfulness-based psychological interventions to significantly improve the quality of life and mood in women with genital cancer (18). Januseka and colleagues showed that mindfulness-based stress reduction program, in women with newly diagnosed breast cancer; enhance the quality of life (19).

In Lévesque et al. study, they assess the efficacy of cognitive therapy on depression in women with metastatic breast cancer after surgical intervention. Based on the results, significant improvements occurred in signs and symptoms associated with depression (anxiety, fatigue) (20).

Research results of Carlson showed that treatment of mindfulness-based has been associated stress reduction (MBSR) with enhanced quality of life and reduce symptoms of anxiety in patients with breast and prostate cancer (21). The results of Evans and colleagues showed significant reduction in symptoms of anxiety and depression and mood symptoms in patients with generalized anxiety of patients who in mindfulness-based cognitive therapy (22).

The high rate of relapse in depression research has shown that cognitive therapy in reducing recurrences of depression compared to drug therapy is more successful (23).

Salehi et al. compared the effects of medication and Drug cognitive therapy in reducing depression in women with breast cancer, the results showed that the average depression score in the intervention

group was significantly different before and after treatment (24).

Rush et al. in late 70s and Beck et al. concluded that cognitive therapy in the treatment of patients who suffer from depression are more effective than antidepressants tricyclic (25).

Conducted studies in Iran indicate that mindfulness-based cognitive therapies are to decrease negative thoughts, depression, anxiety and relapse prevention is effective (26).

According to the therapist responsible for helping individuals to overcome the conditions that cause limitations and reduced quality of life, one of the main goals of treatment in patients with breast cancer is improvement of life quality.

Therefore, this study aimed to determine the effects of mindfulness-based cognitive therapy group therapy on quality of life and creating in women with breast cancer (mastectomy are undergoing).

## Materials and Methods

The study is a randomized clinical trial which had been performed on 50 patients with breast cancer who underwent mastectomy.

The study population consisted of all married female patients with breast cancer who were referred to Omid hospital and health center of Imam Reza in Mashhad (within 3 months of the year 2014). Inclusion criteria for this study include consent to participate in research, Iranian nationality, age less than 70 and exclusion criteria included a history of chronic diseases (cardiovascular, renal, liver, asthma, thyroid disease, disorders of brain part), mental disorders, risk of other cancers, drugs and psychotropic substances (narcotic analgesics, anti-nausea, steroids) during one week before the study, the presence of stressful events (divorce, death of a family member, loss of a job, a change in life) during the last 6 months and not addicted to drugs at least primary school education.

### Research instrument

- *Patient Characteristics Questionnaire*: In this study, the form contains personal information and information were prepared about the disease and the patients.

- *Quality of Life Questionnaire (SF-36)*: This questionnaire aimed to evaluate the physical and mental health of participants that has been formed by combining the scores of eight health domains. This 36-point questionnaire which examines health-8 concept (concept of public health, physical, role limitations due to physical, role limitations due to

emotional, bodily pain, social functioning, fatigue or vitality, mental health or emotional). Questions in the questionnaire are scored from 0 to 100. In each question a score of 100 best quality of life and quality of life expresses the lowest zero. The questionnaire in the UK in 1992 were evaluated by Brazier and colleagues to determine the reliability of the questionnaire. The results showed that Quality of Life Questionnaire's reliability is 85% as Cronbach's alpha (27,28). Quality of Life Questionnaire was used at the international Quality of Life level and in Iran questionnaire was used to assess quality of life in patients with cancer by professors and students of Tarbiat Modarres University (27-29).

- *Mood Scale (POMS)*: It has 65 items to measure participants' mood that mood profile McNair et al. (1971) have developed and standardized. People questionnaire with 6 subscales of stress and anxiety related to specific subscales of stress and anxiety, depression, anger, vigor and abilities, confusion and fatigue that sets specific behaviors to total score is obtained by adding together mood factor and score on the index is obtained. Score of each sub-group is 24-60, which is a lower score, reflect better except for the subgroup to which higher scores indicate better situation (30).

To calculate the total score of mood, grades five sub-anxiety, depression, anger, confusion and fatigue accumulated encapsulation, then the subgroups can be deducted from it. The overall score is the creation of between 24-177 people and finally showed lower is better.

