

RESEARCH ARTICLE

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# Investigating the Effect of Mindfulness-Based Training on Psychological Status and Quality of Life in Patients with Breast Cancer

Somye Pouy<sup>1</sup>, Fatemeh Attari Peikani<sup>2</sup>, Hassan Nourmohammadi<sup>3</sup>, Parisa Sanei<sup>4</sup>, Asma Tarjoman<sup>4</sup>, Milad Borji<sup>5\*</sup>

## Abstract

Cancer poses substantial challenges to both physical and mental health of patients. On the other hand, breast cancer is one of the most common cancers among Iranian women. Therefore, the present study was conducted to investigate the effect of mindfulness-based training on psychological status and quality of life (QoL) of patients with breast cancer living in Ilam, Iran. This quasi-experimental study was performed on 66 patients diagnosed with breast cancer. The patients assigned into two groups of experimental and control. Experimental group received mindfulness-based group training through eight 90-min sessions. Sessions were conducted twice a week and were completed within 1 month. The research tools included a QoL questionnaire (WHOQOL-BREF), Schneider's life expectancy questionnaire, and the depression anxiety stress scale (DASS-21). The questionnaires were completed before and during the interviews with the patients 2 months after intervention. Data were analyzed using SPSS (version 16) and running descriptive and analytical statistics. Before the intervention, there was no significant difference between the experimental and control groups considering QoL, life expectancy, depression, anxiety, and stress ( $p > 0.05$ ). However, after the intervention, the patients in the experimental group reported higher QoL and life expectancy and less severe depression, anxiety, and stress ( $p < 0.05$ ). Considering the positive effect of mindfulness-based training on the psychological status and QoL of patients with breast cancer, we recommend health nurses conduct mindfulness-based training for patients receiving clinical care services.

**Keywords:** Cancer- Mindfulness-based training- quality of life- psychological problems

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## Introduction

Cancer is associated with many complications (Motaghi et al., 2017; Khoshnood et al., 2018; Pakzad et al., 2016). Cancer poses substantial physical and mental health challenges to patients (Razi et al., 2016). Considering all types of cancers, breast cancer is highly prevalent among Iranian women (Rad et al., 2015; Rafiemanesh et al., 2016; Ghoncheh et al., 2016; Mousavi et al., 2007; Mousavi et al., 2006). In a study conducted in Iran, the frequency of breast cancer was reported 41.4%, making it the most common type of cancer among Iranian women during 2000–2009 (Tayebi et al., 2012). However, the survival rate of patients with breast cancer has significantly improved over the past 20 years (Coleman et al., 2008), which is mainly attributed to early cancer diagnosis and new treatments preventing relapse (Marshall et al., 2016).

Cancer causes a lot of changes in patients (khoshnood

Zohreh et al., 2018; Karimi et al., 2017). Changes in physical and sexual functioning are some of the most important problems faced by patients with cancer, especially women. These, in turn, can lead to various physical and psychological complications such as anxiety, disappointment, fatigue, depression, and feeling of proximity to death (Carroll et al., 2016; Shaw et al., 2016; Gozashti et al., 2017; Mirghafourvand et al., 2016). The results of previous studies indicated that reducing the psychological problems of a patient with cancer could increase his or her life expectancy, wellbeing, and QoL (Goldzweig et al., 2017; LeBlanc, 2016; Shin et al., 2016; Mousavi et al., 2008; Keramatnia et al., 2016). Psychological stress impairs a patient's physical and mental functions (Seyyedrasooly and Kalantari, 2014). In addition, anxiety can increase heart rate, blood pressure, and respiratory rate (Borhani et al., 2012). Therefore, nurses are required to spend more time with patients in clinical settings than other members of the treatment team

<sup>1</sup>Department of Nursing, Guilan University of Medical Sciences, Rasht, <sup>2</sup>Amin Hospital, Isfahan University of Medical Science, Isfahan, <sup>3</sup>Department of Internal Medicine, <sup>4</sup>Student Research Committee, <sup>5</sup>Department of Nursing, Faculty of Nursing and Midwifery, Ilam University of Medical Science, Ilam, Iran. \*For Correspondence: borji\_milad@yahoo.com

and they are largely responsible for holistic care (Ghazavi et al., 2016). Nurses should help patients overcome physiological and behavioral disorders (Perry et al., 2012).

