

Effectiveness of Training Mindfulness on Psychological Well-being, Coping Strategy and Family Function among Women Suffering from Breast Cancer

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Abstract

Introduction: The main purpose of this study was to investigate the effectiveness of mindfulness training on psychological well-being, coping strategies, and family functioning among women with breast cancer.

Method: This study was a semi-experimental research with a pretest-posttest control group design and a three-month follow-up period. Twenty nine women who had been diagnosed with breast cancer were selected via convenience sampling method and were then randomly assigned into two experimental and control groups. The Psychological Well-Being questionnaire (PWB), Family Assessment Devise (FAD), Roger's Coping Strategies questionnaire and the Mindfulness Attention Awareness Scale (MAAS) were applied to collect data. The members of the experimental group were treated using mindfulness training protocol in 6 sessions, each lasting for 60 minutes. Eventually, data were analyzed through mixed ANOVA analysis.

Results: Findings showed that training mindfulness had a significant effect on the promotion of psychological well-being, coping strategy and family function of women suffering from breast cancer ($P < 0.01$).

Conclusion: According to the results of this study, the implementation of mindfulness training in psychotherapy centers and health clinics would be beneficial and effective in managing the psychological issues concerning patients with breast cancer.

Keywords: Breast Cancer, Coping Strategy, Family Function, Psychological Well-being, Mindfulness Training

Introduction

Cancer refers to a spectrum of diseases characterized by uncontrolled and abnormal proliferation of cells in the body [1] which also negatively affects the patients' mental health [2]. Breast cancer has been reported to be the most commonly diagnosed cancer among the Iranian female population [3,4]. The patients might experience a variety of therapeutic procedures including surgery, radiation therapy, and/or chemotherapy, which involve high mental pressure and stress, making it hard for them to cope with the complications [5].

Research findings have indicated that stress and psychological distress are negatively

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correlated with psychological well-being; that is, the higher the level of psychological well-being, the lower the level of psychological distress will be [6]. According to Ryff's world model [7], psychological well-being consists of six components: self-acceptance (refers to feeling positive about oneself and the past, even when one is aware of his or her own shortcomings), purpose in life (refers to a sense of meaning of life and directedness), positive relations with others (centers on developing and maintaining warm, satisfying and trusting interpersonal relationships), autonomy (is defined as a sense of self-determination and being able to resist social pressure to think and behave in certain ways), personal growth (centers on a sense of improvement and development in self over time, and making the most of one's talent and capacities), and environmental mastery (involves a sense of mastery and competence in managing the environment so as to meet personal needs, desires, and values). The impact of the diagnosis and treatment of breast cancer may have long-lasting negative effects on patients' well-being [8]. Also, there are multiple sources of stress, such as fear of recurrence [9], cancer worry, uncertainty about the future, and less social support that can impact psychological well-being [10].

Some researchers have reported that adaptive coping strategy selection [11] as well as desirable family function would positively influence psychological well-being [12]. Lazarus and Folkman assert that coping strategy is a way for better decision making and problem solving [13]. Accordingly, it is significant to focus on the psychological intervention regarding tumor patients and guide them to adopt a positive coping style to reduce negative psychological outcomes like recurrence fear [14]. Besides, some studies have shown that chronic diseases like cancer have undesirable effects on patients, and also on their family system [15], especially on the relationship among family members due to involving them in frustrating situations [16]. Many researches have displayed that psychosocial support, promoting family function [17], and paying attention to cancer patients' attachment styles by caregivers and health care team [18] would be crucial and necessary, indicating the importance of attending to the psychological health of patients affected with cancer.

One of the intervention methods used to psychologically support cancer patients is mindfulness-based treatments [19–22]. Mindfulness as a treatment method refers to openness, non-judging awareness, and moment-to-moment attention and consists of two major components: Attention and Awareness [23]. The purpose of mindfulness-based interventions is to focus on the present moment and to get on with the past and future [24]. Gifu et al. [19] conducted a systematic review and reported that mindfulness-based interventions can improve the cognition among breast cancer survivors. According to Lengacher et al. [20], the mobile mindfulness-based stress reduction for breast cancer (MBSR (BC)) program have a clinical impact on decreasing

psychological and physical symptoms among breast cancer patients. Moreover, the research findings of Johannsen et al. [22] showed that MBCT can affect persistent pain in women treated for primary breast cancer.

