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THE EFFECTIVENESS OF MINDFULNESS TRAINING ON DYSFUNCTIONAL ATTITUDES AND COGNITIVE FLEXIBILITY IN PATIENTS WITH BREAST CANCER

PARIVASH VAKILI [1], ZEINAB BOROON[2], SAFIEH ABDOLAHI[3], SOMAYEH ABBASI[4], ZAHRA JAMSHIDIFAR[5], SALVA SHAMSEDDINI LORY*[6]

1 : Assistant Professor, Department of counseling, Islamic Azad University, Roudehen branch, Roudehen, Iran

2 : MA, Department of Counseling, Islamic Azad University, Roudehen branch, Roudehen, Iran

3: MA,department of Clinical Psychology, kish International Branch,Islamic Azad University, kish Island, Iran

5: PhD Student, Department of Counseling, Qom Branch, Islamic Azad University, Qom,Iran 4, 6: PhD Student, Department of Counseling, Young Researchers And Elite Club, Roudehen Branch ,Islamic Azad University, Roudehen, Iran

***Corresponding Author: E Mail: mahoor_princes @ yahoo.com**

ABSTRACT

The aim of this study was to examine the effectiveness of mindfulness training on dysfunctional attitudes and cognitive flexibility in patients with breast cancer. For this purpose, among patients admitted to hospital in Tehran Firouzgar hospital, 24 individuals were selected and were randomly divided into two groups of experiment and control. Both groups were examined in terms of dysfunctional attitudes and cognitive flexibility before and after undergoing treatment sessions and 3 weeks later. The experimental group participated in 8 sessions of mindfulness. The control group did not undergo any intervention. Analysis of covariance of data indicated that mindfulness is effective on reduction of dysfunctional thoughts and cognitive flexibility of patients with breast cancer. So we can use this technique to intervene in treatment of the patient's problems.

Keywords: Mindfulness, dysfunctional attitudes, cognitive flexibility and breast cancer

INTRODUCTION

Cancer, has caused despair and disappointment in patients and they feel as though they are stuck in hard and uncontrollable position (Missel & Birkelund, 2011), like a rolling of a big rock in the sea (Fu, Xu, B. Liu, Haber, 2008). Psychological effects which are brought on by cancer diagnosis and its treatment during the course of the disease has been reported to be 14 to 38 percent prevalence (Rim and Richardson, 1999), in 70% of patients with cancer (Okamura, Yamawaki, Akechi, Taniguchi, & Uchitomi, 2005). Studies that have been carried out have confirmed that the patient's most frequent and original complaint has been adjustment disorder with anxiety, depression and distress (Pirl, 2004)

Research has shown that the role of people's beliefs in the disease and their change of behavior and perceptions, can make them have a better life and more adaptability. Because people's attitudes towards the disease will cause them to have stress and anxiety and high levels of distress has had a long-term negative impact on women's self-belief as well. This has left a very bad and significant impact on family, family functioning, marriage and has led to reduction in their quality of life (Luecken, Compass, 2002). It has increased the rates of depression, anxiety, fear and other forms of psychological distress in patients with cancer (Aghebati, 2005). Depression is also one of the problems of these people and researches have approved the correlation between depression and cognitive flexibility of these patients (Foreign, Hull, Yunvin et al., 2003) According to the theory of cognitive flexibility, mental health means the acceptance of one's own internal and external environment and commitment to activities which are stable in terms of value. Various forms of psychopathology are also described based on cognitive flexibility by excessive behavior and maladaptive emotional rules or by value-oriented behavior and sensitivity to probabilities regarding the future (Masuda and Tully, 2012). Cognitive flexibility can adjust a person's thought and behavior in response to changes in environmental conditions (Dickstein, Nelson, McClure et al., 2006). There are evidence based on this, which indicates that there is an association among cognitive flexibility with mental well-being and vulnerabilities in a wide range of disorders, including depression, anxiety and general psychological distress (Masuda and Tully, 2012). Given the fact that depressed people slip to their inner world with mental ruminations and reinforce their depression,

those who do not have cognitive flexibility have tendency towards rumination, when they feel sad. This is because it is hard for them to find a coping strategies replacement in order to get rid of such feelings (Davis & Nolen-Hoeksema, 2000).