Assessing patients' QoL provides nurses with useful information and can improve the quality of health services delivered to patients (Ghadiri and Motaghi, 2016). QoL is a multifaceted and individualized measure of someone's life (Leininger, 1994). According to World Health Organization, a variety of factors determine individual's QoL, such as health, happiness, freedom of action, justice, and absence of oppression. QoL is an important clinical research subject that has been approved in patient's care. The aims of this study were to compare patients in terms of social, psychological, and family status; to predict disease-related complications; and to evaluate the efficacy of mindfulness-based training in (Ghaheri et al., 2016). Moreover, another important variable greatly affecting health is anxiety (Valizadeh et al., 2016).

Mindfulness-based stress reduction (MBSR), a form of cognitive-behavioral therapy (CBT), is based on an individual's cognition, beliefs, and behaviors. The goal of CBT is to change patient's way of thinking and beliefs and replace his/her misconceptions about physical symptoms with facts in order to improve mental and physical functions (El-Salhy, 2015, Lackner et al., 2008). Mindfulness-based cognitive therapy is another form of CBT that combines MBSR (Kabat-Zinn) with Beck's CBT, a group therapy used for people with histories of depression and vulnerability. Although the goal of this approach is to prevent the relapse of depression during recovery, its effectiveness in other disorders such as eating disorders, anxiety disorders, various physical disorders, and post-traumatic stress disorder is confirmed (Fatemeh and Yousef, 2016; Hayes, 2002).

MBSR facilitates a decentralizing view of one's own thoughts and teaches people to observe their thoughts and feelings without judgment, seeing them as simple mental events that come and go, instead of considering them as an extension of oneself or a reflection of reality. When used correctly, this approach can prevent negative thoughts from occurring in a pattern of rumination, which can be an effective step for patient comfort (Masumian et al., 2013; Hofmann and Gómez, 2017). Mindfulness-based interventions that seek to reduce psychological symptoms and increase QoL are increasingly used as both mental and physical health treatments. There is abundant evidence in the existing literature indicating that MBSR exerts positive effects on a variety of psychological states including worry, rumination, anxiety, pain, general distress, and depression (Masumian et al., 2013; Hopwood and Schutte, 2017; Zhang et al., 2018). Therefore, the present study was conducted to determine the effect of mindfulness-based training on the psychological problems and QoL of patients with breast cancer living in Ilam, Iran.

## Materials and Methods

This quasi-experimental study focused on patients with breast cancer living in Ilam, Iran, assigning them into experimental and control groups. Sample size was determined according to previous studies, considering

60 patients with breast cancer. However, 70 patients (to account for likely attrition) were randomly selected and assigned into one of two (experimental and control) groups. Each group included 35 patients. First, the researcher set the table numbers by default, and then patients were asked to randomly select a number from 1 to 70, and those patients who chose an odd number were put in the experimental group and those who chose an even number were included in the control group. Inclusion criteria were as follows: minimum of 6 months of history of diagnosed breast cancer, no diagnosed psychological disorders, nonmetastatic disease, ability to communicate verbally, and residing in Ilam. Patients were informed that they were free to withdraw from the study at any time for any reason. Exclusion criteria included absence at >2 intervention sessions, emergence of any crisis during the intervention for the patient (such as the death of relatives, etc.), use of psychiatric medications, simultaneous participation in other educational interventions, metastatic disease, and treatments, other than chemotherapy, such as hormone therapy and radiotherapy. Three patients in the experimental group left the study because they were unwilling to continue the study and one patient in the control group withdrew from the study because of her relative's death. Data analyses were performed with 32 patients in the experimental group and 34 in the control group.

