The Effectiveness of Mindfulness-Based Cognitive Therapy in Reducing Psychological Symptoms, Meta-Worry and Thought Fusion of Multiple Sclerosis Patients

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ABSTRACT

Purpose: Multiple sclerosis is a progressive neurological disease and a cause of many disabilities in individuals. Set of symptoms and the chronic nature of this disease, together impair the mental state of the person and cause a wide variety of psychological symptoms worsening the disease. Therefore, this study aimed to evaluate the effectiveness of cognitive therapy based on mindfulness psychological symptoms, meta-worry and thought fusion in patients suffering from multiple sclerosis.

Materials and Methods: This research is a quasi-experimental research in which pretest, post test and control group designs were used. The population included all patients recognized having multiple sclerosis admitted to the Multiple sclerosis Society of Kermanshah, among whom 24 people were chosen using random sampling for both experimental and control groups. The instruments of study were the Beck Depression Inventory, Beck Anxiety Inventory, Fatigue Severity Scale, Meta-worry Questionnaire, Thought Fusion Inventory and the mindfulness-based cognitive therapy package.

Results: The results of the study showed that mindfulness-based cognitive therapy effectively lowers the rates of depression, anxiety, meta-worry and thought fusion in patients with multiple sclerosis but is not effective in reducing fatigue severity in these patients.

Conclusion: Although drug treatments are effective in relieving the symptoms of multiple sclerosis, they conversely accompany with a lot of side effects. Thus, the implicit orientation of this study suggests that the variables of depression, anxiety, meta-worry and thought fusion can significantly be improved as the result of mindfulness-based cognitive therapy. Health authorities in this area should try to consider this therapy as a complementary therapy in the aforementioned patients.

Keywords: relapsing-remitting; mindfulness; cognitive therapies; meta worry; thought fusion.

INTRODUCTION

Multiple sclerosis (MS) is a chronic inflammatory and neurodegenerative disease of the central nervous system (CNS), characterized by axonal injury and demyelination. The etiology of MS is still poorly understood, but immune dysregulation caused by a complex interplay of genetic and environmental risk factors appears central to the disease process.1 People suffering from MS have to deal with the unpredictability nature of the disease, the loss of function and disability, a series of debilitating and changeable

AMHSR 2016;14: 16-21
www.journals.ajaums.ac.ir
The frequency of anxiety symptoms. The total score of the Beck Depression Inventory-II (BDI-II) relates to different symptoms of depression such as sadness, hopelessness, self-blame, guilt, fatigue, and loss of appetite. On each item, patients are asked to choose the statement that best describes their attitude towards the item. Scores of the BDI-II can vary from 0 to 63 and are often classified as follows: 0–13 no depression, 14–19 mild depression, 20–28 moderate depression, and 29–63 severe depression. The English version of BDI-II has been translated and validated in 17 languages so far, and it is used among countries in Europe, the Middle East, Asia, and Latin America.

The Beck Anxiety Inventory (BAI) is a 21-question multiple-choice self-report inventory that is used to measure the severity of an individual’s anxiety and is designed for individuals aged 12 and above. The Beck anxiety inventory is a 4-point Likert-type scale inventory developed by Beck to measure the frequency of anxiety symptoms. The total score of
the inventory ranges from 0 to 63. Thirteen questions evaluate physiological symptoms, 5 questions evaluate comprehension, and 3 questions evaluate somatic and comprehension symptoms.\(^{(19)}\)

### Fatigue Severity Scale

The FSS is a self-administered questionnaire measuring fatigue.\(^{(20)}\) This scale consists of 9 questions, five of which measure quality of the fatigue more than quantity, three measure physical and mental fatigue and its consequence on the person’s social status, and one compares the fatigue severity with other symptoms in people with MS. Points related to each question are between 1 and 7; the score of 1 means that the patient strongly disagrees and 7 means that he/she totally agrees. The total score is calculated by dividing the sum of scores into 9. This score is also between 1 and 7 points, in which 7 represents the highest score of fatigue and 1 indicates a lack of fatigue.\(^{(21)}\)

