

Original Article

## The effectiveness of cognitive-behavioral group therapy in anxiety and self-esteem in patients with multiple sclerosis

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### Abstract

**Introduction:** The present study was conducted aimed at investigating the effectiveness of cognitive-behavioral group therapy in anxiety and self-esteem in patients with multiple sclerosis.

**Materials and Methods:** In this clinical trial with a pretest-posttest and control group design, 20 multiple sclerosis patients were selected through convenience sampling method from the Multiple Sclerosis Association of Mashhad in 2016 and were randomly assigned into two experimental and control groups. The experimental group received cognitive-behavioral group therapy for 2 hours per week for 10 weeks, but the control group received no treatment. In the pretest and posttest, Beck Anxiety Inventory (BAI) and The Cooper-Smith Self-Esteem Inventory (CSEI) were implemented for both groups. Data analysis was performed using the analysis of covariance and t-test.

**Results:** The results demonstrated that cognitive-behavioral group therapy significantly leads to reduced anxiety ( $P < 0.001$ ) and enhanced overall self-esteem ( $P < 0.001$ ), general self-esteem ( $P = 0.002$ ), family self-esteem ( $P = 0.005$ ) and occupational-academic self-esteem ( $P = 0.003$ ) compared to the control group. But no significant difference was observed in the scores of social self-esteem ( $P = 0.388$ ).

**Conclusion:** Cognitive-behavioral group therapy can reduce anxiety and increase self-esteem of multiple sclerosis patients.

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### Introduction

According to the World Health Organization (WHO), chronic diseases are characterized by the conditions with complex and long-term etiology, progress over time and limitation on daily activities (1). Multiple Sclerosis (MS) is one of the most common and most important chronic diseases associated with central nervous system (CNS) disorders, which is largely common among people aged 18 to 45 years and causes a loss of individual and social

performance of the patient (2,3). Its prevalence in women is twice as much as men although its prognosis is worse in men (4). According to the opinion of the Iranian Multiple Sclerosis Society in 2013, there are about 70,000 MS patients (5).

Multiple sclerosis is one of the most important causes of disability worldwide (6,7). MS patients often respond to their illness with depression, anxiety, denial and attempts to hide (8,9). Approximately 48% of MS patients

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experience symptoms of anxiety, stress and depression in the first year after diagnosis (10). Evidence shows that psychological states and mental pressures can affect physical illnesses or accelerate their progress (11).

Illness and disability can negatively affect self-esteem (12-14). Self-esteem refers to how a person sees himself and how he expresses his attitudes toward self-confirmation, self-refusal and self-judgment about one's competence and value (15,16). The progression of MS disease has a significant negative effect on patients' self-esteem by making cognitive and psychological changes (17). Results of various studies on the relationship between chronic diseases and self-esteem, including breast cancer (18,19), diabetes mellitus (20), spinal cord injury (21), stroke (22) and multiple sclerosis (23), demonstrate that these patients have low self-esteem. Fraser's study (23) revealed that patients with progressive MS have low self-esteem. MS disease threatens the individual's independence and ability to effectively participate in the family and society and leads him to the lack of a sense of competence and self-confidence (17). In chronic diseases like MS, low self-esteem can exacerbate symptoms of illness, stress and negative mood (24). Investigations have also indicated that a history of depression, high rates of disability, stress, alcohol consumption and suicide attempts are associated with anxiety experience in MS patients (25). The anxiety caused by this disease reduces the quality of life and worsens clinical symptoms and affects the patient's general health (8).

Cognitive-behavioral therapy is a structured and collaborative approach that focuses on the link between thoughts, emotions and behavior in mental disorders (26). In this approach, unreasonable cognitions and negative hypotheses that contribute to the creation of unpleasant emotional states are challenged (27). Empirical studies have shown that this treatment effectively decreases the symptoms of anxiety disorders and major depression in most patients (28).

In the study by Hosseini (29), cognitive-behavioral group therapy led to reduced depression and enhanced mental health and social function of MS patients. In another research, it was determined that cognitive-behavioral group therapy can improve the mental health of patients with early onset MS (30). Khezri Moqaddam et al. (31) suggested

that group therapy based on the expression of feelings reduces anxiety and depression in MS patients but is not effective in fatigue. Further, research results showed that educational interventions affect the self-esteem of MS patients (32).