Data were gathered using WHOQOL-BREF questionnaire (Group, 1998), Schneider's life expectancy questionnaire, and the depression anxiety stress scale (DASS-21) (Fayers and Bottomley, 2002). The questionnaires were completed during patients' interviews... The WHOQOL-BREF questionnaire has 26 items and consists of four sections; namely physical health (7 items), mental health (6 items), social relationships (3 items), and environmental health (8 items). The first two questions assess global health status and general QoL (Group, 1998). Schneider's life expectancy questionnaire includes 12 items. It is scored using a 5-point Likert scale as follows: completely agree [5], agree [4], have no idea [3], disagree [2], and completely disagree [1]. The scoring method is reverse for items of 3, 7, and 11. The total score ranges from 12 up to 60 (Connor and Davidson, 2003; Bagheri Zanjani Asl Monfared and Entesar Foumany, 2016). The third tool, DASS-21, has 21 items and measures the severity of depression symptoms (7 items), anxiety (7 items), and stress (7 items), and it is scored from 0 to 3 (Shohani et al., 2018).

The experimental group received eight 90-min mindfulness-based group training sessions twice a week. There were seven patients in each group, for a total of five groups. The intervention lasted for 1 month. The materials given to the patients in the experimental group are summarized in Table 1 (Fatemeh and Yousef, 2016; Masumian et al., 2013). Following one month intervention, each patient was given the researcher's number and was encouraged to contact the researcher if she/he had any question. The researcher completed the questionnaires by interviewing patients after 2 months following the intervention. The control group only received routine care, but in order to comply with the ethics of research,

the control group received the same educational package as the experimental group after the study. However, the control group did not participate in group mindfulness-based training sessions. The Ilam University of Medical Sciences institutional Review Board approved this study (with the ethics code of Ir.medilam.rec.1396.129), which was carried out in accordance with the Declaration of Helsinki . Data were analyzed using SPSS (version16) and running descriptive and analytical statistics.

## Results

According to Table 2, there was no significant difference between two groups in terms of demographic characteristics ( $P>0.05$ ).

According to Table 3, there was no significant difference between the quality of life and the psychological status (life expectancy, depression, anxiety and stress) before the intervention . However, patients in the test

Table 1. Stages of MBSR for Patients with Breast Cancer

Session	Content	Discussions
1st	Automatic guidance	Communicating with the patient and conceptualizing, providing explanations on cancer and the importance and applicability of mindfulness-based therapy, discussing about automatic guidance system, and giving assignments to the patients.
2nd	Facing the obstacles	Reviewing the assignments and previous session lessons, exercising the body examination, practicing and discussing the body examination exercise, practicing meditation techniques, practicing mindfulness breathing meditation technique with the patients, and giving assignments to the patients.
3rd	Presence of mind by breathing	Reviewing the assignments and previous session lessons, practicing sitting meditations and taking feedback from patients, doing 3-min breathing exercises, and giving assignments to the patients.
4th	Staying at the present moment	Reviewing the assignments and lessons of the previous session, doing 5-min exercises of seeing or hearing, rehearsing mindfulness breathing meditation and body examination by the patients, and giving assignments to the patients.
5th	The permission of presence	Reviewing the assignments and lessons learned in the previous session; doing breathing exercises; presenting sitting meditation on the subject of “mindfulness about breathing, body, sounds, and thoughts”; explanations about stress and its relation to pain; awareness of pleasant and unpleasant events on feelings, thoughts, and physical senses; and giving assignments to the patients.
6th	Thoughts are not realities	Reviewing the assignments and lessons learned from the previous session, performing conscious yoga exercises, discussing different ways of looking at the thoughts or substitute thoughts, sitting for meditation, and giving assignments to the patients.
7th	Self-care	Reviewing the assignments and lessons learned from the previous session; assessing sleep hygiene, QoL, and mental health; preparing a list of enjoyable activities; and giving assignments to the patients
8th	Accepting and change	Reviewing the assignments and lessons learned from the previous session, exercising body examination, summarizing the content of previous sessions, and discussing programs and continuing exercises.