Medical treatment (Bernstein, Bookoos and Hazlet, 2000), psychological interventions such as cognitive behavioral therapy, modifying dysfunctional thoughts, techniques of relaxation and problem-solving skills (Gielssen., Verhagen, Witjes., & Bleijenberg,2006), hypnosis, relaxation , desensitization and distraction of senses, are among psychological interventions in this area (Antoni, 2003). Among psychological approaches in the third wave, mindfulness has found a special place in reduction of these problems in patients (Jamshidifar, Lotfi Kashani, 2014). Mindfulness, is a non-judgmental, indescribable and present moment awareness, regarding the experience which is in a particular moment within a person's attention. Moreover, it includes the concept of confession to the recalled experience and its acceptance. (Janowski and Lucjan (2012).Anther definition of mindfulness regards it as a technique that encourages meditation in combination with specific mental orientation to the experience, awareness of the present moment in a nonjudgmental way or minimizing the involvement in thoughts and feelings (Potek, 2012). Mindfulness, has been derived from cognitive behavioral therapies and it is regarded as the important components of psychological models of the third wave (McCarney, Schulz & Grey, 2012). All exercises in mindfulness has been designed in a way that they increase body awareness. The important role of body in new interdisciplinary fields such as mind-body medicine has been proven. In studies that use mindfulness, the emphasize is on the interaction between the physical, cognitive and emotional processes (Michalak., Burg, & Heidenreich, 2012). In practice, conducted extensive research on the adult population has proven the usefulness of this method in various areas such as stress management and anxiety and improvement in emotion regulation skills (Potek, 2012).

Increasing research suggests the usefulness of mindfulness in cases such as chronic pain (Lee, Bowen and Marlatt, 2005); post-traumatic stress disorder (Smith, Ortiz, Steffen, Tooley, Wiggins, & et al, 2011); reduction of addictive behaviors (Garland , Schwarz , Kelly, Whitt. & Howard , 2010); improvement of behavioral abnormalities, such as aggression and substance abuse (Wupperman, Marlatt, Cunningham, Bowen,

Berking & et al., 2012), decreasing impulsivity (Murphy & MacKillop, 2012); modification of social anxiety (Schmertz, Masuda & Anderson, , 2012); reduction of rumination and depression (Mckim, 2008), stress, anxiety and depression (Leigh , Bowen , Marlatt, 2005).

Based on studies carried out, mindfulness effects depression and dysfunctional attitude at least in two ways. One is dealing with mental ruminations and the other is reduction of emotional automatic response with the impact on insula path (Paul, Stanton, Greeson, Smoski & Wang, 2012). This study investigates the effectiveness of mindfulness training on dysfunctional attitudes and cognitive flexibility in patients with breast cancer.

MATERIALS AND METHODS

The study design was a quasi-experimental design with pretest - posttest along with the control group. The population of this study included patients with breast cancer who referred to Firouzgar hospital in Tehran, which among them 24 people were selected from available samples. They were then divided into two groups of for experiment and control, each group consisted of 12 people. They were then tested with dysfunctional attitude and cognitive flexibility questionnaires. Then the experimental group underwent 8 sessions of mindfulness therapy. The control group did not undergo any treatment. After completion of therapy sessions and 3 weeks after that both groups were tested again by the dysfunctional attitudes and cognitive flexibility questionnaires.

The dysfunctional attitude by Wiseman and colleagues in 1978 has been constructed in order to assess the dysfunction attitude rate based on beck's original questionnaire. The main test consists of 40 words, and 7 sub-scales. The current version of this questionnaire which is 10 questions, studies the dysfunctional attitudes of subjects in a single factor form. This questionnaire is a self-report instruments and the subject has to report one's agreement in a five-point likert scale (from strongly disagree 0, to completely agree 4). The subject should express one's agreement with any of the phrases. Scores range from 0 to 40 with higher scores indicating higher levels of maladaptive beliefs. Heroit has reported the internal consistency coefficient 0.74 with cronbach's alpha test (Ebrahimi, 2009).