### Meta-Worry Questionnaire

The questionnaire has 7 items which measure worry and metacognition. There are two scales for each item. One to assess the frequency of meta-worry which is a Likert’s scale ranging from 1 to 4 with each point labeled as follows: Never; sometimes; often; almost always. The other is used to rate the belief in each meta-worry at its time of occurrence and ranges from 0 to 100 with anchor points labeled at each extreme as follows: I do not believe this thought at all, and I am completely convinced this thought is true. There is a very good internal reliability, and the scales correlated meaningfully with the existing measures. Cronbach’s alpha coefficients of the MWQ were 0.88 for the frequency scale and 0.95 for the belief scale. The meritorious and marvelous criteria were respectively satisfying the MWQ frequency subscale (0.87) and the belief subscale (0.93).\(^{(4)}\)

### Thought Fusion Inventory

TFI consists of 14 items rated on a 0 to 100 scale which assess metacognitive beliefs about the meaning, importance, and peril of intrusive thoughts. This inventory was designed to measure the three types of thought fusion: Thought-Action Fusion, Thought-Event Fusion, and Thought-Object Fusion. Gwilliam and colleagues obtained acceptable reliability and preliminary evidence supporting its convergence and discriminate validity. Also, other studies have showed correlations ranging from 0.4 to 0.7 among TFI and metacognitive beliefs instrument and thought action fusion. Khoramdel and colleagues have reported satisfactory reliability and validity in Iranian population which can be used for diagnosis and treatment purposes.\(^{(4)}\)

### Manual of Cognitive Therapy based on Mindfulness

The MBCT program used in this study follows the manual developed by Segal and colleagues. In brief, the manual proposes the following format for the eight group sessions: 1. Welcome and introduction to the session theme, 2. A short opening meditation, 3. A discussion of at-home practice, 4. An introduction and practice of new exercises, 5. A group reflection/discussion, 6. A review of the next weeks’ at-home practice, 7. A closing sitting meditation.\(^{(22)}\) The program teaches skills that enable participants to disengage from these habitual dysfunctional cognitive routines and thus reduce the risk of relapse into depression. In this study, MBCT comprised an individual interview followed by eight weekly two-hour classes, including training in meditation skills such as sustained attentional focus on the body and breath and adopting a decentered view of thoughts as passing mental events.\(^{(23)}\)

### RESULTS

According to the results of the univariate analysis of covariance in Table 1, statistically significant effect of the subjects (of the experimental group) is confirmed \((F_{(1&17)} = 2.013, P<.05, \text{ test ability } = .121)\). Adjusted mean scores of depression in the post test show that the experimental group, compared with the control group, has less depression rates. Apparently, .121 of the variance of depression reduction in the post test is explained by mindfulness-based cognitive therapy (Table 1).

According to the results of Table 2, adjusted mean scores of anxiety in the post test show that the experimental group, compared with the control group, were less anxious. Apparently, .259 of the variance of anxiety reduction in the post test is explained by...
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DISCUSSION

The first results from the study showed positive effects of mindfulness-based cognitive therapy on depression in patients with multiple sclerosis. These findings were consistent with the results of some research including those of Teasdale et al and colleagues,(24) Wallin and colleagues,(25) Arnot, Barwick & Beene,(26) and Simpson and colleagues,(27) Depression can be the result of multiple effects associated with managing a chronic condition. In addition to neurological damages, this disease often accompanies a lack of working conditions, social roles, sense of self-control and ability to participate.(28) The nature of MS is unpredictable and potentially painful. Understanding this unpredictability and uncertainty, the possible outcomes of MS such as impairing effects in daily activities and the consequent low hope are factors that can lead an individual to depression.(29) Also, loss of employment and resulted financial situation proposes a direct relationship between MS and depression. Unemployment in these patients is associated with lower quality of life.(30) Therefore, to explain the findings it can be noted that mindfulness-based cognitive therapy can improve the cognitive abilities of people with MS and thus reduces depression in the patients. It appears that this therapy helps patients to cope with their feelings of anxiety and depression and also to experience a higher quality of life, this therapy also reduces automatic negative thoughts and dysfunctional attitudes in these patients. Another research shows disapproval of effectiveness of the cognitive therapy based on mindfulness in reducing the severity of fatigue in patients with multiple sclerosis. (11) It seems that fatigue in patients with multiple sclerosis, rather than being influenced by cognitive factors is influenced by physical factors and requires physical intervention. Also findings of the study showed positive effects of mindfulness-based cognitive therapy in reducing meta-worry in patients with multiple sclerosis which is consistent with studies of Delgado-Pastor and colleagues,(31) Lenze and colleagues(32) and Desrosiers and colleagues. (33) It appears that this therapy helps reducing automatic negative thoughts and dysfunctional attitudes and leading to a reduction in meta-worry. The other findings of the research showed that mindfulness-based cognitive therapy (Table 2).

