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Original Article

The Effect of Imagery Rescripting and Mindfulness-Based Cognitive Therapy on Emotional Exhaustion in Women with Multiple Sclerosis in Tehran, Iran

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Abstract

Background: The problems imposed by multiple sclerosis (MS) can affect the patients' mental health socially and psychologically. Patients must thus acquire practical coping mechanisms to deal with their illness and go on living. The present study examined the impact of mindfulness-based cognitive therapy (MBCT) and imagery rescripting and reprocessing treatment (IRRT) on emotional tiredness in MS-affected women.

Methods: In this quasi-experimental study, the statistical population comprised 145 women with MS who had registered in the Iran MS Society in Tehran, Iran from May to October 2019. A sample of 45 was conveniently selected and randomly divided into two experimental and one control group (15 patients per group). The control group received no training, whereas the first experimental group experienced seven sessions of IRRT, the second experimental group underwent eight 90-minute sessions of MBCT. The data were collected using Emotional Exhaustion subscale of the Maslach Burnout Inventory. The repeated-measures ANOVA was used to analyze the data.

Results: Based on the results, two therapies significantly differed in terms of emotional exhaustion ($P<0.001$). The mean (SD) of the post-test score of emotional exhaustion in the MBCT and IRRT groups was 40.73 (1.66) and 41.20 (1.47), respectively, which was different from the control group (43.76(1.80)). However, there was no significant difference between the effectiveness of the two therapies on emotional exhaustion in women with MS. The effects of the interventions on emotional exhaustion persisted during three-month follow-up.

Conclusions: IRRT and MBCT can be recommended as effective interventions to improve the emotional exhaustion of women with MS.

Keywords: Mindfulness, Imagery, Psychotherapy, Emotions, Exhaustion, Women

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1. Introduction

Axons and the myelin sheath are damaged by the chronic illness multiple sclerosis (MS), which affects the central nervous system (CNS) (1). MS is a degenerative condition that may also affect other areas of the nervous system and result in a variety of neuromuscular diseases, such as tiredness, imbalance, muscle weakness, and muscle spasms (2). MS affects different dimensions of patients' life and imposes heavy stress on them. Fatigue is a debilitating symptom affecting 75-90% of patients with MS. Fatigue impacts patients' quality of life and can cause serious socioeconomic problems, including job loss in many cases (3). A mental lack of physical or mental energy is referred to as fatigue (4). It may have a significant negative effect on many aspects of one's personal life, interfere with social interaction, prevent physical exercise, and make one less responsible, all of which can lower one's contentment with their quality of life (5). The patients with MS need to learn effective strategies to adapt to their disease and continue living (6). Medical interventions play a pivotal role in helping the patients with MS, yet they are associated with many harmful side effects, which poses a serious challenge for healthcare providers when dealing with this population (7). Psychological interventions have thus been considered to help mitigate emotional exhaustion in people with MS.

One of the most successful strategic trainings for MS patients is mindfulness treatment. Being mindful involves shifting your focus from the past and future to the present. People may see all the internal and exterior facets of reality when

they are in the present moment. They realize that the mind is constantly engaged in rumination and internal dialogs in terms of its judgments and interpretations. Upon this realization, they examine these judgments and interpretations and find the reason for them (8). Hoogerwerf and colleagues (9) concluded that mindfulness intervention helps mitigate fatigue in people with MS. According to Rahmani (10), mindfulness-based cognitive therapy (MBCT) and conscious group yoga help reduce the severity of fatigue and improve the quality of life of patients. Furthermore, MBCT has been demonstrated to help workers with chronic fatigue syndrome who exhibit indicators of weariness, self-compassion, and mindfulness. Van den and colleagues (11) claimed that cognitive behavioral therapy is effective in reducing fatigue in MS patients. Imagery rescripting and reprocessing therapy (IRRT) was developed by Smucker and Boos (12). This method helps traumatized people overcome negative thoughts and disturbing memories through reprocessing (13). In other words, after expressing their negative ideas and upsetting pictures, patients get help in letting go of tension via cognitive reprocessing (14). According to IRR therapists Dibbets and Arntz (15), IRRT procedures such as mental rotation, muscular relaxation, mental screening, and cognitive reprocessing are skills that focus thinking about a certain topic, picture, or concept. These skills promote mental well-being, enhance the quality of life, reduce self-conflicts, maladaptive schemata, and sleep problems by replacing negative thoughts and images (16). Mohammadzadeh and colleagues (17) showed that mental exercise approaches are very useful and practical in rehabilitating patients with MS who suffer from fatigue and problems with sleep, functional balance, and gait.

