

# The Effects of Mindfulness-Cognitive Based Therapy on the Dysfunctional Beliefs and the Social Appraisal of Patients with Cancer and Changes in Physical Appearance

Touraj Hashemi,<sup>1</sup> Shirin Zeinali,<sup>2,\*</sup> Ali Reza Nikan Far,<sup>2</sup> and Parviz Noori<sup>3</sup>

<sup>1</sup>Department of Psychology, Faculty of Psychology, Tabriz University, Tabriz, IR Iran

<sup>2</sup>Hematology and Oncology Research Center, Tabriz University of Medical Sciences, Tabriz, IR Iran

<sup>3</sup>Department of Psychology, Faculty of Psychology, Mohaghegi University, Ardebil, IR Iran

\*Corresponding author: Shirin Zeinali, Hematology and Oncology Research Center, Tabriz University of Medical Sciences, Tabriz, IR Iran. Tel: +98-4135575849, Fax: +98-4135546901, E-mail: shirinzeinali@yahoo.com

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## Abstract

**Background:** Cancer can change patients' physical appearance and thereby, threaten their psychological well-being. The current study aimed to evaluate the effects of mindfulness-based cognitive therapy on the dysfunctional beliefs and the social appraisal of the patients with cancer and changes in physical appearance.

**Methods:** It was a pretest-posttest controlled quasi-experimental study. A convenience sample of 40 patients with skin, breast, head and neck cancers was recruited from Shahid Ghazi Hospital, Tabriz, Iran. The patients had cancer-induced changes in physical appearance such as severe hair and eyebrow loss, mastectomy and skin lesions. They were randomly allocated to the experimental (20 patients) and the control groups (20 patients). Patients in the experimental group received mindfulness-based educations in eight 1.5-hour sessions held twice a week in four consecutive weeks while patients in the control group received no education. Before and one week after the study intervention, patients in both study groups completed the Jone irrational belief test and the social appraisal subscale of the self-talk scale. The data were analyzed by the SPSS ver. 16.0 and through conducting the independent- and the paired-sample T-tests and the multivariate analysis of variance (MANOVA) at the significance level of 0.05.

**Results:** Study findings revealed that mindfulness-based cognitive therapy significantly improved the participating patients' demand for approval, high self-expectation, blame proneness, frustration reactive, emotional irresponsibility, anxious over-concern, problem avoidance, perfectionism, social appraisal ( $P < 0.001$ ), dependency and helplessness for change ( $P < 0.05$ ).

**Conclusions:** Mindfulness education is recommended to correct dysfunctional beliefs and improve social appraisal of patients with cancer and changes in physical appearance.

**Keywords:** Mindfulness-Based Therapy, Irrational Beliefs, Social Appraisal, Cancer

## 1. Background

Cancer is among the most prevalent health problems of the present century. It is defined as uncontrolled cell proliferation (1). Some types of cancer such as skin, head and breast cancers negatively affect the physical appearance of the body and cause the deformity of its outer surface. Such cancer-induced changes reduce patients' self-confidence and create severe psychological crises for them (2, 3). It is believed that altered appearance has negative effects on patients' cognitive functioning and causes them to have an irrational attitude towards their own weaknesses (4-6). In other words, cancer-induced altered appearance results in the formation of irrational and dysfunctional cognitions and beliefs about physical appearance.

Dysfunctional beliefs are usually deep-seated beliefs that affect emotional and behavioral functionality (7). Empirical evidence shows that people with physical health problems usually have irrational beliefs about their own body and tend to misinterpret their bodily sensations (8). Changes in body sensitize people to others' social appraisal of them and give them irrational beliefs such as demand for approval, high self-expectations, blame proneness, frustration reactive, emotional irresponsibility, anxious over-concern, problem avoidance, dependency, helplessness for change and perfectionism. Consequently, effective management of such problems is needed to accelerate the recovery process and alleviate psychological problems of patients with cancer who experience changes in physical appearance.