Regardless of how much MS treatment is effective for the patient, patients and their families and specialists agree on the point that living with this disease is very difficult and disappointing in physical and mental terms (33). Such a process can have adverse consequences in various aspects of the individual, family, social and occupational life of the patient. Thus, with respect to the effect of psychological factors on chronic diseases and the role of chronic diseases such as MS in exacerbating psychological problems and also considering the effectiveness of cognitive-behavioral interventions in patients with various chronic diseases, it seems that cognitive-behavioral group therapy can improve self-esteem and reduce anxiety in MS patients. Therefore, the present study aims to investigate the effectiveness of cognitive-behavioral group therapy in anxiety and self-esteem of multiple sclerosis patients.

### Materials and Methods

The present study was a clinical research with a pretest-posttest control group design, which was approved by the research deputy of Hakim Sabzevari University and lasted from September to November 2016. The statistical population of this study comprised all MS patients with a record in the Multiple Sclerosis Association of Mashhad.

Of this number, 20 patients who had the research inclusion criteria were selected using the convenience sampling method and were randomly assigned into two experimental and control groups. Initially, before implementing the intervention process, a meeting was held with members of the two groups in which the goals of the plan were explained to all patients and the necessary assurance was given to them about the confidentiality of information and the possibility of discontinuation of treatment whenever the patient wishes so.

The inclusion criteria consisted of the following: Age 20 to 50 years old, having a minimum degree of diploma and signing a written consent to participate in the research. The research exclusion criteria included: Being in the acute phase of the disease so that there is

no physical ability to attend the sessions, heart attack or stroke, severe depression, substance dependency and other neurological disorders such as epilepsy.

Sessions were held once a week (2 hours) over 2 months and a half. The experimental group participated in the treatment sessions but the control group was asked to only attend the pretest and posttest and remain on the waiting list to be treated by the therapist after the treatment of the experimental group subjects. The content of cognitive-behavioral group therapy sessions (34) has been provided in Table (1).

#### Research instrument

A) *Beck Anxiety Inventory (BAI)*: This questionnaire was developed by Beck and Steer in 1990 to assess the rate of anxiety. It is a 21-item multiple-choice (from 0 to 3) self-report inventory. Each item reflects one of the symptoms of anxiety faced by anxious people in anxiety-provoking situations. The responses are scored as follows: Never (0), mild (1), moderate (2) and severe (3). The range of the scores can vary from 0 to 63 (35). Studies indicate the validity and reliability of the BAI in different situations and societies (36). Cronbach's alpha has been reported to be between 0.92 and 0.94 for adults. Also, test-retest reliability within a week's interval has been calculated by Beck et al. (37) to be 0.75. Kaviani and Mousavi (38) obtained the reliability coefficient in patient and non-patient population to be 0.83 and 0.92 through test-retest method and Cronbach's alpha, respectively. In another study on a sample of 600 people, Rafiei and Seifi (39) estimated the reliability coefficient to be 0.92 using Cronbach's alpha. Additionally, Besharat et al. (40) conducted a research in which Cronbach's alpha coefficients in a sample of normal and

patient subjects were reported to be 0.91 and 0.92, respectively.

B) *Cooper-Smith Self-Esteem Inventory (CSEI)*: This questionnaire is a self-report scale which was developed by Cooper-Smith in 1967 and comprises 58 items that the subject responded the questions with Yes, No. 50 items measure self-esteem and 8 items are neutral. Overall, this questionnaire consists of four subscales of general self-esteem (26 items), family self-esteem, social self-esteem and academic self-esteem (each containing 8 items) and a lie score subscale (8 items). The scoring method is in the form of 0 and 1, meaning that in items 4, 8, 9, 14, 19, 20, 27, 28, 29, 33, 37, 38, 39, 42, 43 and 47, score 1 is given to the answer "yes" and zero is assigned to the answer "no" and other items are scored in reverse fashion. In this questionnaire, the minimum score is zero and the maximum score is 50. Obtaining a score higher than 4 in the lie subscale indicates low reliability of the test. This suggests that the subject wanted to display himself better than what he really is (41). In various studies, the validity and reliability of Cooper-Smith's questionnaire have been highlighted (42,43). Cooper-Smith et al. (44) reported the reliability of this questionnaire to be 0.88 using test-retest method. In the research by Shahni Yeylaq et al. (45), the reliability of this questionnaire was calculated to be between 0.73 and 0.91 through split-half method and Cronbach's alpha. Ghobari Bonab and Hejazi (46) estimated the reliability coefficient to be 0.87 using Cronbach's alpha. In another study, Keikhay Farzaneh et al. (47) obtained the reliability coefficients of 0.80 and 0.73 through Cronbach's alpha and split-half method, respectively. For data analysis, independent group t-test and one-way analysis of covariance (ANCOVA) were employed in SPSS 22 software.