The problems and limitations imposed by chronic MS can impact patients' mental health socially and psychologically. Significant theoretical and practical ramifications will result from identifying disparities in the efficacy of treatments in Iranian samples and on the relevant dependent variables. The findings of this research may help mental health professionals choose and provide the best treatments. According to this background, the present study aimed to compare the effectiveness of imagery rescripting and mindfulness-based cognitive therapy on emotional exhaustion in women with MS.

2. Methods

2.1. Design and Participants

This was a quasi-experimental, pretest-posttest-follow-up study. The statistical population comprised all women with MS who had registered in the Iran MS Society in Tehran, Iran in 2019. From four groups of patients with MS, the researchers separated those with a clinically isolated syndrome who used interferon drugs, such as Rebif, Betaferon, CinnoVex, and Actovex to control the course of the disease. Age, education, marital status, and the amount of time since the diagnosis were all taken into consideration when matching people. From this group, 45 women were conveniently chosen, and two experimental groups and one control group, each with 15 patients, were randomly separated (Figure 1).

2.2. Ethical Considerations

To observe ethical principles, the participants provided informed consent for participation and the effective intervention was also administered to the control group at the end of the study.

2.3. Instrument

Emotional Exhaustion sub-scale: Maslach Burnout Inventory (MBI) developed by Maslach and Jackson (18) has 22 items and three subscales of emotional exhaustion, personal accomplishment, and depersonalization. According to the research objectives, only the nine-item emotional exhaustion subscale was administered in this research. The items are scored on a six-point Likert scale ranging from 0 (never) to 6 (every day). Maslach and Jackson reported a reliability coefficient of 0.9 for the emotional exhaustion subscale (19). Cronbach's alpha of emotional exhaustion sub-scale was 0.85 (20). Cronbach's alpha coefficient reported as 0.86.

2.4. Procedure

A few of the interventions were MBCT and IRRT. The control group did not undergo the intervention program, whereas the first experimental group experienced seven sessions of IRRT and the second experimental group completed eight 90-minute sessions of MBCT. The emotional exhaustion of all three groups was measured before the intervention and one week after the intervention. Tables 1 and 2 present the content of the two interventions in brief.

