

The Effect of Group Cognitive Behavioral Therapy on Stress, Anxiety, and Depression of Women with Multiple Sclerosis

Abstract

Background: One of the factors that could influence the quality of life in patients with multiple sclerosis, which is usually overlooked, is its psychological aspects. Considering the increasing acceptance of complementary medicine in the health system, this study was designed and conducted to determine the effect of group cognitive therapy on the stress, anxiety, and depression of women suffering from multiple sclerosis. **Materials and Methods:** This clinical trial was conducted among 70 women suffering from multiple sclerosis who were referred to the health centers of Isfahan. Participants were randomly allocated into two groups of intervention and control, each containing 35 patients. The intervention group received cognitive behavioral therapy as 8 90-minute group sessions (a session per week), and the control group participated in 4 group sessions to express their feelings and experiences. Data were gathered using the Depression Anxiety Stress Scale (DASS-24). **Results:** There was a significant difference between the mean score of stress ($P = 0.03$), anxiety ($P = 0.02$), and depression ($P = 0.03$) of the intervention and the control group immediately after and 1 month after the intervention. Least squares difference test showed that the mean score of stress ($P = 0.02$), anxiety ($P = 0.02$), and depression ($P = 0.03$) immediately and 1 month after the intervention was significantly lower in the intervention group. **Conclusions:** According to the results of the present study, cognitive behavioral therapy could decrease stress, anxiety, and depression in patients suffering from multiple sclerosis.

Keywords: Anxiety, cognitive behavioral therapy, depression, multiple sclerosis, stress

Introduction

Multiple sclerosis is a chronic and progressive disease of the central nervous system and is one of the most common neurological diseases that can severely affect different aspects of an individual as well as their family's life and cause disruption in the patient's quality of life owing to different reasons.^[1,2] According to the released statistics, the average age of onset of this disease is 25–30 years in Iran, and more than 40000 people are suffering from this disease, with 2000 people being added annually.^[2] Many of these patients are women of reproductive age, especially 20–40 years old; therefore, the pathogenesis period of this disease in women occurs usually simultaneously with various opportunities such as starting a family and choosing a job or providing financial support. Concurrence of two of the most important consequences of this disease, i.e., the involvement of young women and causing disability during reproductive and

effective ages, has made this disease of significant importance among women.^[3] One of the effective factors that can influence the quality of life in these patients and is usually neglected is its psychological aspects. According to different studies, 48% of the patients experience symptoms of stress, anxiety, and depression during the first year after their diagnosis.^[4,5] Some of the most significant factors are fear of death, concern about future, and social factors such as losing job and providing the treatment costs, as well as concern about the future of their children. Having a feeling of a permanent sadness, being disappointed about the future, repeated thoughts regarding the disability, and being constantly preoccupied by negative thoughts are some of the undesirable consequences of depression in these patients, which can even lead to extreme behaviors, such as attempting suicide.^[4] Considering the high prevalence of stress, anxiety, and depression in these patients, using diagnostic tests and mental-social treatments along with

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the common medicinal therapies are necessary to reduce such symptoms because the common medicinal therapies are not completely effective for everyone, and in addition to the high costs of the drugs, they have many side effects including muscle spasm, nausea, depression, nervous pains, fever, and headache.^[5,6] Fear of side effects and the desire to relieve the symptoms would increase the tendency toward complementary medicine, such as cognitive behavioral treatment, in patients. Considering the increasing acceptance of complementary medicine in the health system, these therapies could slow the process of the disease, reduce the number of seizures, and delay the onset of physical and mental disabilities.^[7] Clinical trials have shown that psychological therapies for outpatients, compared to valid therapeutic interventions that use placebo, have more obvious effects on many more psychological disorders. According to the results of Lopez *et al.*, cognitive behavioral therapy compared to medicinal therapy has been more effective in improving depression symptom.^[8] Results of a study conducted by van Kessel *et al.* also showed that, despite the effectiveness of both the methods of cognitive behavioral therapy and muscle relaxation, on fatigue in patients with multiple sclerosis, the effect of cognitive behavioral therapy was more.^[9] Therefore, cognitive behavioral therapies, for emphasizing the beliefs and effective behaviors in causing psychological problems and their permanency and changing these troubling behaviors and beliefs, are more valid scientifically and are better than other psychological therapies.^[10] To reach the desired goals in this method, the therapist could use individual or group methods. In group therapies, the individual could observe his/her behavior toward the society within the group, which would promote their attitude toward themselves, their disease, and their current condition would teach them new experiences about effective communication with others, and would also make them feel powerful.^[11] Different studies have evaluated the positive effect of this method on different diseases including Rahimpour *et al.*,^[11] Norlund *et al.*,^[12] and Hewlett *et al.*^[13] Considering the focus of most of the conducted studies regarding the effect of cognitive behavioral therapy on physical aspects of multiple sclerosis, and also because the researcher has passed cognitive behavioral therapy courses and has gained some professional experience in this regard, the researcher decided to determine whether cognitive behavioral therapy group could be effective on mental aspects such as stress, anxiety, and depression in women suffering from multiple sclerosis.