Reliability and volatility of the questionnaire in patients undergone with surgical mastectomy performed by Targari and colleagues and also Fazel and colleagues with guide study on 20 persons and calculating of Cronbach's alpha was evaluated and POMS questionnaire was confirmed in both cases with rate of 0.81 (31,32).

If should be noted that the researcher also used the method of content to determine the validity of questionnaire. The amount of Cronbach's alpha with 0.95 and calculated person for depression 0.91, for anger 0.95, for ability 0.95, for fatigue 0.98 and for confusion was 0.98 (33).

In the next steps the experimental group or the intervention of 8 sessions in mindfulness-based cognitive therapy to the length of these sessions two hours per week in groups were held. Each group session, approximately 12 clients are included. MBCT teaches patients how ruminative patterns, habits and automatic recognition of thoughtful and deliberate mind as soon as they turn their mind, so

that thoughts and negative feelings from wider perspective as simple events known through the mind. MBCT successfully presented striking new way to prevent the recurrence of major depression is back. In addition, this approach opens up new avenues for further development of cognitive therapy (34,35).

Program is divided into two main components: in sessions one to fourth, clients are taught to be of lasting change how mind and mental focus with body checking techniques, deep breathing or conscious mind aware of other techniques, clients also learn how negative thoughts and feelings can arise from their minds. MBCT in first step in learning is way to respect a non-judgmental approach targeted at any moment and paying attention in meetings to be taught a fourth. At first this by paying attention to different parts of the body (body checking) and then refer learned to breath. In the next step, the participants learn how the mind creates negative thoughts and feelings wander up the road to identify their emotional changes. The second phase involves MBCT and the fifth to eighth sessions; the client will learn how their mood changes immediately or sometime after business changed hands. By doing so, participants will learn how to be fully aware of thought or feeling, and one to two minutes before they turned their attention to the body, pay attention to their breathing.

Such action to control the problem at the moment is very useful awareness of the unpleasant thoughts or feelings. Mindfulness-based cognitive therapy on four pillars; 1). Thinking about body 2). Thinking about feelings 3). Thinking about mind 4). Thinking about psychological issues (34). Participants are also encouraged to do their homework. In fact, mindfulness teaches people how their skills from working out and for information processing resources to neutralize the environmental objectives, such as breathing or feel the moment, conditions are ready for change. Because in a state of conscious processing, processing information from past and current experience and future is spinning. In this way, all sessions with a focus on breathing, relaxation exercises and resolved to start (36,37). After mindfulness-based cognitive therapy skills training for the experimental group, the post-test in both groups was performed after the treatment under the same conditions. Both groups completed questionnaires before and after the intervention.

For normalization of test and control groups Kolmogorov-Smirnov test was used. Data were analyzed based on analysis of covariance with SPSS software (version 20).

**Results**

This study evaluated the effect of MBCT on

women with breast cancer. The scores related to mood and quality of life presented in Table 1-2.

**Table 1.** Descriptive statistics for variables related to mood and quality of life in controls

Control group		Number	Variation range	Mean	SD	Coefficient of skewness	Coefficient of relief
Mood	pre-exam	25	144.000	71.6800	43.45085	0.646	-0.772
	Posttest	25	113.000	98.0800	32.58952	0.098	-0.785
Quality of life	pre-exam	25	54.69	46.4508	14.78089	0.076	-0.606
	Posttest	25	40.85	32.8884	11.20649	0.690	-0.540