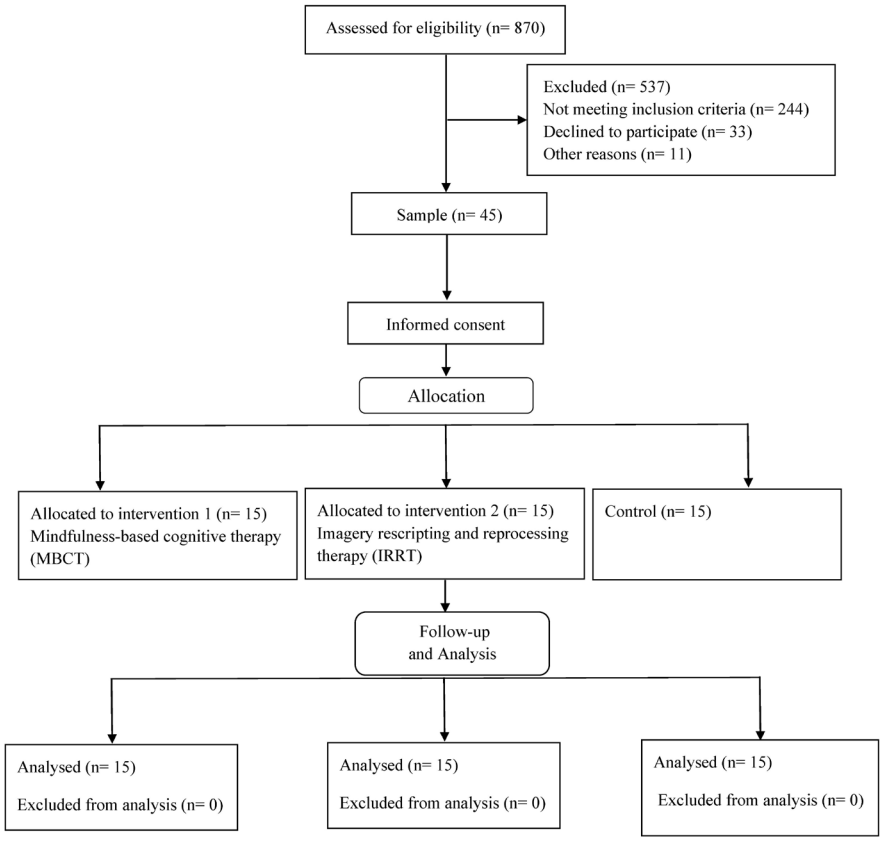

Figure 1: The figure shows the flowchart of the participants selection.

Table 1: The structure of Imagery Rescripting and Reprocessing Treatment sessions

Session	Objective	Content
1	IRR and its relation to thoughts	Getting to know one another, presenting an overview of IRRT and its role, psychological symptoms, such as negative automatic thoughts, insomnia, and disturbing feelings
2	Identifying disturbing thoughts and images and their relationship with mood and behavior	Identifying negative thoughts, visualizing disturbing images, realizing how they affect mood, thinking, behavior, and insomnia
3	Practicing muscle relaxation, visualizing disturbing thoughts and images	Visualizing disturbing thoughts and images in full detail with eyes closed during muscle relaxation and its relationship with mood and insomnia
4	Imagery rescripting	Imagery rescripting training by the therapist to control negative thoughts and disturbing images and to form positive images
5	Mental rotation and mental rehearsal	Training cognitive rehearsal and mental rotation along with cognitive reprocessing to eliminate negative automatic thoughts and form positive thoughts and moods
6	Practicing cognitive reconstruction of negative thoughts and disturbing images	Applying the cognitive rehearsal and mental rotation with reprocessing to control recurring flashbacks and change the meanings of traumatic events
7	Implementing the trained techniques	Recurring flashback control, continuous use of mental rotation while changing the meanings of disturbing thoughts and images to find positive thoughts, feelings, and moods

IRR: Imagery Rescripting and Reprocessing, IRRT: Imagery Rescripting and Reprocessing Treatment

2.5. Statistical Analyses

Descriptive statistics, including mean and standard deviation, as well as repeated measures analysis of variance with the Bonferroni post-hoc test was used to analyze the data.

3. Results

The participants included 30 women with MS with an average age of 36.69±6.12 years. The duration of the disease in the experimental and control groups was 5.23±2.24 and 4.88±2.82 years,

Table 2: The structure of Mindfulness-based Cognitive Therapy sessions

Session	Objective	Content
1	The concept of mindfulness	Getting to know one another, explaining the nature of the therapy session, mindfulness and its role in stress reduction
2	Mindfulness techniques and their relationship with stress	Training relaxation by creating and releasing stress in muscles, the wandering mind, practicing body attention, paying attention to breathing
3	Learning to alleviate the wandering mind and its relationship with negative and positive thoughts	Training relaxation through re-reading muscle groups, sitting meditation, doing exercises that maintain attention in the present moment, controlling negative automatic thoughts
4	Teaching mindful meditation and being in the present moment	Practicing breathing control, becoming aware of thoughts and feelings, mindful meditation without value judgment, and controlling negative automatic thoughts
5	Generalizing relaxation and meditation	Generalizing relaxation and meditation to different situations, training on being present in the moment and having mindful meditation and positive thoughts
6	The link between thinking and negative moods and emotions	The link between thinking and negative moods and emotions, sitting meditation, focusing on emotional feelings, changing the mood and thoughts based on their relationship
7	Distress tolerance and controlling negative automatic thoughts	Distress tolerance to control negative automatic thoughts and create positive thoughts
8	Applying stress reduction techniques to control negative thoughts in real-life settings	Reviewing stress reduction techniques, using them in the present moment, and generalizing them to the whole process of real life