A treatment technique to manage dysfunctional cogni-

tions and interpersonal problems is mindfulness. Mindfulness is to become aware of thoughts, behaviors, emotions, and motivations to manage them more effectively (9). The key attribute of mindfulness is to make patients aware of the root causes and the mechanisms of problems in the brain. It prevents patients from developing anxiety, helps them consciously focus on thoughts and desires and enables them to be indifferent toward irrational thoughts and instead pay attention to biological roots of disorders. Irrational thoughts include negative and destructive comments on self. Such thoughts play a significant indirect role in causing, aggravating and managing disorders. Mindfulness helps users identify these thoughts and understand that the frequency of these thoughts as well as the quality of their beliefs is changed once developing a disease. Consequently, they learn to simply observe these thoughts instead of being immersed in them (10). Czajkowska et al. (11) reported that non-melanoma skin cancer changes patients' appearance and hence, causes them cognitive problems. Thus, they noted that some sort of cognitive therapies are needed for these patients to alleviate their psychological problems. Moghtadaei et al. (12) also found that mindfulness-based cognitive therapy (MBCT) alleviated physical and cognitive problems of patients with irritable bowel syndrome. Besides, Czajkowska et al. (11) found mindfulness-based therapies effective in reducing negative thoughts related to alterations in skin among patients with skin cancer.

To the best of authors' knowledge, limited numbers of studies are conducted so far to investigate the effectiveness of psychological therapies in alleviating psychological problems of patients with cancer and altered appearance.

## 2. Objectives

The current study aimed to evaluate the effects of MBCT on the dysfunctional beliefs and the social appraisal of patients with cancer and changes in physical appearance.

## 3. Methods

It was a pretest-posttest controlled quasi-experimental study. A convenient sample of 40 patients with skin, breast, head and neck cancers was recruited from Shahid Ghazi Hospital, Tabriz, Iran. The patients had cancer-induced changes in physical appearance such as severe hair and eyebrow loss, mastectomy and skin lesions. They were randomly allocated to the experimental (20 patients) and the control groups (20 patients).

Patients in the experimental group received mindfulness-based educations. Educations were provided

in eight 1.5-hour sessions held twice a week consecutively for four weeks, while patients in the control group received no education. Before and one week after the study intervention, patients in both groups completed the Jones irrational belief test and the social appraisal subscale of the self-talk scale.

### 3.1. The Jones Irrational Belief Test (IBT)

This test was developed in 1868 - 1869 by Jones and is one of the most commonly used tests to evaluate irrational beliefs. The IBT consists of ten subscales each of which contain ten items and evaluate one irrational belief. Accordingly, the IBT contains 100 items and evaluates ten irrational beliefs including demand for approval, high self-expectations, blame proneness, frustration reactive, emotional irresponsibility, anxious over-concern, problem avoidance, dependency, helplessness for change and perfectionism. The scoring of the IBT items was performed on a five-point Likert-type scale from 1 to 5 which stand respectively from "completely disagree" to "completely agree". The IBT has an acceptable validity. Mahboobi et al. (13) reported a Cronbach's alpha of 0.84 for the test. Amin Poor and Ahmad Zadeh (14) also reported that the test-retest correlation coefficient and the Cronbach's alpha of the test were respectively 0.92 and 0.74 while the Cronbach's alpha values of its subscales ranged from 0.66 to 0.80.

### 3.2. The Self-Talk Scale (STS)

The STS is a 16-item paper-and-pencil scale which consists of four subscales including social appraisal (items 4, 6, 11 and 16), self-reinforcement (items 2, 5, 8 and 13), self-management (items 3, 9, 12 and 15) and self-criticism (items 1, 7, 10 and 14). In this scale, respondents rate their self-talk on a four-point Likert scale from "never" to "very often" which are scored 1 and 5, respectively (15). The present study only used the social appraisal subscale of the STS. Khodayarifard et al. (16) found that the Cronbach's alpha and the test-retest correlation coefficient of the scale were respectively 0.91 and 0.64. They also reported that the test-retest correlation coefficients of the STS subscales were 0.67, 0.52, 0.51 and 0.60, respectively.

### 3.3. The MBCT Educational Package

MBCT intervention consisted of eight educational sessions. Table 1 shows the contents of each MBCT educational session. The MBCT dealt with educations in main areas such as establishing communication, primary orientation, the nature of cancer, changes in physical appearance and their types, irrational beliefs and cognitions, four steps of mindfulness and giving homework assignments. These materials were given to patients in a booklet and taught to

them by an instructor (17). All educational sessions were held through group counseling and in a workshop-like manner in Shahid Ghazi hospital, Tabriz, Iran, under the supervision of MSc holder in clinical psychology. In each session, the instructor provided information about MBCT techniques and then, the techniques were implemented personally by the study participants. The participants were also given homework assignments to perform the learned techniques at home.

