

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.

AMHSR 2016;14:16-21
www.journals.ajaums.ac.ir

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

symptoms and the uncertain perspectives of the disease.⁽²⁾ These symptoms gradually become dominant and their combination exacerbates the mental state of the person, also stressful events can accelerate the rate of disease attacks. Depression is very common among these patients as it is estimated that more than 50 percent of people with MS suffer from depression at the same time.⁽³⁾ There is a strong correlation between fatigue and depression and also between depression and anxiety.⁽²⁾ Another factor is meta-worry, which means worrying about worry. Worry, as a key part of distress, has been described as a chain of thoughts and images and relatively automatic thoughts related to possible threatening outcomes and their potential consequences. Meta-worry is a part of metacognitive model which has been studied in OCD patients.⁽⁴⁾ One of the fundamental concepts of metacognitive model is thought-fusion in which metacognitive beliefs eliminate the borders between thought, incidents and acts.⁽⁴⁾ Beliefs of fusion can involve themes of: (a) thought-action fusion (TAF); “if I think about stabbing him, I probably will stab him”; (b) thought-event fusion (TEF); “If I think of the Devil, the Devil will appear or if I think I’ve abused her, I probably have done so”; and (c) thought-object fusion (TOF); an example is the belief that “feelings of unrest” can be transferred into books, thus contaminating them such that the feeling can never be escaped when the infected books are used.⁽⁵⁾ Mindfulness, as described by Kabat-Zinn, is the process of bringing a nonjudgmental attention to one’s moment-by-moment experience without immediately attempting to change it. Mindfulness has been conceptualized as a dispositional trait, meaning that it varies among individuals, but also can be enhanced with training.⁽⁶⁾ The main goal of mindfulness-based cognitive therapy is that the patient gets aware of the effects of mentality doing mode reactivation through automatic monitoring.⁽⁷⁾ Researchers at previous studies have shown that increasing mindfulness is related with a variety of health outcomes such as pain relief,⁽⁸⁾ depression,⁽⁹⁾ eating disease,⁽¹⁰⁾ panic attacks and anxiety disorders,⁽¹¹⁾ chronic fatigue syndrome⁽¹²⁾ and stress.⁽¹³⁾ It has also been shown that the mentioned increase is significantly reducing the duration of symptoms associated with depression and lengthening their relapse time through a better quality of life.⁽¹⁴⁾ In another study, results suggest that training of mindfulness reduces depression and fatigue and increases the quality of life among the patients.⁽¹⁵⁾ According to psychological problems caused by MS, the necessity to study the internal and external realities in the context of mindfulness-based cognitive therapy and through mental state is discussed.

MATERIALS AND METHODS

This study is an applied research and a semi-experimental in terms of performance, in which pretest, posttest as well as control group designs have been used. The study sample included all female patients diagnosed with multiple sclerosis referred to the MS Society of Kermanshah. Of the population, 24 people were selected using a random sampling method to be included in experimental and control groups (12 patients in the experimental and 12 in the control group). Considering the purposes of this study, patients were selected among people with multiple sclerosis referred to the MS Society of Kermanshah who had the criteria for the study, which include having MS utmost 10 years, being graduated from school or above in terms of education level, and being consistent with the purposes of the research. First, sampling method was a public call among members of the MS Society of Kermanshah. Then, 24 individuals were randomly selected and equally put into each of the experimental and control groups. Beck Depression Inventory, Beck Anxiety Inventory, Fatigue Severity Scale, meta-worry questionnaire and Thought Fusion Inventory were completed by patients and then 8 two-hour sessions of cognitive therapy based on mindfulness were held for participants in the experimental group. At the end of the eighth meeting both control and experimental groups were asked to complete the mentioned questionnaire again.

Beck Depression Inventory-II

The BDI-II is a 21-item self-report questionnaire with four response options for each item. Items of the BDI-II relate 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 follow: 0–13 no depression, 14–19 mild depression, 20–28 moderate depression, and 29–63 severe depression.⁽¹⁶⁾ 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.⁽¹⁷⁾

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.⁽¹⁸⁾ 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 meaning fully 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 discriminant 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 ($F_{(1&17)} = 2.013$, $P < .05$, 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 mind fulness-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

Table 1. Results of univariate analysis of covariance effects of mindfulness-based cognitive therapy on reducing the symptoms of depression

Source effect	SS	df	MS	F	P	Test ability
Group (independent variable)	2.238	1	2.238	2.013	.031	.121
Error	22.390	17	7.823			

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

Source effect	SS	df	MS	F	P	Test ability
Group (independent variable)	52.26	1	52.26	5.95	.026	.259
Error	142.297	17	8.782			

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**.