Table 3: Mean (SD) of the distress tolerance in experimental and control groups

Variable	Phases	MBCT	IRRT	Control
		Mean (SD)	Mean (SD)	Mean (SD)
Emotional exhaustion	Pre-test	44.07 (1.16)	43.93 (1.38)	44.06 (1.57)
	Post-test	40.73 (1.66)	41.20 (1.47)	43.76 (1.80)
	Follow-up	40.20 (1.47)	41.13 (1.12)	44.60 (1.76)

MBCT: Mindfulness-based Cognitive Therapy, IRRT: Imagery Rescripting and Reprocessing Treatment

Table 4: Repeated measurement results for the effects of time and interaction time and group

Variable	Source	Source	SS	df	MS	F	P	η^2
Emotional exhaustion	Within groups	Time	94.04	1	94.04	330.99	<0.001	0.89
		Time × group	79.02	2	39.51	139.06	<0.001	0.87
		Error	11.93	42	0.28	-	-	-
	Between groups	Group	162.71	2	81.35	14.10	<0.001	0.40
		Error	242.22	42	5.76	-	-	-

SS: Sum of Squares; MS: Mean Square; df: Degrees of Freedom; F: F-statistic; P: P-value; η2: Eta-squared

respectively. The inclusion criteria were female sex, diagnosis of MS by a neurologist based on MRI, the age range of 20-40 years, and having a minimum of high-school education. A severe physical illness that would prevent them from regularly attending treatment sessions, having a severe mental illness or disorder (such as bipolar disorder, major depressive disorder, schizophrenia, or dementia), or receiving other therapeutic training concurrently were the exclusion criteria. The mean and standard deviation (SD) of emotional exhaustion scores divided by groups on the pre-and post-test are presented in Table 3. Both interventions improved emotional exhaustion in patients with MS, while in the control group, no significant difference was observed (Table 3).

The effect of measurement time was significant on emotional exhaustion scores (F=330.99, P<0.001) (Table 4). Thus, there was a significant difference between the mean score of emotional exhaustion on the pre-test, post-test, and follow-up, regardless of the experimental group. The time×group interaction effect was also significant (F=139.06, P<0.001). Thus, the mean difference in the score of emotional exhaustion at different times differed according to the group membership. The effect of group membership was also significant on emotional exhaustion scores (F=14.10, P<0.001). Therefore, there was a significant difference between the mean score of emotional exhaustion of the experimental groups regardless of measurement time.

Table 5: Results of pairwise comparison of the emotional exhaustion in the post-test phases

Variable	Groups	Mean difference	SE	P
Emotional exhaustion	MBCT-IRRT	-0.59	0.37	0.434
	MBCT-Control	-3.13	0.39	<0.001
	IRRT-Control	-2.55	0.40	<0.001

MBCT: Mindfulness-based Cognitive Therapy, IRRT: Imagery Rescripting and Reprocessing Treatment

The MBCT×control group effect was significant (P<0.001). In other words, MBCT affected the emotional exhaustion of women with MS. IRRT ×control group was significant (P<0.001) (Table 5). In other words, IRRT affected the emotional exhaustion of women with MS.

4. Discussion

This research aimed to investigate the effect of IRRT and MBCT on emotional exhaustion in women with MS in Tehran, Iran. The results showed that MBCT and IRRT affected the emotional exhaustion of women with MS. Emotional exhaustion in women with MS decreased under the influence of intervention programs. During the three-month follow-up, the effects of intervention on emotional weariness remained. This outcome is in line with what was discovered in earlier research (10, 11, 19, 21). Van den Akker and colleagues (11) reported that using cognitive-behavioral therapy to treat fatigue in patients with MS has a relatively positive short-term effect. Rahmani (10) demonstrated that the mindfulness intervention program was effective in reducing the severity of fatigue and improving quality of life in patients with MS. Bahadori and colleagues (21) reported that Imagery Rescripting was effective in increasing the adversity quotient and positive cognitive emotion regulation in patients with MS.