Although the results of some previous studies [19–22] have indicated the effectiveness of mindfulness-based interventions on several psychological issues of breast cancer patients, it is unclear in the literature and research background whether the components of training mindfulness are also useful for enhancing well-being, coping styles and family function concurrently among women with breast cancer or not. Therefore, the present study seeks to investigate the influence of training mindfulness on these three variables in women with breast cancer. The following question was considered for conducting this study:

Does mindfulness skill training improve psychological well-being, family functioning, and the coping strategies in women with breast cancer during chemotherapy?

Method

The present study is a semi-experimental study with pretest-posttest control group design and a three-month follow-up period. The study consisted of 29 women from Tehran -aged between 35 and 55 years old - diagnosed with breast cancer by oncologists, and who were under chemotherapy in 2016. They were selected via the use of convenience sampling and randomly assigned to two groups. For the first phase of the study (before intervention), all subjects completed a 15 item mindfulness scale; among 43 participants, 38 individuals with an average level of mindfulness or less were selected. During the six sessions, nine participants quit the sessions due to medical and personal reasons. All reminder participants were assigned to two groups: experimental group (15 participants) and control group (14 participants). The members of the experimental group received mindfulness training in six sessions, each lasted for 60 minutes and the members in the control group received supportive counseling for the same period. The inclusion criteria were: 1) women diagnosed with breast cancer by oncologists with an age range of 35-55 years, 2) receiving chemotherapy, 3) having at least Diploma, 4) being married 5) having an average to low score in mindfulness. The exclusion criteria included: 1) unorganized presence (absent for just one session), 2) diagnosed with another disease except cancer, 3) having mental chronic disorder, 4) use of alcohol and smoking, and 5) reluctant to participate in the study. It should be noted that there was no significant difference between the two groups in terms of age and education. In order to carry out this study the following instruments were employed:

Psychological Well-being Questionnaire:

Psychological well-being was measured using the Ryff scale with six dimensions in 18 questions. The dimensions were: autonomy (the items of 9,12,18), environmental mastery (1,4,6), personal growth (7,15,17), positive relations with others (3,11,13), purpose in life (5,14,16) and self-acceptance (2,8,10), from the multiple theoretical

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accounts of positive functioning [25]. Cronbach's alpha coefficient in Khanjani et al.'s research [26] for all questions was 0.71. In Bayani's research, the reliability coefficient and validity has been reported 0.82 [27] and also the validity of Ryff in another research has been reported 0.80 [28]. In this study, the version with 18 items was employed. It should be noted that Cronbach's alpha was calculated to be 0.93 in this study (autonomy: 0.81, environmental mastery: 0.75, personal growth: 0.73, positive relations with others: 0.65, purpose in life: 0.67, self-acceptance: 0.84).

Family Assessment Devise (FAD):

The McMaster model of family functioning is based on a systematic theory that assumes the following: 1) the whole family is related to one another, 2) family functioning should be comprehensive and understood by all family members, and 3) the structure, organization and interaction patterns of a family will influence family members' behavior. The FAD represents six dimensions of family functioning: problem solving (6 items), communication (7 items), roles (9 items), affective responsiveness (7 items), affective involvement (9 items) and behavior control (9 items) with 60 questions [29]. In addition to these six dimensions, general functioning assesses the overall health of the family (13 items). The overall reliability and validity of the instrument in Iran which was assessed by Zadeh mohammadi and Malekkhosravi [30] was reported between 0.51 and 0.94. In this study, Cronbach's alpha and reliability of the questionnaire were 0.90 (problem solving: 0.86, communication: 0.93, roles: 0.76, affective responsiveness: 0.87, affective involvement: 0.79, behavior control: 0.59). It is worth mentioning that a higher score indicates a weaker family function.

Coping Strategies Questionnaire:

This questionnaire has been designed by Roger et al. [31]. It is a 4 point scale questionnaire, ranging from 1 to 4 and consists of 60 questions. This questionnaire consists of 4 components: cognitive component (coping with the source of stress), disengagement component (coping with stress rather than the source of stress), emotional component (coping with stress under emotional state) and avoidance component (avoiding stress and the source of stress) [31]. Criterion-based validity for the CSQ scales was 0.89 [32] while some research have reported it as 0.70 [33]. The Cronbach's alpha scale for the present study was calculated to be 0.75.