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 and colleagues,⁽²⁴⁾ Wallin and colleagues,⁽²⁵⁾ Arnet, Barwick & Beeney,⁽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 in 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-

Table 3. Results of univariate analysis of covariance effects of mindfulness-based cognitive therapy on reducing the symptoms of fatigue

Source effect	SS	df	MS	F	P	Test ability
Group (independent variable)	21.631	1	21.631	3.982	.062	.190
Error	92.339	17	5.432			

Table 4. Results of univariate analysis of covariance effects of mindfulness-based cognitive therapy on reducing the symptoms of meta-worry

Source effect	SS	df	MS	F	P	Test ability
Group (independent variable)	62.196	1	62.196	24.40	.001	.546
Error	51.819	17	3.048			

Table 5. Results of univariate analysis of covariance effects of mindfulness-based cognitive therapy on reducing the symptoms of thought fusion

Source effect	SS	df	MS	F	P	Test ability
Group (independent variable)	12964.687	1	12964.687	9.635	.006	.362
Error	22875.126	17	1345.596			

based cognitive therapy was effective in reducing thought fusion in people with multiple sclerosis. Findings show that mindfulness skills such as observation, awareness and acceptance were seen to be helpful in managing thought fusion,⁽³⁴⁾ they also can improve cognitive biases and reduce thought fusion in patients.

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.

REFERENCES

- Hadgkiss EJ, Jelinek GA, Weiland TJ, Pereira NG, Marck CH, van der Meer DM. The association of diet with quality of life, disability, and relapse rate in an international sample of people with multiple sclerosis. *Nutr Neurosci*. 2015;18:125-36.
- Carletto S, Borghi M, Francone D, et al. The efficacy of a Mindfulness Based Intervention for depressive symptoms in patients with Multiple Sclerosis and their caregivers: study protocol for a randomized controlled clinical trial. *BMC Neurol*. 2016;16:7.
- Sadovnick AD, Remick RA, Allen J, et al. Depression and multiple sclerosis. *Neurology*. 1996;46:628-32.
- Zeinodini Z, Sedighi S, BaghertorkRahimi M, Noorbakhsh S, RajeziEsfahani S. Dysfunctional Metacognitive Beliefs in Body Dysmorphic Disorder. *Glob J Health Sci*. 2015;8:10-6.
- AmiriPichakolaei A, Fahimi S, BakhshipourRoudsari A, Fakhari A, Akbari E, Rahimkhanli M. A comparative study of thought fusion beliefs and thought control strategies in patient with obsessive-compulsive disorder, major depressive disorder and normal people. *Iran J Psychiatry Behav Sci*. 2014;8:33-41.
- Pivarunas B, Kelly NR, Pickworth CK, et al. Mindfulness and eating behavior in adolescent girls at risk for type 2 diabetes. *Int J Eat Disord*. 2015;48:563-9.
- Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol*. 2003;84:822-48.
- Zeidan F, Grant JA, Brown CA, McHaffie JG, Coghill RC. Mindfulness meditation-related pain relief: evidence for unique brain mechanisms in the regulation of pain. *NeurosciLett*. 2012;520:165-73.
- Shallcross AJ, Gross JJ, Visvanathan PD, et al. Relapse prevention in major depressive disorder: Mindfulness-based cognitive therapy versus an active control condition. *J Consult Clin Psychol*. 2015;83:964-75.
- Kristeller JL, Hallett CB. An Exploratory Study of a Meditation-based Intervention for Binge Eating Disorder. *J Health Psychol*. 1999;4:357-63.
- Kim YW, Lee SH, Choi TK, et al. Effectiveness of mindfulness-based cognitive therapy as an adjunct to pharmacotherapy in patients with panic disorder or generalized anxiety disorder. *Depress Anxiety*. 2009;26:601-6.
- Rimes KA, Wingrove J. Mindfulness-based cognitive therapy for people with chronic fatigue syndrome still experiencing excessive fatigue after cognitive behaviour therapy: a pilot randomized study. *Clin Psychol Psychother*. 2013;20:107-17.
- Specia M, Carlson LE, Goodey E, Angen M. A randomized, wait-list controlled clinical trial: the effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosom Med*. 2000;62:613-22.
- Godfrin KA, van Heeringen C. The effects of mindfulness-based cognitive therapy on recurrence of depressive episodes, mental health and quality of life: A randomized controlled study. *Behav Res Ther*. 2010;48:738-46.
- Grossman P, Kappos L, Gensicke H, et al. MS quality of life, depression, and fatigue improve after mindfulness training: a randomized trial. *Neurology*. 2010;75:1141-9.
- Warmenhoven F, van Rijswijk E, Engels Y, et al. The Beck Depression Inventory (BDI-II) and a single screening question as screening tools for depressive disorder in Dutch advanced cancer patients. *Support Care Cancer*. 2012;20:319-24.
- Wang YP, Gorenstein C. Assessment of depression in medical patients: a systematic review of the utility of the Beck Depression Inventory-II. *Clinics (Sao Paulo)*. 2013;68:1274-87.
- Chen CY, Lin SH, Li P, Huang WL, Lin YH. The role of the harm avoidance personality in depression and anxiety during the medical internship. *Medicine (Baltimore)*. 2015;94:e389.
- BalciŞengül MC, Kaya V, Şen CA, Kaya K. Association between suicidal ideation and behavior, and depression, anxiety, and perceived social support in cancer patients. *Med Sci Monit*. 2014;20:329-36.
- Koopman FS, Brehm MA, Heerkens YF, Nollet F, Beelen A. Measuring fatigue in polio survivors: content comparison and reliability of the Fatigue Severity Scale and the Checklist Individual Strength. *J Rehabil Med*. 2014;46:761-7.
- Schwid SR, Covington M, Segal BM, Goodman AD. Fatigue in multiple sclerosis: current understanding and future directions. *J Rehabil Res Dev*. 2002;39:211-24.
- Schultz M, Atherton IM, Hubbard G, Watson AJ. The use of mindfulness-based cognitive therapy for improving quality of life for inflammatory bowel disease patients:

- study protocol for a pilot randomised controlled trial with embedded process evaluation. *Trials*. 2013;14:431.
23. Williams JM, Crane C, Barnhofer T, et al. Mindfulness-based cognitive therapy for preventing relapse in recurrent depression: a randomized dismantling trial. *J Consult Clin Psychol*. 2014;82:275-86.
 24. Teasdale JD, Segal ZV, Williams JM, Ridgeway VA, Soulsby JM, Lau MA. Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *J Consult Clin Psychol*. 2000;68:615-23.
 25. Wallin MT, Wilken JA, Turner AP, Williams RM, Kane R. Depression and multiple sclerosis: Review of a lethal combination. *J Rehabil Res Dev*. 2006;43:45-62.
 26. Arnett PA, Barwick FH, Beeney JE. Depression in multiple sclerosis: review and theoretical proposal. *J Int Neuropsychol Soc*. 2008;14:691-724.
 27. Mohr DC, Cox D. Multiple sclerosis: empirical literature for the clinical health psychologist. *J Clin Psychol*. 2001;57:479-99.
 28. Simpson R, Booth J, Lawrence M, Byrne S, Mair F, Mercer S. Mindfulness based interventions in multiple sclerosis--a systematic review. *BMC Neurol*. 2014;14:15.
 29. Lynch SG, Kroencke DC, Denney DR. The relationship between disability and depression in multiple sclerosis: the role of uncertainty, coping, and hope. *Mult Scler*. 2001;7:411-6.
 30. Aronson KJ. Quality of life among persons with multiple sclerosis and their caregivers. *Neurology*. 1997;48:74-80.
 31. Delgado-Pastor LC, Ciria LF, Blanca B, Mata JL, Vera MN, Vila J. Dissociation between the cognitive and interoceptive components of mindfulness in the treatment of chronic worry. *J Behav Ther Exp Psychiatry*. 2015;48:192-9.
 32. Lenze EJ, Hickman S, Hershey T, et al. Mindfulness-based stress reduction for older adults with worry symptoms and co-occurring cognitive dysfunction. *Int J Geriatr Psychiatry*. 2014;29:991-1000.
 33. Desrosiers A, Vine V, Klemanski DH, Nolen-Hoeksema S. Mindfulness and emotion regulation in depression and anxiety: common and distinct mechanisms of action. *Depress Anxiety*. 2013 Jul;30(7):654-61.
 34. Wilkinson-Tough M, Bocci L, Thorne K, Herlihy J. Is mindfulness-based therapy an effective intervention for obsessive-intrusive thoughts: a case series. *Clin Psychol Psychother*. 2010;17:250-68.

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Received: November 2015

Accepted: January 2016

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