**Table 2.** Perceived emotions of OCD patients

			Coefficient of relief	Coefficient of skewness	SD	Mean	Variation range	Number	Control group
Mood Questionnaire subscales	Anxiety	Pretest		25	24.00	19.2400	6.91183	0.336	-0.911
		Post test		25	21.00	22.9200	6.18412	-0.376	-0.772
	Depression	Pretest		25	48.00	20.8800	14.96195	0.755	-0.691
		Post test		25	40.00	28.4400	11.85707	0.462	-0.772
	Anger	Pretest		25	30.00	19.1600	8.33007	0.389	-0.590
		Post test		25	25.00	25.1200	6.62269	0.179	0.399
	Powerful	Pretest		25	17.00	13.2800	4.27707	-0.609	-0.212
		Post test		25	10.00	10.6800	2.76477	0.143	-0.774
	Fatigue	Pretest		25	23.00	13.0000	6.25833	0.427	-0.674
		Post test		25	16.00	16.8400	4.65188	-0.119	-0.939
	Confusion	Pretest		25	22.00	12.6800	6.76831	0.613	-0.624
		Post test		25	18.00	15.4400	4.76165	0.186	-0.469
Subscales of quality of life questionnaire	Physical	Pretest		25	70.00	54.8000	19.92068	-0.419	-0.191
		Post test		25	65.00	39.2000	15.92168	0.529	-0.096
	Role physical	Pretest		25	75.00	24.0000	23.36308	0.750	-0.119
		Post test		25	50.00	9.0000	14.21650	1.343	1.036
	Physical pain	Pretest		25	77.50	64.9000	21.04658	-0.604	-0.093
		Post test		25	77.50	53.1000	18.58651	0.633	0.759
	Public health	Pretest		25	60.00	41.2000	17.63519	0.081	-0.650
		Post test		25	55.00	30.0000	14.57738	0.318	-0.232
	Fatigue and vitality	Pretest		25	70.00	47.8000	16.65083	0.251	0.615
		Post test		25	55.00	37.0000	10.80123	0.809	2.886
	Social function	Pretest		25	75.00	59.0000	19.60548	-0.057	2.886
		Post test		25	37.50	42.0000	14.37953	0.105	-1.435
	Emotional health	Pretest		25	80.00	50.5600	19.76154	-0.099	-0.086
		Post test		25	60.00	40.8000	16.61325	0.153	-0.490
	Mental Health	Pretest		25	100.000	29.3333	35.11888	0.954	-0.265
		Post test		25	66.67	12.0000	21.25681	1.623	1.637

The numbers of participants in the control group of mastectomy with breast cancer are 25. There is full information for all variables, in other words we did

not have lost any view.

Tables 3 and 4 indicate the scores related to the experimental group.

**Table 3.** Descriptive statistics of the experimental group in measures of mood and quality of life

Experimental group		Number	Variation range	Mean	SD	Coefficient of skewness	Coefficient of relief
Mood	pre-exam	25	120.00	88.7600	34.68583	0.397	-0.705
	Posttest	25	54.00	-3.1600	14.28484	0.457	-0.027
Quality of life	pre-exam	25	47.19	39.1800	13.43643	-0.308	-0.456
	Posttest	25	33.44	81.8940	8.73326	-0.721	0.120

**Table 4.** Descriptive statistics for the subscales mood and quality of life in the experimental group

			Coefficient of relief	Coefficient of skewness	SD	Mean	Variation range	Number	Experimental group
Mood Questionnaire subscales	Anxiety	Pretest		25	22.00	21.5600	6.17846	-0.151	-1.105
		Post test		25	9.00	4.9200	2.69134	0.218	-0.802
	Depression	Pretest		25	50.00	25.4400	13.33879	0.596	-0.536
		Post test		25	15.00	4.2400	4.05463	1.278	1.507
	Anger	Pretest		25	25.00	22.8000	6.75154	-1.005	0.462
		Post test		25	9.00	4.8800	2.78867	0.410	-1.056
	Powerful	Pretest		25	15.00	12.0800	3.99917	-0.327	-0.655
		Post test		25	12.00	24.0000	2.98608	-0.337	-0.338
	Fatigue	Pretest		25	17.00	14.9600	5.27952	0.754	-0.335