During the study intervention, three patients from the experimental group voluntarily withdrew from the study and hence, the final data analysis was performed on the data retrieved from 37 patients seventeen patients from the experimental group and 20 from the control group. The data were transferred into the SPSS ver. 16.0 and analyzed through conducting the independent- and the paired-sample T-tests and the multivariate analysis of variance (MANOVA) at the significance level of 0.05. The measures of descriptive statistics such as mean and standard deviation were also used to describe the data.

#### 4. Results

The means of the patients' age in the experimental and the control groups were  $42.29 \pm 2.2$  and  $41.45 \pm 2.3$  years, respectively ( $P = 0.27$ ). The study groups did not differ significantly regarding the participants' gender. The results of the independent-sample T-test illustrated no significant difference between the groups in terms of the scores of irrational beliefs and social appraisal ( $P > 0.05$ ). However, after the study, the difference between the groups was statistically significant ( $P < 0.001$ ). The paired-sample T-test also showed that in the experimental group, the posttest values of irrational beliefs and social appraisal respectively decreased and increased significantly compared with those of the corresponding pretest values ( $P < 0.001$ ); however, pretest-posttest changes in the irrational beliefs and social appraisal scores of the patients in the control group were not statistically significant (Table 2).

The MANOVA also indicated that the study groups differed significantly from each other concerning the posttest mean value of at least one of the components of irrational beliefs ( $P < 0.05$ ). The results of between-group pairwise comparisons revealed that the scores of all components of irrational beliefs in the experimental group were significantly higher than those of the control group ( $P < 0.05$ ; Table 3).

#### 5. Discussion

The results of the current study indicated that mindfulness significantly changed irrational beliefs (including

demand for approval, high self-expectations, blame proneness, frustration reactive, emotional irresponsibility, anxious over-concern, problem avoidance, dependency, helplessness for change and perfectionism) as well as social appraisal among patients with cancer and altered physical appearance. Newman Taylor et al., Kaviani et al., Azargoon and Kajbaf and Brown and Ryan (2, 18-20) also reported the same findings. Adams et al. (21) noted that altered appearance results in the formation of negative cognitions and body images which preoccupy the afflicted patient. According to Schutte and Malouff (22), exercises such as paying attention to feelings and having mindful breathing help patients focus on fear over agony or terrible thoughts and cope with disease-related physical problems more effectively.

White reported that in the early phases of treatment, the body image of patients who undergo mastectomy is severely affected while behavioral cognitive therapies can improve their social self-esteem as well as beliefs related to body image (4). It seems that the process of mindfulness reduces the severity of irrational beliefs in patients with cancer about their physical infirmities, prevents them from overestimating their infirmities and helps them avoid self-blame. Moreover, mindfulness-based therapies and joining groups of people with similar problems reduce patients' demand for approval, problem avoidance, and helplessness to change and alleviate their anxieties and over-concerns.

Patil (23) also applied MBCT to patients with chronic back pain and found it effective in alleviating pain, clinical parameters and general psychological symptoms. According to the above discussion, many scholars reported the effectiveness of mindfulness-based exercises in changing thinking patterns or individuals' attitudes towards their thoughts. Kabat-Zinn et al. (17) also noted that nonjudgmental observation of pain and concern-related thoughts can help people understand that they are just thoughts and not accurate representations of realities. Patients who understand that negative thoughts formed due to changes in appearance do not correctly reflect realities are less worried about others' social appraisal of their appearance and abilities.