Patients with MS usually have negative self-evaluation and consider themselves victims of difficult situations (22). This kind of negative evaluation, which is accompanied by rumination, causes cognitive distortions and maladaptive beliefs about oneself, the world, and the future over time. Patients struggle with both emotional and psychological symptoms, such as despair, anxiety, hopelessness, and even suicide thoughts. Negative ideas, maladaptive schemas, and damaging mental pictures about a person's condition are depicted in full detail, explained, pictured, and then cognitively repeated throughout IRRT. Subsequently, by changing their meanings, they replace negative thoughts and images with positive ones (23). This promotes their distress tolerance and hopefulness, and mitigates their self-conflict, negative emotions, and disturbing thoughts.

Many patients with refractory diseases are unhappy and refuse to change their thinking because they consider themselves victims of unjust conditions and their destiny. When they receive IRRT, they express negative automatic thoughts and disturbing mental images precisely, visualize them in full detail, analyze them with cognitive reprocessing, and change the meanings of stressful events and negative beliefs. To this end, they use flashback control techniques, mental rotations, and muscle relaxation. After some time, people are able to regulate their negative automatic thinking and ruminating with relative ease. Some experiences in the actual world fosters self-assurance in one's abilities to manage and relieve rumination and habitual negative thoughts. Eventually, healthy cognitive schemata and pleasurable mental pictures replace dysfunctional attitudes and mental images (24, 25). The IRR therapist attempts to turn inconsistent information and schemata into functioning attitudes and consistent information inside the patient's mental framework and organization using externalization. By externalization in the real world, people can release themselves from the harmful impacts of cognitive distortions they had previously internalized. In this state, feelings of hatred, disgust, guilt, and negative automatic thoughts associated with stressful events subside (26).

Researchers believed that the stress caused by these thoughts and mental images over time disrupts immune cells, lowers the body's immunity, and hurts disease course (27). Using the techniques, such as mental awareness, acceptance of reality, presence at the moment, mindfulness, distress tolerance, and avoiding rumination practiced in MBCT, people learn to have a more positive view of everyday feelings, which will reduce emotional exhaustion and promote psychological well-being in people with MS (28). Mindfulness training is connected with less interference with

effectiveness. The negative association between emotional interference and mindfulness derives from the intentionality of effect, which includes innocuous sensory information rather than threats that impair the required self-regulatory response. Mindfulness training decreases clinical symptoms and negative emotional reactions in the presence of negative self-beliefs by lowering affective response-related brain activity and strengthening attention-based brain networks (29). According to the results, MBCT encourages people to repeatedly practice focused attention on neutral stimuli and intentional awareness of the body and mind; in this way, it helps anxious people with mental obsessions release threatening thoughts and worries about their performance in life, and thus takes their mind off the autopilot mode (30). Mindfulness is a process that maintains functional stability and allows flexibility in new situations (31). In general, mindfulness training requires meta-cognitive learning and new behavioral strategies to focus attention, prevent rumination, and avoid the tendency to stress responses. It creates new thoughts and reduces unpleasant emotions.

4.1. Limitations

This study was conducted only on patients visiting the Iran MS Society in Tehran from May to October 2019. Caution should be exercised to generalize the results to MS patients in other cities and communities. Other limitations were the inability to control all confounders including the patients' personal issues, the ups and downs of their illness progression, the use of drugs to treat disease symptoms during the intervention sessions, commuting issues. Conducting similar studies in other communities as well as controlling confounding factors is one of the most important suggestions for future studies. Future studies in this area are recommended to compare men and women in the effects of IRRT and MBCT. Moreover, future studies are recommended to investigate the effects of IRRT and MBCT on other patients with chronic diseases. Besides, comparing the effectiveness of IRRT and MBCT with other training interventions such as acceptance and commitment therapy (ACT) is recommended.

5. Conclusions

As a result, emotional exhaustion in women with MS decreased under the influence of MBCT and IRRT. MS-affected women are more anxious about the future, and this anxiety might create emotional weariness. MBCT should be delivered to ground individuals in the present, and IRRT should be provided to help them rehearse, rectify, and rebuild their undesired ideas. The results of the present study can be applied in medical centers for people with MS.

Ethical Approval

The study was approved by the Ethics Committee of Islamic Azad University, Semnan branch with the code of IR.IAU.SEMNAN.REC.1399.009. Also, written informed consent was obtained from the participants.

Conflicts of Interest: None declared.

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