Materials and Methods

The present study was a two-group (control and intervention), three-stage clinical trial (registered in IRCT2015012720833N1) that was conducted to determine the effect of group cognitive behavioral therapy on stress, anxiety, and depression of the studied population in 2014. Participants were 70 women (35 in the control and 35 in

the intervention group) suffering from multiple sclerosis who had medical records at neurology specialized clinics affiliated to Isfahan University of Medical Sciences. The inclusion criteria were at least 6 months of diagnosis,^[14] having experienced no relapses of the disease during the last month,^[14] willingness to participate in the study and being randomly allocated into one of the study groups, not having participated in any complementary medicine sessions during the last 6 months such as body relaxation and cognitive therapy,^[15] having a stress, anxiety, and depression score of mild or moderate according to DASS-24, not having any diagnosed physical and mental diseases (chronic and acute) at the time of the study (such as vascular diseases, renal diseases, severe depression, speech or hearing impairment), having at least a diploma degree (considering active and participatory nature of cognitive behavioral therapy and daily homework), not having consumed any psychotropic drugs at least for 3 months,^[14] not being a part of a medical team (physician or nurse), not using any other complementary methods at the time of the study such as physical therapies, acupuncture, yoga, and psychotherapy and gaining a score of 0–5.5^[14] according to the Expanded Disability Status Scale (EDSS). The exclusion criteria were disability to regularly participate in sessions (being absent for more than 2 sessions) and facing crises and severe stress during the study. In this study, participants were selected by simple sampling among women suffering from multiple sclerosis who were referred to Kashani and Al-Zahra clinics for treatment and follow-up and met the inclusion criteria. For the study, patients' disability level was measured using EDSS and by reviewing their medical records. Then, patients were randomly and through minimization method allocated into two groups of control and intervention. The sample size was calculated to be 35 for each group, using a formula with mean difference and reliability of 95%, power of 80%, minimum acceptable difference of 0.7 s, and 10% possibility of sampling loss. Thus, the present study was conducted among 70 participants. During the sessions, 6 samples were excluded (3 for unwillingness to participate, 1 for facing crises and severe stress, and 2 for relapse of the disease), and hence, the study was continued with 64 participants. Data were gathered using a two-part questionnaire. The first included demographic characteristics (age, sex, marital status, educational level, duration of the disease, number of hospitalization, job, income, and stage of the disease) and the second part was Depression Anxiety Stress Scale (DASS-42), which included 42 questions with a 4-point Likert scale including never (0), somehow (1), almost (2), and very much (3). DASS-42 included 14 questions about depression, 14 about anxiety, and 14 about stress. Considering the inclusion criteria and having a mild or moderate score of stress, anxiety, and depression, in the field of depression the minimum score was considered to be 15 and the maximum score was 25, the minimum score of anxiety was 8 and its maximum was 14, and the minimum score was stress

