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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 in mortality (1). In a study by Najafi et al., Iranian surgeons found that 81% do mastectomies as surgical treatment for breast cancer, and there is limited information about the quality of their lives (2,3). Treatment and supportive care of women are done with breast cancer to reduce the psychosocial impact of cancer and improve their quality of life, and it is necessary to be considered an 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 a significant and inverse correlation between mood and quality of life in a patient with mastectomy (7).

The effect of breast cancer treatments, such as mastectomy, on patients includes mental disorders, especially mood disorders, and changes in lifestyle (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 the 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 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 with MBSR can cause the quality of life and mood in women with breast cancer to be stage zero to three (12). Results of Foley showed that mindfulness-based cognitive therapy could be used in all aspects of life, including quality of life and mood improved outcomes in cancer patients (13). In Godfrin and colleagues' study, quality of life was observed in patients receiving MBCT (14). Clinical studies by Kathleen Flugel et al. showed that short-term intervention of MBSR considerably improved 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 had 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 significantly improve the quality of life and mood in women with genital cancer (18). Januseka and colleagues showed that mindfulness-based stress reduction programs 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 by Carlson showed that treatment of mindfulness-based has been associated with stress reduction (MBSR), enhanced quality of life, and reduced symptoms of anxiety in patients with breast and prostate cancer (21). The results of Evans and colleagues showed a 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, and the results showed that the average depression score in the intervention group was significantly different before and after treatment (24).

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

Conducted studies in Iran indicate that mindfulness-based cognitive therapies to decrease negative thoughts, depression, and anxiety and relapse prevention are 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 the improvement of life quality. Therefore, this study aimed to determine the effects of mindfulness-based cognitive therapy group therapy on quality of life and creation in women with breast cancer (mastectomy is undergoing).

Materials and Methods

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

The study population consisted of all married female patients with breast cancer who were referred to Omid hospital and the health center of Imam Reza in Mashhad (within three 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 six months and not addicted to drugs at least primary school education.

Research instrument

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

B) Quality of Life Questionnaire (SF-36): This questionnaire aims to evaluate the physical and mental health of participants that have been formed by combining the scores of eight health domains. This 36-point questionnaire examines the 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 U.K. in 1992 was evaluated by Brazier and colleagues to determine the reliability of the questionnaire

The results showed that the 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 the quality of life in patients with cancer by professors and students of Tarbiat Modarres University (27-29).

C) Mood Scale (POMS): It has 65 items to measure participants' moods, the mood profile McNair et al. (1971) have developed and standardized. People questionnaire with six 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. The score of each sub-group is 24-60, which is a lower score and reflects better, except for the subgroup in which higher scores indicate a better situation (30). To calculate the total score of mood, grade 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 who had undergone a surgical mastectomy performed by Targari and colleagues and also Fazel and colleagues with a guided study on 20 persons and calculating of Cronbach's alpha were evaluated, and the POMS questionnaire was confirmed in both cases with a rate of 0.81 (31,32).

It should be noted that the researcher also used the method of content to determine the validity of the questionnaire. The amount of Cronbach's alpha with 0.95, and the calculated person for depression was 0.91, anger 0.95, ability 0.95, fatigue 0.98, and confusion 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. In 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 minds, so that thought and negative feelings from a wider perspective as simple events known through the mind. MBCT successfully presented a 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 the 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 the first step in learning, is a way to respect a non-judgmental approach targeted at any moment and pay 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 breathe. In the next step, the participants learn how the mind creates negative thoughts and feelings and wander up the road to identify their emotional changes.

The second phase involves MBCT, and in the fifth to eighth sessions, the client will learn how their mood changes immediately or sometime after the business changes hands. By doing so, participants will learn how to be fully aware of thought or feeling, and one to two minutes before they turn their attention to the body, pay attention to their breathing.

Such action to control the problem at the moment is a very useful awareness of 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 feeling the moment, conditions are ready for change.

Because in a state of conscious processing, processing information from past and current experiences and the future is spinning. In this way, all sessions with focus on breathing and relaxation exercises 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, the Kolmogorov-Smirnov test was used. Data were analyzed based on the 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 are presented in Tables 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. Descriptive statistics for the subscales mood and quality of life in controls

	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	
	Sub scales of 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	
		Post test	25	8.00	3.400	2.25462	0.450	-0.892	
	Confusion	Pretest	25	18.00	16.0800	4.90680	-0.110	-0.345	
		Post test	25	13.00	3.4000	2.62996	2.005	6.755	
	Sub scales of of quality of life questionnaire	Physical	Pretest	25	60.00	51.6000	17.48333	-0.335	-0.878
			Post test	25	35.00	83.2000	9.66954	-0.306	-0.888
	Role physical	Pretest	25	75.00	15.0000	22.82177	1.286	0.494	
		Post test	25	75.00	77.0000	21.55420	-0.586	-0.318	
	Physical pain	Pretest	25	87.500	44.9000	33.87284	0.088	-0.715	
		Post test	25	65.00	72.4000	20.46949	-0.731	-0.812	
	Public health	Pretest	25	70.00	43.2000	17.78810	-0.342	-0.468	
		Post test	25	45.00	84.4000	10.34005	-0.963	1.478	
	Fatigue and vitality	Pretest	25	55.00	38.0000	14.50575	-0.067	-0.648	
		Post test	25	30.00	74.6000	8.52936	-0.686	0.423	
	Social function	Pretest	25	62.50	50.5000	17.48511	-0.573	-0.506	
		Post test	25	37.50	88.5000	12.97032	-0.657	-0.913	
	Emotional health	Pretest	25	56.00	38.2400	14.88086	0.267	-0.527	
		Post test	25	44.00	79.0400	10.01865	-0.759	0.913	
	Mental Health	Pretest	25	100.00	31.9999	26.31722	0.626	0.343	
		Post test	25	33.33	96.0000	11.05531	-02.491	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. Kolmogorov-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. Kolmogorov-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.

Results of Table 8 shows that mindfulness-based cognitive therapy is effective on anxiety in patients with mastectomy with breast cancer Results of Table 9 shows that mindfulness-based cognitive therapy is effective on depression in patients with breast cancer.

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			

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			

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 eight patients with breast cancer often leads to complete removal of breast tissue, chemotherapy, radiation, and hormone therapy (38). The development of methods of treatment and prognosis of breast cancer means the risk of death and survival, which means it is possible for the patient to achieve and maintain a 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 Zindel Segal of the 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 a combination of innovative aspects of cognitive therapy. Beck (Beck, Rushm, Shavo Emri) and the 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 by 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 the 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's 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). In the results, Rahimian emphasized the importance of psychotherapy on depression and promoting mental health in Teasdale and secondary school students (34).

A study by Hassani et al. on 60 women with breast cancer showed that cognitive therapy helped 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 is coordinated and consistent with the 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 on the effectiveness of mindfulness-based cognitive therapy on the quality of life for cancer patients, are 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 nobody 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 and provide a better view.

Perhaps one of the reasons for the effectiveness of group cognitive therapy based on mindfulness practices is their educational foundation. Because in this way, they learn how to 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, which is mastectomy.

The researcher in the study faced some limitations that may have affected the quality of the 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 for further extension.

Conclusion

Group mindfulness-based cognitive therapy can be considered 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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