Cardaciotto (24) also noted that changing patients' thoughts, attitudes and mentalities about diseases can alleviate the symptoms of thoughts. According to Kabat-Zinn (25), MBCT results in a cognitive reconstruction without any need to therapist's direct involvement in dealing with patients' data and dysfunctional attitudes. Joining a group of patients who had experienced similar changes in their appearance (such as mastectomy, hair loss and skin lesions) helped the study participants find that other people also have the same problems, become aware of each

**Table 1.** The Contents of MBCT<sup>a</sup> Educational Sessions

Session	
1	Orientation with the program, the instructor, and other group members; expression of feelings about cancer and altered appearance and their effects on social behaviors; self-directed mindfulness and exercising mindful raisin eating
2	Exercising the “being in the body” technique (focusing on the body and experiencing bodily feelings); preparing patients for body scanning; exercising alternative thoughts and feelings; documenting pleasant experiences
3	Introducing the sitting meditation exercise and its rationale; checking previous homework assignments; documenting pleasant events; giving homework assignments
4	Staying at present time; mindful breathing of voices and thoughts; the three-minute breathing technique as a coping strategy
5	Meditation and simultaneous remembering of problems and irrational and dysfunctional beliefs
6	Exercising the fact that beliefs and thoughts are not real; doing meditation and educating how to work with emotional pains
7	Diagnosing the warning signs of relapse and educating a practical program to cope with such signs
8	Summarizing educational materials for future; adopting a new plan for the remaining of life; regular exercising of mindfulness and body scanning and giving homework assignments

<sup>a</sup>MBCT, mindfulness-based cognitive therapy.

**Table 2.** Comparing the Study Groups Regarding the Pretest and Posttest Values of Irrational Beliefs and Social Appraisal

Groups	Mean ± Standard Deviation		P Value
	Pretest	Posttest	
<b>Irrational beliefs</b>			
Experimental	30.6 ± 6.01	6.4 ± 7.22	< 0.001
Control	30.2 ± 5.3	4.6 ± 1.31	< 0.9
<b>P value (the results of the independent-sample T-test)</b>		0.82	< 0.001
<b>Social appraisal</b>			
Experimental	5.1 ± 5.13	25 ± 2.4	< 0.001
Control	13.4 ± 1.4	13.1 ± 1.6	< 0.7
<b>P value (the results of the independent-sample T-test)</b>		0.84	< 0.001

other's feelings, assess their irrational beliefs, get familiar with the irrationality of their thoughts and understand that thoughts do not necessarily represent realities. The ability to avoid exaggerating weaknesses and reduce the amount of irrational beliefs such as demand for approval and perfectionism improved the quality of social interactions in the study subjects and prevented them from giving too much value to others' social appraisals. Generally, presence in mindfulness-based group therapy helps patients get familiar with their own irrational beliefs, use cognitive-behavioral techniques and exercises to reduce such thoughts, and adopt a more positive attitude towards life.

### 5.1. Conclusion

Cancer is among the health conditions which negatively affect patients' cognitive and thinking status and results in the formation of irrational beliefs. On the

other hand, cancer-induced changes in patients' physical appearance alter their physical appraisal. Accordingly, establishing counseling centers in hospitals and using mindfulness-based therapies are recommended to improve cancer patients' irrational beliefs and social appraisal.

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**Table 3.** Between-Group Comparison of the Posttest Scores of the Components of Irrational Beliefs in Both Study Groups

Components	Groups		P value (Pairwise Comparisons)
	Experimental, Mean $\pm$ SD	Control, Mean $\pm$ SD	
Demand for approval	17.9 $\pm$ 8.8	29.2 $\pm$ 6.9	< 0.001
High self-expectations	22.7 $\pm$ 4.3	31.9 $\pm$ 3.4	< 0.001
Blame proneness	14.8 $\pm$ 2.8	18.4 $\pm$ 2.6	< 0.001
Frustration reactive	25.7 $\pm$ 5.1	28.4 $\pm$ 5.9	< 0.001
Emotional irresponsibility	22.7 $\pm$ 4.7	25.25 $\pm$ 5.9	0.008
Anxious over-concern	21.9 $\pm$ 0.2	36 $\pm$ 8.8	< 0.001
Problem avoidance	23.3 $\pm$ 2	32.7 $\pm$ 8.7	< 0.001
Dependency	25.9 $\pm$ 5.1	35.8 $\pm$ 6.7	0.02
Helplessness for change	18.7 $\pm$ 5	24 $\pm$ 3.1	0.04
Perfectionism	25 $\pm$ 3.2	29.5 $\pm$ 4.3	< 0.001

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