Mindfulness Attention Awareness Scale (MAAS):

The MAAS was developed to measure the extent to which individuals attend, to and are aware of, the present moment. It is a scale with 15 questions designed by Brown and Ryan. This is a 6-point Likert scale from almost always to almost never with an overall score range of 15 to 90, the higher score means higher levels of mindfulness. Cronbach's alpha was reported to be 0.5 to 0.5 and test-retest reliability coefficient of this scale was also reported at a constant 6-month interval [23]. In Iran, its Cronbach's alpha and validity have been reported to

be 0.81 and 0.80 respectively [34]. The Cronbach's alpha scale for this study was calculated to be 0.96.

Mindfulness Training Program:

Within the sessions formulated for the experimental group, at the beginning of each session, the experiences of the subjects during the week were discussed. In the first session, after explaining the concept of being mindful, researches focused on breathing, eating and talking about being mindful to events and the participants were asked to perform these exercises at home during the week. In the second session, researches focused on breathing and the body scan. The third session was centralized on breathing, talking about the enjoyable events that the subjects had experienced during the week, and the body scan exercise. The fourth session was focused on breathing, body scan and talking about experiencing unpleasant events during the week. Within the fifth and sixth sessions, concentrating on breathing and body scan was performed, as well as simple yoga techniques with the subjects.

In the current study, in order to analyze the statistical data, first, the data were extracted from the questionnaires, and then all the data were analyzed using SPSS 16. In the descriptive section, frequency, mean, and standard deviation indices were used. Mixed ANOVA analysis was used to test the research questions.

Results

The age of patients in both the experimental and control group ranged from 35 to 55, all of which were married, 62% (n=18) were housewives and 38% (n=11) reported that they were working. About 86% (n=25) had diploma and bachelor degree and 14% (n=4) had master-PhD degree. In this study, 89% (n=26) were in the early stage of disease and just 10% (n=3) were in an advanced stage. In addition, 31% of the patients had at least a child between 0-10 years, 65% of them had a child between 11-20 years and just 4% of them had a child aged over 20 years.

Table 1 shows the descriptive indices (mean and standard deviation) of all variables and Table 2 shows the Correlation Matrix of variables.

In this study, mixed ANOVA analysis was used to observe and measure the changes in the time course of subjects. Before performing the analysis, the most important assumption of mixed ANOVA analysis, homogeneity of the variance-covariance matrix, was examined through Mauchly's Test. According to Table 3, the homogeneity of the variance-covariance matrix of all variables was established.

As the assumption of variance-covariance matrix homogeneity of all variables was confirmed, Table 4 reports the summary of mixed ANOVA analysis for investigating the effect of mindfulness training on psychological wellbeing, family function, and coping strategy.

Concerning the obtained results, it can be concluded that mindfulness training was effective on improving psychological well-being, family function, and coping strategy in women with breast cancer.

Table 1. Mean and Standard Deviation of all Variables, in Experimental and Control Groups in all Stages of Study

Variable	Group	Stage	Mean	Standard Deviation
Psychological Wellbeing	Experimental	Pretest	56.20	5.42
		Post-test	74.93	3.41
		Follow up	78.93	3.55
	Control	Pretest	54.07	4.92
		Post-test	58.15	4.27
		Follow up	53.07	6.90
Family Function	Experimental	Pretest	2.52	0.33
		Post-test	2.11	0.11
		Follow up	2.07	0.15
	Control	Pretest	2.54	0.26
		Post-test	2.53	0.23
		Follow up	2.55	0.22
Coping Strategy	Experimental	Pretest	0.85	0.13
		Post-test	1.57	0.20
		Follow up	2.05	0.24
	Control	Pretest	0.81	0.20
		Post-test	0.98	0.35
		Follow up	0.70	0.31

Table 2. Correlation Matrix of Variables

Variable	Psychological Wellbeing	Family Function	Coping Strategy
Psychological Wellbeing	1	0.89	0.56
Family Function	0.89	1	0.63
Coping Strategy	0.56	0.63	1

** (P < 0.01)

Table 3. Homogeneity of the Variance-covariance Matrix of all Variables (Mauchly's Test).