According to the results of univariate analysis of covariance presented in Table 3, no significant effect of the factor on the subjects (of the experimental group) is suggested (F (1&17) = 5.95, P< .05). The result is mentioned in Table 3.

Based on the results of univariate analysis of covariance presented in Table 4, a significant effect of the factor on the subjects (of the experimental group) is confirmed (Table 4).

According to the results of univariate analysis of covariance presented in Table 5, a significant effect of the factor on the subjects (of the experimental group) is confirmed. The result is mentioned in Table 5.

Table 2. Results of univariate analysis of covariance effects of mindfulness-based cognitive therapy on reducing anxiety

<table>
<thead>
<tr>
<th>Source effect</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
<th>Test ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group (independent variable)</td>
<td>52.26</td>
<td>1</td>
<td>52.26</td>
<td>5.95</td>
<td>.026</td>
<td>.259</td>
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<tr>
<td>Error</td>
<td>142.297</td>
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<td>8.782</td>
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Table 3. Results of univariate analysis of covariance effects of mindfulness-based cognitive therapy on reducing the symptoms of fatigue

<table>
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<th>Source effect</th>
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<th>df</th>
<th>MS</th>
<th>F</th>
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<tr>
<td>Group (independent variable)</td>
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<td>21.631</td>
<td>3.982</td>
<td>.062</td>
<td>.190</td>
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<tr>
<td>Error</td>
<td>92.339</td>
<td>17</td>
<td>5.432</td>
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Table 4. Results of univariate analysis of covariance effects of mindfulness-based cognitive therapy on reducing the symptoms of meta-worry

<table>
<thead>
<tr>
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<th>SS</th>
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<th>MS</th>
<th>F</th>
<th>P</th>
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<td>Group (independent variable)</td>
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<td>1</td>
<td>62.196</td>
<td>24.40</td>
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<td>Error</td>
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Table 5. Results of univariate analysis of covariance effects of mindfulness-based cognitive therapy on reducing the symptoms of thought fusion

<table>
<thead>
<tr>
<th>Source effect</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P</th>
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<td>Group (independent variable)</td>
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<td>.006</td>
<td>.362</td>
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<tr>
<td>Error</td>
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<td>17</td>
<td>1345.596</td>
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based cognitive therapy was effective in reducing thought fusion in people with multiple sclerosis. Findings show that mindfulness skills such as observation, awareness, meta-worry and thought fusion are significantly influenced by cognitive factors. Health authorities in this field should try to focus on mindfulness-based cognitive therapy as an adjunctive treatment in this area.

CONCLUSIONS
The implicit allusion of the research is about mood disorders in patients with multiple sclerosis, and it is proposed that variables including depression, anxiety, meta-worry and thought fusion are significantly influenced by cognitive factors. Health authorities in this field should try to focus on mindfulness-based cognitive therapy as an adjunctive treatment in this area.

ACKNOWLEDGMENTS
In the end, we tend to appreciate all the patients who participated in this study.

CONFLICT OF INTEREST
None declared.

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Received: November 2015
Accepted: January 2016