was considered 10 and its maximum was 20. After data analysis, the level of stress, anxiety, and depression in patients was categorized into normal, mild, moderate, severe, and very severe.^[15] To evaluate reliability and validity of DASS, in a study that was conducted among 420 participants, the internal consistency coefficients of three scales of depression, anxiety, and stress were, respectively, reported to be 0.93, 0.90, and 0.92 and retest coefficients for these three scales with a 3-week interval were reported to be 0.84, 0.89, and 0.90, respectively.^[10] Furthermore, in a study that was conducted in Iran among 52 patients with multiple sclerosis, the internal consistency coefficient of depression, anxiety, and stress scales, using Cronbach's α , was calculated to be 0.87, 0.78, and 0.83, respectively.^[16] After obtaining a recommendation letter from the faculty of nursing and midwifery of Isfahan University of Medical Sciences, the researcher referred to specialized clinics for patients with multiple sclerosis who were affiliated to the Isfahan University of Medical Sciences including Al-Zahra and Kashani clinics and started sampling according to the inclusion criteria. The researcher completed the demographic characteristics questionnaire for both the intervention and the control group before the intervention. The intervention program was developed based on the existing literature and opinion of experts (neurologists and psychologists). The program was conducted as 8 90-minute sessions once a week^[14] by a psychiatric nurse (the researcher). The presented program for this study was designed to determine, challenge, and change participants' negative cognitions based on the ABCD model; A: Existence of a reality, event or behavior, B: Belief, C: Emotional and behavioral consequences, and D: Challenging and confronting the thoughts. Each session was designed in a manner that each participant, other than learning a cognitive technique, would also learn and practice a behavioral technique (muscle relaxation, using diaphragmatic breathing and visualization). At the beginning of each session, previous discussions and participants' homework were reviewed and sessions ended with questioning and group discussion. Moreover, relaxation techniques were conducted at the beginning and ending of each session.

At the beginning of the sessions, an educational booklet and a CD that included the content of the sessions were given to the participants. In this study, the control group was asked to participate in the preintervention, postintervention, and follow-up stages; along with receiving the common usual treatments (medicinal therapy) during the time of the intervention, the control group was asked to gather at a separate place than the intervention group and discuss their disease and their experiences. After the intervention, the participants of the control group could voluntarily participate in the educational sessions for free. Gathered data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 18 (IBM software Version

18.0., Chicago) through independent *t*-test, Chi-square test, Mann-Whitney test, repeated measures analysis of Variance analysis with repeated measures, and *post hoc* least squares difference (LSD) test.

Ethical considerations

The present study was approved by the ethics committee of Isfahan University of Medical Sciences, No. 393513. All possible ethical issues addressed as explained above and the participants signed a written informed consent.

Results

There was no significant difference between the intervention and the control group regarding their demographic characteristics such as age, duration of disease, educational level, marital status, employment status, income level of the family, and clinical pattern of the disease ($P > 0.05$) [Table 1]. Independent *t*-test showed no significant difference between the intervention and the control group before the intervention regarding their mean score of stress ($P = 0.63$), anxiety ($P = 0.61$), and depression ($P = 0.66$). Results of the Kolmogorov-Smirnov test showed that the distribution of qualitative variables data (mean score of stress, anxiety, and depression) were following normal distribution at all times ($P > 0.05$). Further, the results of Levene test showed no significant difference between the variances ($P > 0.05$). Results of repeated measures analysis of Variance showed that, while there was no significant difference between the mean scores of stress ($P = 0.14$), anxiety ($P = 0.08$), and depression ($P = 0.72$) at three stages of before, immediately after, and 1 month after the intervention, the results of the intervention group showed a significant decrease in the mean score of stress, anxiety, and depression at the mentioned intervals ($P = 0.001$) [Table 1]. Results of *post hoc* LSD test showed that in the intervention group the mean score of stress ($P = 0.02$) and anxiety ($P = 0.01$) was significantly lower 1 month after the intervention compared to immediately after the intervention; however, the mean score of depression showed no significant difference at the mentioned interval ($P = 0.3$). According to Table 2, independent *t*-test showed the mean of changes in the scores of stress, anxiety, and depression in the intervention group immediately after, and 1 month after the intervention was significantly different compared to before the intervention ($P = 0.001$).

Discussion

This study was conducted to evaluate the effect of group cognitive behavioral therapy on stress, anxiety, and depression in women suffering from multiple sclerosis. Not only had this study proved the effectiveness of cognitive behavioral therapy on the level of stress, anxiety, and depression in women suffering from multiple sclerosis, it has also shown its stable effectiveness 1 month after

Table 1: Comparison of the mean score of stress, anxiety, and depression before, immediately after, and 1 month after the intervention between intervention and the control group

Variable	Mean (SD)			Variance analysis with repeated measures <i>F</i> (<i>P</i> value)
	Before the intervention	Right after the intervention	1 month after the intervention	
Intervention group				
Stress	20.42 (9.41)	10.13 (6.30)	5.86 (5.12)	52.67 (0.001)
Anxiety	12.75 (8.18)	7.20 (5.85)	5.56 (5.34)	13.64 (0.001)
Depression	15.74 (10.15)	6.82 (5.73)	5.92 (4.55)	33.83 (0.001)
Control group				
Stress	19.53 (6.00)	20.03 (6.30)	21.84 (7.02)	1.69 (0.14)
Anxiety	11.80 (7.00)	12.8 (13.42)	13.42 (7.57)	2.78 (0.08)
Depression	14.71 (9.00)	14.10 (6.80)	14.20 (7.40)	0.33 (0.72)