**Table 1.** Content of cognitive-behavioral group therapy sessions

Session	Content
Introductory session	Preparing and determining group structure, defining goals, discovering expectations, creating group cohesion and coping with the initial anxiety of group members
First session	Introducing the cognitive-behavioral approach to emotional disorders particularly depression and anxiety, describing the biopsychosocial model of emotional disorders, eliminating resistance to treatment. Home assignment: Completing the sheets for the biopsychosocial model
Second session	Reviewing the previous session's assignment, teaching the relationship between activities and mood states including sadness and feeling of hopelessness, using behavioral interventions to modify behaviors for improving the mood, providing feedback and reinforcement to group members, facilitating interactions within the group. Home assignment: Completing the activity program and mood rating
Third session	Reviewing the previous session's assignment, examining the outcomes and consequences of behavioral modifications, determining "mood changes" targeted by cognitive interventions, naming and rating the emotions experienced in the existing tough situations by examples. Home assignment: Completing the first two columns of the daily thought record sheet (situations and emotions).

Fourth session	Reviewing the previous session’s assignment, describing and interpreting “self-talk” as a relationship between the situation and the emotion by the patient’s examples, examining automatic thoughts and focusing on the thoughts that have the greatest relationship with emotion, introducing a technique for providing evidence, identifying and evaluating the existing evidence about automatic thoughts. Home assignment: Completing the first four columns of the daily thought record sheet
Fifth session	Reviewing the previous session’s assignment, introducing “opposite evidence” through the patient’s questions and examples, introducing a list of “cognitive distortions” along with examples. Home assignment: Completing the first seven columns of the daily thought record sheet and determining cognitive distortions
Sixth session	Reviewing the previous session’s assignment, introducing alternative thoughts, applying problem-solving about alternative thoughts. Home assignment: Completing thought record sheets
Seventh session	Reviewing the previous session’s assignment, bringing up behavioral experiments, designing an experiment consistent with the patient’s example or case, teaching the imaginary exposure technique to reduce anxiety from social situations and thus increase quality of life. Home assignment: Doing a test and reviewing its results and consequences
Eighth session	Reviewing the previous session’s assignment, introducing deep cognitions, the concept of conditional assumptions and core and important beliefs, using downward arrow technique. Home assignment: Doing the downward arrow exercise
Ninth session	Reviewing the previous session’s assignment, explaining the relationship between conditional assumptions and core beliefs through spectrum model, introducing the coping strategies related to core beliefs, training problem-solving. Home assignment: Applying alternative coping strategies and monitoring its outcomes
Tenth session	Reviewing the previous session’s assignment, strengthening changes, discussing the use of skills learned in the group in everyday situations, follow-up and post-treatment evaluation, conclusion

**Results**

In the present study, 20 MS patients participated, including 7 males and 3 females in the experimental group and 6 males and 4

females in the control group. Table 2 displays the descriptive indicators of age and data obtained from implementing BAI and CSEI in the pretest and posttest for each group.

**Table 2.** Mean and standard deviation of the research variables in the pretest and posttest for the two groups

Variables	Group	Pretest		Posttest	
		Mean	SD	Mean	SD
Age	Experimental	35.7	7.21		
	Control	34.9	6.88		
Anxiety	Experimental	33.7	5.8	13.9	2.3
	Control	24.1	9.1	22.3	8.2
General self-esteem	Experimental	13.7	3.6	17	2.8
	Control	13.0	3.2	13.1	2.6
Family self-esteem	Experimental	3.2	0.9	5.8	0.9
	Control	4.2	0.8	4.2	1.3
Social self-esteem	Experimental	4.4	0.7	5	0.9
	Control	4.8	0.6	4.7	0.5
Occupational-academic self-esteem	Experimental	3.8	0.6	5.7	0.5
	Control	3.8	0.6	4.4	1.1
Overall self-esteem	Experimental	25.1	3.8	33.5	3.0
	Control	25.8	3.7	26.4	3.6

In Table 3, t-test results have been presented to compare the pretest, and homogeneity of variances test and regression slope have been

provided as the assumptions of the analysis of covariance.