Table 2. Demographic Information of Patients with Breast Cancer in the Two Study Groups

Variable		Group		p-value
		experimental	Control	
Married	Marital status	16 (50)	19 (55.9)	0.63
	Widow	16 (50)	15 (44.1)	
Education level	Illiterate	16 (50)	15 (44.1)	0.48
	Diploma	14 (43.8)	15 (44.1)	
	Collegiate	2 (6.3)	4 (11.8)	
Annual income	Less than 500 thousand	8 (25)	9 (26.5)	0.71
	Between 500 and 1 million	24 (75)	23 (67.6)	
	Between 1 and 2 million	0 (0)	2 (5.9)	
Housewife	Housewife	32 (100)	33 (97.1)	0.33
	Employee	0 (0)	1 (2.9)	
number of children	0-3	3 (9.4)	2 (5.9)	0.94
	4-6	16 (50)	19 (55.9)	
	More 6	13 (40.6)	13 (38.2)	
Age (Mean(SD))		52.12±11.07	56.14±11.04	0.14

Table 3. Comparison of Quality of Life and Psychological Problems of Patients before and after the Intervention

Variable		experimental	Control	P-value
		Mean (SD)	Mean (SD)	
Quality of Life	Before	33.43±7.40	30.58±8.62	0.15
	After	47.53±10.77	30.97±9.88	0.001
	p-value	0.001	0.69	
Life expectancy	Before	22.15±10.39	21.94±9.48	0.93
	After	31.71±10.21	22.64±9.37	0.001
	p-value	0.001	0.15	
Depression	Before	15.53±2.65	15.79±3.19	0.73
	After	11.84±3.81	15.20±3.55	0.001
	p-value	0.001	0.16	
Anxiety	Before	16.18±1.82	15.82±2.58	0.51
	After	12.78±3.01	15.55±2.84	0.001
	p-value	0.001	0.17	
Stress	Before	16.09±2.87	16.52±2.67	0.52
	After	13.53±2.78	15.67±2.70	0.001
	p-value	0.001	0.07	

group had higher quality of life and higher life expectancy after the intervention... In addition, the patients in the test group had significantly lower depression, anxiety, and stress after the intervention.

## Discussion

The use of non-prescriptive techniques may have a significant effect on QoL and psychological status in patients with breast cancer (Rahmani et al., 2014). Implementation of the MBSR technique increased QoL and life expectancy in patients with breast cancer and reduced depression, anxiety, and stress. Prior studies examined the effect of the MBSR technique on the health status of patients with and without cancer. The results of these studies are comparable to those of our study.

Johns et al., (2015) studied the effect of the MBSR technique on reducing fatigue in cancer survivors. Their findings showed that sleep quality increased and stress, fatigue, and depression significantly decreased in the experimental group after implementing the intervention. Lengacher et al., (2015) implemented 12 weeks of MBSR and found improved sleep quality in patients with breast cancer. Würtzen et al., (2015) examined the effect of MBSR on distress, somatic symptoms, spiritual wellbeing, and mindfulness in women with breast cancer. They followed up patients for 6 and 12 months and found that implementation of the MBSR technique improved the somatic symptoms of the patients after 6 months; however, no significant effects were observed after 12 months. Patients' distress decreased and mindfulness improved 6 and 12 months after the intervention. However, no significant difference was observed considering spiritual wellbeing of patients with breast cancer during the follow-up, suggesting that it is better to use spiritual wellbeing promotion techniques to improve the spiritual health of patients.

Bakhshani et al., (2016) used MBSR technique to

improve QoL and perceived pain severity in patients with chronic headaches. In their study, implementation of 8 weeks of MBSR improved perceived pain severity and QoL, which is consistent with the results of the present study. Smith et al., (2015) found that MBSR could reduce anxiety and elevate QoL of inner-city residents. Kolahkaj and Zargar, (2015) used MBSR technique for managing stress, anxiety, and depression in women with multiple sclerosis and found that this technique reduced the severity of all measured complications. These results were consistent with the results of the present study considering the efficacy of this technique in reducing the psychological problems faced by patients with breast cancer.

One of the limitations of this research was the self-reporting nature of variables examined in this study, which hurt the accuracy of gathered information on the researcher. Therefore, it is suggested that additional studies be done to examine the health status of patients through physical variables.

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