Table 2: Comparison of the mean of changes in score of stress, anxiety, and depression before, immediately after, and 1 month after the intervention between the intervention and the control group

Variable	Time	Mean (SD)		<i>t</i> -test	
		Intervention	Control	<i>t</i>	<i>P</i>
Stress	Immediately after the intervention	-10.32 (1.00)	0.65 (0.83)	8.46	0.001
	One month after the intervention	-14.64 (1.60)	2.35 (0.92)	9.41	0.001
Anxiety	Immediately after the intervention	-5.55 (1.04)	1.00 (0.75)	5.26	0.001
	One month after the intervention	-7.34 (1.50)	1.67 (0.78)	5.25	0.001
Depression	Immediately after the intervention	-8.90 (1.21)	-0.60 (0.83)	5.88	0.001
	One month after the intervention	-9.86 (1.78)	-0.50 (0.80)	4.89	0.001

the intervention. In this regard, the results of a study by Kawaguchi *et al.* showed the long-term effectiveness of cognitive behavioral therapy in patients with anxiety disorders. In this study, cognitive behavioral therapy had a significant impact on patients' anxiety during time in a manner that its effectiveness lasted for 1 year after the study.^[17] Further, the study of Gonzalez *et al.* titled "cognitive behavioral therapy for patients with incurable bipolar disorder" showed a significant difference between both the groups at all times after the intervention. At their 12-month evaluation, the intervention group had fewer hospitalizations compared to the control group and showed lower anxiety and depression at their 6 month, 12 month, and 5 year follow-ups.^[18] Results of a study by Ghafari *et al.* that was conducted to determine the effect of applying Progressive Muscle Relaxation Technique on Quality of Life of patients with multiple Sclerosis, showed that there is a significant difference in mean score of whole and dimensions of health-related quality of life between two groups in three times (before, 1 month, and 2 months after the intervention).^[19] To explain these results, it could be said that during cognitive behavioral therapy sessions, patients were taught about cognitive distortions and negative automatic thoughts, learned the solutions to cope with these thoughts, and by exercising and repeating relaxations techniques in the behavioral dimension of the therapy, felt more peace in different situations in life and were able to overcome the feelings of stress and anxiety. However, it seems that, to achieve the lasting impact of the intervention on depression of patients with multiple

sclerosis, more time is needed and more sessions should be conducted to repeat exercises. Unlike the results of the present study, the study of Peterson *et al.*, that was conducted to determine the effect of group cognitive behavioral therapy on depression in women with mood disorders in America, reported that cognitive behavioral therapy had no effect on patients' depression immediately after and 1 month after the intervention.^[20] The differences between the results of Peterson *et al.* study and the present study could be due to the differences in the studied samples and the type of interventions. It appears that having more time, conducting more sessions, and having 1 session per week (because it gave patients more time to do their homework and exercises and repeat their lessons) could be a reason for the effectiveness of the present study compared to the abovementioned study. Another notable matter about the present study was the ascending trend of the mean score of stress, anxiety, and depression in the control group at three intervals of before, immediately after, and 1 month after the intervention. In this regard, results of a study by Thimm and Antonsen, that was also conducted to examine the outcomes of patients who received group CBT for depression, showed that the mean score of depression in the patients of the control group was increased immediately after and 1 month after the intervention.^[21] To explain the results of the present study it could be said that maybe the control group by exposure to crises or progression of the symptoms of the disease during time have experienced more stress, anxiety, and depression.

One of the limitations of this study was personal differences of the participants in response to the intervention and its effects, as well as the effect of individual's environmental and cultural differences on their perception of the cognitive behavioral therapy and improvement of their psychological symptoms. Therefore, by random allocation of the participants to the control and intervention, we tried to reduce this limitation to minimum.

Conclusion

According to the results of the present study, cognitive behavioral therapy could lower stress, anxiety, and depression in patients with multiple sclerosis. Therefore, it is recommended to predict and provide such psychological services in the mental health care system for patients with chronic diseases, including multiple sclerosis.

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Conflicts of interest

There are no conflicts of interest.

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