**Table 3.** Comparison of means in the baseline and assumptions of the analysis of covariance

Variables	Comparison of means in the pretest		Assumption of the homogeneity of variances		Assumption of regression slope homogeneity	
	t	Significance level	F	Significance level	F	Significance level
Anxiety	1.79	0.135	1.5	0.231	2.33	0.148
General self-esteem	0.45	0.655	0.03	0.858	2.68	0.133
Family self-esteem	1.61	0.173	0.03	0.860	3.21	0.091
Social self-esteem	1.34	0.196	0.62	0.442	3.32	0.064
Occupational-academic self-esteem	0	1.000	0	1.000	0.97	0.648
Overall self-esteem	0.41	0.684	0.01	0.919	1.97	0.311

Results of Table 3 show that both groups are equal in the pretest and also the assumption of homogeneity of variances and regression slope homogeneity are established. Hence, ANCOVA was applied to evaluate the effectiveness of cognitive-behavioral group

therapy in anxiety and self-esteem of MS patients. Results of covariance analysis of comparing the experimental and control groups in the research variables after removing the effects of the pretest are presented in Table 4.

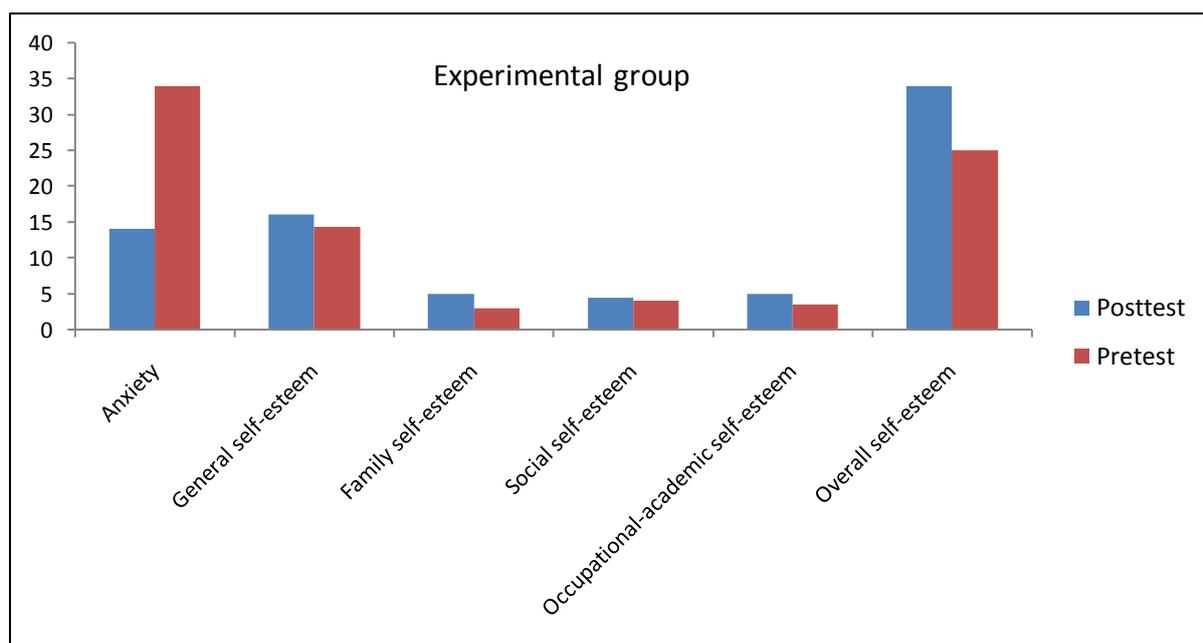
**Table 4.** Summary of the covariance analysis of the effectiveness of cognitive-behavioral group therapy in anxiety and self-esteem

Variables	Sum of squares	Degree of freedom	Mean square	F	Significance level	Effect size
Anxiety	745.8	1	745.8	60.7	0.001	0.78
General self-esteem	62.65	1	62.65	12.62	0.002	0.43
Family self-esteem	13.13	1	13.13	10.15	0.005	0.37
Social self-esteem	0.46	1	0.46	0.78	0.388	0.04
Occupational-academic self-esteem	8.45	1	8.45	11.57	0.003	0.40
Overall self-esteem	283	1	283	54.65	0.001	0.76