Subscales of quality of life questionnaire	Confusion	Post test	25	8.00	3.400	2.25462	0.450	-0.892
		Pretest	25	18.00	16.0800	4.90680	-0.110	-0.345
	Physical	Post test	25	13.00	3.4000	2.62996	2.005	6.755
		Pretest	25	60.00	51.6000	17.48333	-0.335	-0.878
	Role physical	Post test	25	35.00	83.2000	9.66954	-0.306	-0.888
		Pretest	25	75.00	15.0000	22.82177	1.286	0.494
	Physical pain	Post test	25	75.00	77.0000	21.55420	-0.586	-0.318
		Pretest	25	87.500	44.9000	33.87284	0.088	-0.715
	Public health	Post test	25	65.00	72.4000	20.46949	-0.731	-0.812
		Pretest	25	70.00	43.2000	17.78810	-0.342	-0.468
	Fatigue and vitality	Post test	25	45.00	84.4000	10.34005	-0.963	1.478
		Pretest	25	55.00	38.0000	14.50575	-0.067	-0.648
	Social function	Post test	25	30.00	74.6000	8.52936	-0.686	0.423
		Pretest	25	62.50	50.5000	17.48511	-0.573	-0.506
	Emotional health	Post test	25	37.50	88.5000	12.97032	-0.657	-0.913
		Pretest	25	56.00	38.2400	14.88086	0.267	-0.527
	Mental Health	Post test	25	44.00	79.0400	10.01865	-0.759	0.913
		Pretest	25	100.00	31.9999	26.31722	0.626	0.343
	Post test	25	33.33	96.0000	11.05531	-0.2491	4.563	

Descriptive statistics for experimental group included central and dispersion measures are provided in Tables 3 and 4. Most central criteria mean and standard deviation of the standard

distribution of observations that are less affected than other indices are remote variables.

Results of Table 5 showed that all significant level is higher than 0.05 more in all cases.

**Table 5.** Kolmogrov-Smirnov test of variables in the control and experimental groups

		Control Group		Experimental Group	
		Kolmogorov-Smirnov test	Sig.	Kolmogorov-Smirnov test	Sig.
Mood	pre-exam	1.028	0.241	1.285	0.074
	Posttest	0.567	0.905	1.533	0.939
Quality of life	pre-exam	0.89	0.407	0.541	0.931
	Posttest	0.955	0.321	0.567	0.904

Number of participants in experimental group as control group is 25. So we don't have lost in experimental group. After descriptive observations and hypotheses, it is necessary to study normality of observations to determine the appropriate method of testing hypotheses. Kolmogrov-Smirnov test was performed for normality hypothesis for each of the groups. It results in segregation for variables in control group or the experiment is presented in Table 5. The results showed that normal distribution assumption for the above observations is accepted ( $P>0.05$ ).

According to accept the normality assumption observations are authorized to use the analysis of covariance.

The results in Table 6 show that means with 95% compared to the variable quality of life in both experimental and control groups don't have consistency in posttest.

The results of Table 7 show that mindfulness-based cognitive therapy treatment is effective on mood of women with breast cancer mastectomy with 0.95 reliability.

**Table 6.** Mindfulness-based cognitive therapy treatment covariance analysis to evaluate the quality of life of women with breast cancer mastectomy

	Sum of Square	df	Mean of Square	F	Sig.
Constant	91657.924	1	91657.924	259.853	0.000
Test (pre-test, post-test)	5311.439	1	91657.924	15.058	0.000
Group (control tests)	10886.210	1	91657.924	30.863	0.000
Error	34214.787	97	352.730		
Total	50412.345	99			

**Table 7.** Mindfulness-based cognitive therapy covariance analysis to examine mood in women with breast cancer mastectomy

	Sum of Square	df	Mean of Square	F	Sig.
Constant	32176.420	1	91657.924	162.497	0.000
Test (pre-test, post-test)	26830.440	1	91657.924	13.550	0.000
Group (control tests)	44268.160	1	44268.160	25.356	0.000

Error	192070.840	97	1980.112
Total	263169.440	99	

Results of Table 8 shows that mindfulness-based cognitive therapy is effective on anxiety in patients with mastectomy with breast cancer.

**Table 8.** Covariance to examine mindfulness-based cognitive therapy on anxiety in women with breast cancer mastectomy

	Sum of Square	df	Mean of Square	F	Sig.
Constant	20808.000	1	20808.000	351.938	0.000
Test (pre-test, post-test)	1049.760	1	1049.760	17.755	0.000
Group (control tests)	1536.640	1	1536.640	25.990	0.000
Error	5735.040	97	59.124		
Total	8321.440	99			

Results of Table 9 shows that mindfulness-based cognitive therapy is effective on depression in patients with breast cancer.