Cognitive flexibility Inventory has been introduced by Dennis and Vander Wal (2010) and it is a short self-report instrument for measuring 20 questions, which is to assess the kind of cognitive flexibility which

is essential for individual's success in challenging and replacing dysfunctional thoughts with more efficient thoughts. It is scored based on the likert 7 degree scale. This questionnaire is used for assessing the progress of an individual in clinical and non-clinical work and to assess subject's progress rate in creating a flexible thinking in cognitive-behavioral therapy for depression and other mental illnesses. The concurrent validity of this questionnaire with the Beck Depression Inventory (BDI-II) equals to -39. 0, and its convergent validity with Martin and Robbin was 0.75(Dennis and Van der Wal, 2010). In Iran Share and colleagues reported (quoted by Soltani, Share, Bahreinian & Farmani, 2013) the Reliability coefficient of the whole scale as 0.71 and cronbach's alpha coefficient of the whole scale as 90.o. Cronbach's alpha of the questionnaire data in this study was 75.0.

Method of performance:

In this study, first through a calling list, volunteered people with breast cancer were prepared at Firoozgar hospital for mindfulness training sessions. Then, among them patients were selected and they were randomly divided into two groups of 12, then the experimental group underwent 8 sessions of 90 minutes of mindfulness training. The control group did not undergo any training. In table 1 a summary of mindfulness therapy package was presented.

Due to the structure of the research and assessment of pretest and posttest, after confirming the assumption of variance, covariance analysis was used. Data were analyzed with SPSS software of sixteenth edition.

RESULTS

In Table 1, descriptive component scores are presented in three stages of pretest, posttest and follow-up in separate forms of experiment and control groups.

By controlling the pre-test, it was found that the Wilks lambda test rate (13.66) is significant in the 0.001 level. This shows that the difference between the mean is significant based on multivariate analysis of covariance groups. To find out which variables is different between the two groups, one way anova was conducted in the context of mancova (Table 2). As it is shown in table 2 with controlling pretest, overall there is a significant difference in cognitive flexibility. The one way anova table indicates that overall cognitive flexibility ($F=42.89$ and $p<0.001$) has been different among the two groups. This indicates the effectiveness of treatment in the experimental group.

In order to evaluate the reliability of the mindfulness effect, subjects in both groups

were asked to be re-evaluated in the follow up, after 3 weeks .Results of the analysis showed that with controlling pre-test, the Wilkes Lambda rate (9.214) is significant (0.001). This represents a significant difference between means based on the multivariate covariance analysis of groups. The Summary of one way anova analysis in the mancova context is presented in Table 3. The calculated F error is significant in level of 0.001 error. The results indicates that there is a significant difference in dysfunctional attitude ($F=8.789$, $p<0.001$) between the experimental and control groups. So it can be concluded by keeping the pre-test scores fixed in both groups, post-test scores in both groups were significantly different. So the impact of mindfulness on the experimental group was found to be significant, in terms of dysfunctional attitudes and cognitive flexibility, compared to the control group. So, there is sufficient evidence to support the study hypothesis. The comparison of test scores in the post-test and follow-up shows that there was no significant difference in mean of both score; in other words we can say that the scores have shown significant stability.