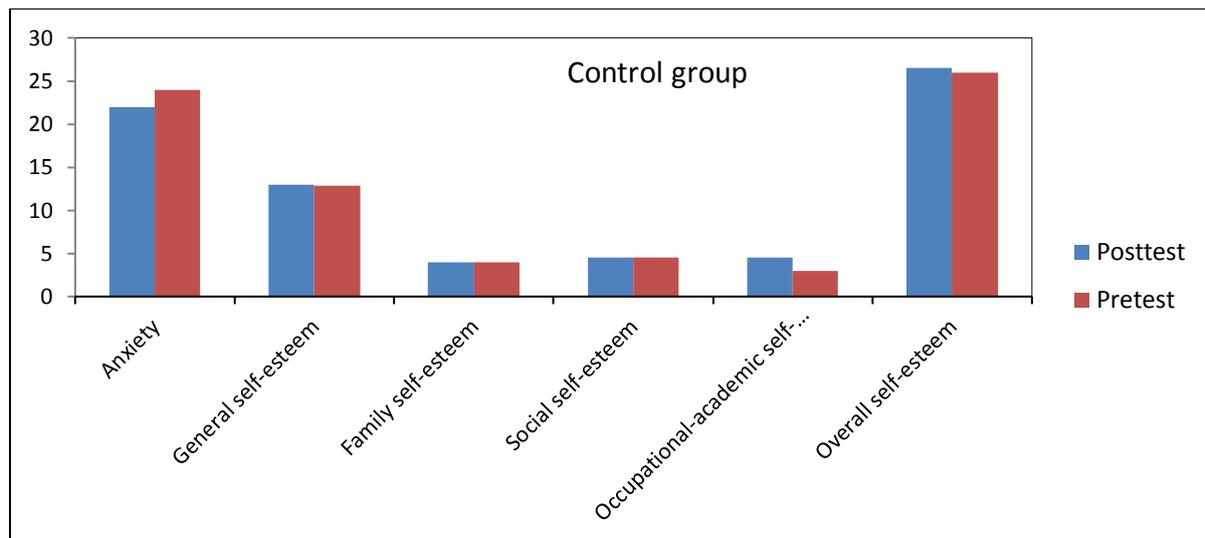
Results of the analysis of covariance demonstrate that cognitive-behavioral group therapy has decreased anxiety and has improved general self-esteem, family self-esteem, occupational-academic self-esteem and overall self-esteem in MS patients. But comparison of two groups in the variable of social self-esteem is not significant. Effect sizes indicate that improvement in anxiety and overall self-esteem is greater than the subscales

of general, family and occupational-academic self-esteem.

The following diagrams visually show the changes in the scores of the research variables for the experimental and control groups. By observing them, we can easily notice the greater changes in the posttest scores compared to the pretest scores in the experimental group relative to the control group.



**Chart 1.** Mean scores of the pretest and posttest of anxiety and types of self-esteem in the experimental group



**Chart 2.** Mean scores of the pretest and posttest of anxiety and types of self-esteem in the control group

## Discussion

This study was conducted to investigate the effectiveness of cognitive-behavioral group therapy in anxiety and self-esteem in patients with multiple sclerosis. The research results disclosed that after attending cognitive-behavioral group therapy sessions, the levels of anxiety, general self-esteem, family self-esteem, occupational-academic self-esteem and overall self-esteem of MS patients improved. But social self-esteem did not improve significantly. These results are relatively consistent with the findings of other studies (48-52) concerning the effectiveness of cognitive-behavioral group therapy in MS disease. In the research by Famil Sharifian et al. (30), 10 sessions of cognitive-behavioral group intervention based on Michael Frey approach enhanced mental health of patients with early onset MS. Results of the study performed by Pahlevanzadeh et al. (48) on 70 female patients with MS revealed that cognitive-behavioral group therapy makes a significant impact on reduced stress, anxiety and depression of MS patients. Morris et al. (53) carried out a study with the purpose of examining the effectiveness of cognitive-behavioral group therapy compared to the supportive listening technique in psychological adjustment of 94 MS patients. According to the obtained results, cognitive-behavioral group therapy led to a more significant improvement in psychological adjustment and psychological disturbances of MS patients. This result persisted in 12 months after treatment. In the study by Van Kessel et al. (54), the findings obtained from comparing the cognitive-behavioral group therapy and