Variable	Chi-Square	P-value
Psychological Wellbeing	2.32	0.31 (P > 0.05)
Family Function	1.14	0.31 (P > 0.05)
Coping Strategy	4.50	0.10 (P > 0.05)

Table 4. Summary of the Mixed ANOVA for Investigating the Effect of Mindfulness Training on Psychological Wellbeing, Family Function, and Coping Strategy

Variable	Source	SS	df	MS	F	Sig	Partial Eta
Psychological Wellbeing	stage	2307.04	2	1153.52	140.398	0.001	0.84
	stage*group	1997.52	2	998.76	121.561	0.001	0.82
Family Function	stage	4.58	2	2.29	67.95	0.001	0.72
	stage*group	6.04	2	3.02	89.44	0.001	0.77
Coping Strategy	stage	0.86	2	0.43	13.85	0.001	0.34
	stage*group	0.87	2	0.43	13.96	0.001	0.34

Discussion

The purpose of this study was to investigate the effectiveness of mindfulness training on psychological wellbeing, coping strategies, and family functioning in women with breast cancer undergoing chemotherapy. Statistical results showed that learning mindfulness techniques not only increased the level of mindfulness in cancer patients undergoing chemotherapy but also affected the psychological wellbeing, family functioning and coping strategies of the patients and this effect continued during the follow-up period.

Mindfulness exercises through increasing flexibility and adaptability allow individuals to experience high levels of emotional self-regulation and higher quality of life. Individuals with higher levels of mindfulness experience significantly less negative emotions and report higher psychological well-being [35]. A review of previous research shows that the most important impact of mindfulness training on cancer patients is the reduction of stress and psychological distress [36]. In line with

Lykins' research, the present study reports that the more people experience higher levels of mindfulness, the better they feel, and the higher level they experience psychological well-being [37]. It has also been shown that mindfulness can help one get rid of psychological distress such as anxiety, worry, fear, and anger [38,39]. In fact, mindfulness via affecting the sub-components of psychological well-being enhances it so that the more mindful a person is and the more he/she experiences life in the present, he/she will have a greater sense of independence [23], and acceptance [40] and compared to those who have lower levels of mindfulness. Mindfulness also increases psychological well-being by reducing symptoms of psychological distress, emotion regulation, and improving appropriate behaviors [41].

High levels of stress and anxiety about different treatments and the future of the illness may increase psychological distress in women with breast cancer, and in this circumstance, patients may not use appropriate strategies to cope with the illness [42]. Contrary to

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previous studies showing that breast cancer patients use avoidant coping strategies when faced with the illness and its symptoms [43], the present study showed that coping strategies in women with breast cancer undergoing chemotherapy are emotion driven. This means that the present study showed that patients respond emotionally to their illness. Training mindfulness techniques helps patients become more aware of rational coping styles by raising awareness and paying attention to their thoughts and feelings. In explaining the impact of mindfulness on coping strategies in women with breast cancer, it can be pointed out that increasing the level of awareness, attention and acceptance of the present condition and understanding it will help the patients to cope with the disease and conditions and prepare them to reduce their negative emotions such as sadness and stress, and use rational coping strategies.

Consistent with earlier findings, it has been noted that patients with breast cancer experience high levels of anger, anxiety, and sadness; and negative emotions make patients unable to play their roles as spouses and mothers in the family and as a result have trouble in relationship with their spouses and children [44]. In this case, they cannot fulfill their responsibilities and unintentionally pass on all their unpleasant emotions to the family members [45]. The training of mindfulness techniques has been effective in pushing the family of patients from relatively unhealthy to relatively healthy levels. Such a way that patients were able to play an appropriate role by focusing on the present and the liberation of the dubious past and the future, as well as to communicate more effectively with their family members and to act in an emotionally responsive way towards their family. On the other hand, being mindful has led patients to form richer relationships with their spouse and children, to be more empathetic and to respond in a more appropriate emotional manner.

Some of the limitations of the present study included: given that the patients were undergoing chemotherapy and receiving medication, it was not possible to implement some of the mindfulness strategies such as mindfulness walking; and since sampling was restricted to private clinics in Tehran, generalization is limited. As a result, it is suggested to conduct a clinical interview with patients to examine their clinical and mental health status before training. To better evaluate the effectiveness of different psychological interventions on breast cancer patients undergoing chemotherapy, comparative studies should be conducted in order to investigate the effectiveness of these techniques and other interventions. Mindfulness techniques can be used alongside other medical treatments to increase levels of psychological well-being, enhance family functioning, and help to better cope with stressful conditions for patients with breast cancer.

Conclusion

Since women with breast cancer who undergo chemotherapy usually tolerate high levels of stress that can negatively impact different aspects of patients' life, the result of this study would be helpful for them as training mindfulness techniques can help them improve

their psychological well-being and also change their coping strategies. Besides, increasing the level of mindfulness can be effective for enriching patients' relationship during chemotherapy.

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