**Table 9.** Mindfulness-based cognitive therapy covariance to examine treatment of depression in women with breast cancer mastectomy

	Sum of Square	df	Mean of Square	F	Sig.
Constant	26819.280	1	26819.280	140.006	0.000
Test (pre-test, post-test)	1162.810	1	1162.810	6.070	0.016
Group (control tests)	2410.810	1	2410.810	12.585	0.001
Error	18581.130	97	191.558		
Total	22154.750	99			

## Discussion

Almost one of every 8 patients with breast cancer that often leads to complete removal of breast tissue, chemotherapy, radiation, and hormone therapy (38). Development of methods of treatment and prognosis of breast cancer means that risk of death and survival, it means it is possible for patient to achieve and maintain good quality of life is preserved (39).

According to Beyer and Esmlotzer, surgical treatment of breast cancer is the most common treatment (40,41).

In 1992, John Teasdale and Mark Williams from the University of Wales and Zyndel Segal of University of Toronto to prevent recurrence and back Depression raised a new approach that was called mindfulness-based cognitive therapy (42).

This new approach was called the third wave of cognitive therapy and combination of innovative aspects of cognitive therapy. Beck (Beck, Rushm, Shavo Emri) and mindfulness-based stress reduction program of Kabat-Zinn (43). A study of 25 depressed patients using MBCT with a two-year follow-up showed that the treatment not only in reducing depression, but depression is effective in preventing relapse (44).

In the study, Stafford and colleagues at Community Hospital Health Australia on 115 women with breast cancer and reproductive did MBCT treatment resulted in significant

improvements in depression, anxiety, stress and quality of life in patients (45). Hall et al. concluded that the teaching of MBSR, dramatically reduces depression and anxiety (46).

Baer in research elsewhere that practicing mindfulness skills, the ability of clients to tolerate negative emotional states increase and enable them to effectively counter (40). Teasdale, Williams, Segal and Soulsby found that mindfulness meditation attention control skills learned can be useful in the prevention of recurrence of major depressive episodes (42). Results Bridge and colleagues indicate the effectiveness of cognitive behavioral techniques (relaxation and mental imagery) to reduce anxiety and calm patients with breast cancer (47).

Horowitz and Garder meta-analysis of several studies of the effectiveness of cognitive therapy compared with cognitive therapy in reducing depression medication show a clear advantage compared to no treatment or waiting list control group there (48). The results Rahimian emphasized the importance of psychotherapy on depression and promoting mental health Teasdale and secondary school students (34).

Study of Hassni et al. on 60 women with breast cancer showed that cognitive therapy help to reduce the symptoms of depression in the experimental group compared with the control group (49).

This finding is consistent with results in the area of

the effects of cognitive therapy based on mindfulness to increase the quality of life and are coordinated and consistent with research of Kathleen Flugel and colleagues, Sharplin et al., Baron Hofer et al., Kaviani and colleagues, Nourozi and colleagues, Carolina et al., Foley et al., Godfrin et al., Brotto and colleagues, Januseka et al. The results of the present study with the results of research the effectiveness of mindfulness-based cognitive therapy on quality of life for cancer patients is consistent (50-53).

The approach of this therapy, the patient's changing relationship with the suffering caused by negative thoughts is crucial, because there is no possible way to relieve the suffering of the patient's all there. Cognitive therapy and no body checking alone will not prevent the occurrence of unpleasant events in our daily lives, but these methods may be combined together to control these unpleasant events provide a better view.

Perhaps one of the reasons for the effectiveness of group cognitive therapy based on mindfulness practices, their educational foundation. Because in this way they learn how consider targeted at any moment and without judgment emphasized. This study examines the impact of mindfulness-based cognitive therapy has been tested in two groups. Due to the quality of life and the people in the experimental group improved. We can say that this improvement reflects the impact of treatment on

patients with breast cancer is mastectomy.

Researcher in the study faced some limitations that may have affected the quality of research. Quality of life and the creation of two self-concepts are measurable. So confidence in the accuracy of responses achieved by the research units and also lacks a strong background in the field of the treatment of breast cancer, the limitations of this research. Given the importance of psychological treatments with specific treatments for breast cancer patients, it is recommended that additional studies be done in this regard to further extension.

### Conclusion

Group mindfulness-based cognitive therapy can be considered as an effective and efficient approach to the quality of life and mood (anxiety and depression) in women with breast cancer who have undergone mastectomy.

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