relaxation therapy suggested that cognitive-behavioral group therapy more significantly improves depression, anxiety and stress among MS patients. Moreover, Hozhir et al. (49) conducted a study on 35 MS patients and found that cognitive-behavioral group therapy can improve depression, anxiety and stress and change perceptual representations of the disease and promote emotional states of MS patients. Zende Talab and Norouzi (32) also investigated the effect of group discussion on MS patients and addressed training about the importance of mental health, the position of self-esteem and a sense of self-worth in improving the quality of life, different dimensions of self-esteem, the role of self-esteem in everyday life, ways to strengthen self-esteem, signs of lack of self-esteem, problems caused by low self-esteem and the need for changes in lifestyle to promote self-esteem. Results of this group discussion led to an increase in the self-esteem of MS patients. According to the results of these studies and in confirmation of the findings of the current research, it can be mentioned that cognitive components are one of the most important sources affecting self-esteem. MS is a debilitating, chronic and unpredictable disease that creates many challenges in the lives of patients. Given the age of the onset of the disease, patients have to reconsider their plans for life, family and job and face the disease relapse and lack of autonomy that cause a lot of anxiety and worry (55). By applying techniques such as identifying negative thoughts and changing inefficient cognitive components and also by using solutions like distraction and

ultimately verbal challenges with negative automatic thoughts (26), cognitive-behavioral therapy can make emotional and behavioral changes and lead to reduced anxiety and increased self-esteem of patients. This approach, by correcting the patients' cognitive errors, provides the opportunity for them to be released from the constraint of do's and don'ts and idealistic thoughts and accept their illness and reasonably deal with it. Besides, the existence of behavioral strategies that is a step towards the activation of the patients helps them be released from indulging into the role of a sick person and engage in daily activities as much as possible (28). It seems that some features of cognitive-behavioral therapy, such as providing semi-structured treatment sessions, coping with inefficient thoughts and stopping spontaneous thoughts, rebuilding and renaming distorted thoughts and beliefs, using a variety of cognitive-behavioral techniques like problem-solving and positive effects of group participation, can play a crucial role in reduced anxiety and enhanced self-esteem of MS patients. In this study, cognitive-behavioral group therapy had no significant effect on social self-esteem of patients with MS. The obtained result is relatively congruent with the findings of the study by Kiany et al. (56) in relation to adolescents with thalassemia major and the research by Sharifi et al. (57) regarding MS patients. Progression of diseases, such as thalassemia and MS, causes a reduction in social self-esteem of patients by making cognitive and psychological changes and creating limitations and inability in playing the roles and implementing the socially accepted patterns (17).

Although treatment is effective in overall self-esteem, general self-esteem, family self-esteem and occupational self-esteem of patients, it seems that the social sphere is so vast and overshadowed by communication with others that cannot easily be improved by short-term cognitive-behavioral therapy. Self-esteem of patients in this area is more damaged than other areas and requires more serious and deeper or longer-term treatments to improve. However, given the limited research in this field, further

research in the future can examine, approve or modify the results of the present study. Use of the convenience sampling method to select the sample and the small number of subjects limit the generalizability of the results while due to the lack of follow-up results, it is not clear whether the results remain stable over time. Conducting research on wider samples and following the therapeutic effects can contribute to the generalization of the results and confirmation of the stability of the findings over time. Further, considering the importance of self-esteem in different areas of life and its key role in mental health, it is recommended that in multi-group research projects, results of cognitive-behavioral group therapy approach be compared with third-wave therapies, such as metacognition and acceptance and commitment therapy, or combined approaches.

### Conclusion

According to the results of the present study, cognitive-behavioral group therapy can lead to enhanced overall self-esteem and decreased anxiety of MS patients. Patients suffering from multiple sclerosis should reconsider their life plans and face frequent relapses and lack of autonomy which cause great anxiety and worry. Cognitive-behavioral group therapy leads to reduced anxiety and increased self-esteem and activation of patients by helping them share their problems and receive effective exposure solutions from the group members, challenge negative thoughts and idealistic beliefs and use distraction, problem-solving and behavioral strategies. Thus, this low-cost and short-term treatment can be applied in all health centers for the protection of MS patients.

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