Table 1: Descriptive component of cognitive flexibility and dysfunctional attitudes in pre-test, post-test and follow-up scores

Follow up		posttest		pretest			
experiment	control	experiment	control	experiment	control		
114	90..05	117	88/76	96.33	96.70	M	Cognitive flexibility
19.26	16.74	16.82	11.57	12.97	13.59	sd	
5.67	181.11	187.01	176.11	195.20	176.19		Dysfunctional attitudes
4.69	175.21	4.02	4.76	5.81	4.69		

Table 2: Results of multivariate analysis of covariance of cognitive flexibility and dysfunctional attitudes between groups: The experimental and the control group

Eta^2	Sig.	F	MS	df	SS	variables
0.712	0.001	71.80	11491	1	11149	Correct responses
0.710	0.001	71.03	10437	1	10437	Total errors
0.377	0.001	17.57	1820	1	1820	Remained responses
0.306	0.001	12.77	1278	1	1278	Remained errors
0.554	0.001	36.08	4570	1	4570	Non remained errors
0.087	0.106	2.78	1600	1	1600	Total efforts to complete the first category
0.701	0.001	68.02	191	1	191	Number of categories completed
0.551	0.001	42.89	4300	1	4300	Cognitive flexibility
0.295	0.007	8.161	25.464	1	25.464	Dysfunctional attitudes

Table 3: The results of multivariate analysis of covariance of cognitive flexibility and dysfunctional attitudes between groups, the experimental group and the control group in the follow-up stage

Eta^2	Sig.	F	MS	df	SS	variables
0.65	0.001	52.81	10654	1	10564	The correct responses
0.662	0.001	54.77	10173	1	10173	Total errors
0.745	0.001	81.59	4587.33	1	4587.33	The remaining responses
0.311	0.001	12.65	1227	1	1227	The remaining errors
0.741	0.001	79.98	4081	1	4081	The non-remaining errors
0.211	0.011	7.48	3284	1	3284	Total efforts to complete the first category
0.793	0.001	107.58	202.77	1	202.77	Number of categories completed
0.522	0.001	37.161	4031	1	4031	Cognitive flexibility
0.295	0.007	8.789	264.661	1	264.66	Dysfunctional attitudes

DISCUSSION

According to the findings mindfulness training is effective on dysfunctional attitudes and cognitive flexibility in patients with breast cancer. To explain these findings, we can say that in this treatment, the aim of emphasizing on the willingness of the individuals on internal experience was to help them experience their distressing thoughts just as a thought. They get aware of the nature of their current dysfunctional program and instead of responding to it, they should pay attention to what is important to them in life and what is in line with their value. Mindfulness, is a receptive and non-judgmental awareness of the current events (Ryan and Brown, 2003). Awareness that is created because of attention on the target, at the current moment, without any deduction of moment to moment (Kabat - Zinn, 2005). Mindfulness people, understand the inner and outer realities freely and without distortion. They have a great ability to deal with a wide range of thoughts, emotions and experiences (both pleasant and unpleasant) (Brown, 2007). Mindfulness has a positive relationship with peace of mind, psychological and mental health, while self-awareness is associated with low levels of psychological comfort (Dimoore, 2005). Mindfulness can be considered as the ability for self-regulation of attention and guiding it toward task. Based on this, setting regulation of thought-out attention, is the central part of the mindfulness (Bayer, 2006; D. Moore, 2009). In explaining the findings it can be inferred that women's problem with cancer, have more mental and cognitive aspects. Because in this way, one learns the technique that is related to the experience of the moment, temporarily attitudes and beliefs that are rooted in the past and is released by the fears and concerns of the future (Kabat Zinn, 2002). Also, the attitude of having acceptance without judgment to all matters is established within them (pleasant and unpleasant).

Adopting such measures is very much useful, especially for cancer patients who experience painful feelings such as frustration, helplessness and sadness. As Shigan et al. (2006) noted, mindfulness exercises give the participants the opportunity to see their thoughts, emotions and physical sensations in the absence of catastrophic outcomes due to exposure to the thoughts and feelings of anxiety and controlling avoidance as the increasing factor of anxiety.

Arch and Vehicles (2005) also believe that the mechanisms of mindfulness, is effective on emotion regulation with utilizing concentrated breathing. So in conclusion we can say that using mindfulness-based cognitive therapy, is along with the change of pattern of defective thinking in cancer patients. This therapeutic approach can be used as a stand-alone manner or in conjunction with other treatment methods such as Pharmacotherapy and improve the psychological and behavioral problems of people due to these problems.

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