Original Article

The Effectiveness of Cognitive-Behavioral-Based Stress Management Training on Anxiety in Female MS Patients

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Objectives: This present study aims to examine the effectiveness of cognitive-behavioral-based stress management training on anxiety in female MS patients.

Methods: This study employed a semi-experimental research method with pre-test post-test, control group and random assignment. The statistical population fully consisted of female MS patients referred to the Iran MS association in 2014, from which 24 individuals were selected by accessible sampling, who were randomly divided into intervention and control groups. For measuring the independent variable, Beck's Anxiety inventories were used.

Results: The results of ANCOVA showed that cognitive-behavioral-based stress management training was effective in reducing the anxiety of female MS patients ($p \leq 0.05$).

Discussion: According to the results obtained, we believe that the cognitive-behavioral-based stress management training program has been effective on anxiety reduction in female MS patients. Thus, this training method can be used for target groups and the general population as an interventional program.

Key words: Stress management, cognitive-behavioral method, multiple sclerosis

Introduction

Multiple sclerosis (MS) is one of the most debilitating neurotic disorders. MS is a chronic progressive disease of the central nervous system that affects the brain and spinal cord (1,2) and impairs the transmission of nerve signals. Available statistics show that worldwide, about 5.2 million people are diagnosed with multiple sclerosis (3). The incidence of the disease is 15-30 per 100 thousand people (4). MS usually appears between the ages of 20-40 years, with twice the risk to women as compared to men, and it is the third largest cause of disability in America (5). MS symptoms vary widely and can include decreased performance, fatigue, muscle weakness, ataxia, cognitive impairment, depression and anxiety (6). In addition to the medical and biological symptoms of MS, there are also psychological factors. Stress, depression, anxiety, and guilt are the most common symptoms of MS, and patients with MS, when compared with healthy individuals, have higher levels of psychological disorders such as stress and anxiety (4). The

prevalence of reported anxiety amongst MS patients has varied from 20% to 42% (7). It seems to be associated with chronic pain. Whilst the association with disability status is only moderate (8), the importance of anxiety amongst MS patients, and how it is influenced by other symptoms, has been less studied (9). Like any other chronic disease, multiple sclerosis can cause psychological problems, so doctors recommend preventive treatment in order to reduce the physical, social and psychological trauma of the patients. This treatment is a way to reduce anxiety and increase the pathways they use for dealing with stress. Thus, focusing on alleviating these problems is very important. Now, with regard to the extent of mental health problems for MS patients, many researchers around the world are exploring various methods of psychotherapy to help patients who are supportive and understanding (10). Studies of the effectiveness of psychological interventions such as cognitive therapy, cognitive restructuring, behavioral therapy, cognitive behavioral therapy, stress management and on

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psychological symptoms have been reported in patients with stress (11).

A comprehensive program of cognitive behavioral stress management has exhibited a multi-faceted approach to the management of stress and anxiety in patients with chronic physical problems. Other issues to consider include lack of personal control, coping demands, anxiety and depression, all of which are organized in chronic and severe physical categories. The comprehensive program of cognitive, behavioral, emotional, social, and physical and relaxation of muscle has been studied in relation to anxiety (12). One reason for using cognitive-behavioral approaches in combination rather than separately is that this method simultaneously teaches the patient cognitive skills, including identifying and replacing negative irrational thoughts with rational positive thoughts and promising mental schemas, and through behavioral techniques, such as muscle relaxation training, which enhances the activity of the parasympathetic system. Also, objectivism in terms of stress management will be trained (11). By teaching this technique to patients, health professionals can improve their health and ultimately reduce psychological symptoms.

More importantly, due to its increased prevalence in recent years, especially among young women aged from 20 to 40, MS is not just a crippling motor disease, but also leads to serious difficulty in interpersonal communication and creates mental health issues. It is therefore necessary to provide health care facilities and to reduce psychological problems and difficulties. Thus, although studies in this area have been conducted, they have been limited in scope, and more research attention is needed. Accordingly, the aim of this study is to determine the effectiveness of cognitive-behavioral therapy-based stress management training on anxiety in women with multiple sclerosis.

Methods
This research was a semi-experimental study with pre-test, post-test and control group. Samples were randomly chosen. The population fully consists of female MS patients referred to the Iran MS association in 2014, from which 24 individuals were selected by accessible sampling, who were randomly divided into intervention and control groups. In this way, 12 individuals were assigned to the control and experimental groups. After obtaining the permission from the University of Welfare and Rehabilitation

Sciences, the researcher was introduced to the MS Society of Iran in Tehran. The purpose of this study and the methodology were explained to the officials of the association. Informed consent was obtained from the patients. Entry criteria included: women with MS between the ages of 20 to 40 years; a lack of concurrent disorders; and extending the patient's file for at least three days since the last attack of the disease. Exclusion criteria included: use of certain drugs in the treatment of multiple sclerosis which affect mood; interference in the treatment of multiple sclerosis; and missing more than two sessions of the treatment process. The measurement of this research was Beck's Anxiety inventory (BAI). This inventory is a self-reported questionnaire that measures the severity of anxiety in adolescents and adults, and which has 21 options. Subjects are asked to indicate to what extent each of the symptoms in the last month have caused inconvenience and annoyance to him/her on a 4-point scale ranging from 0 to 3. The phase scores are added together. The total score ranges between 0 and 63. In this test, with regard to the psychometric properties of an Iranian population, the validity coefficient has been reported at 72%, with a retest reliability coefficient of approximately 83% within one month, and Cronbach's alpha was 92% (13). The Beck's Anxiety Inventory was implemented as the pre-test. Then, the experimental group received life skills training in 10 sessions (1 session per week, each 120 minute), while the control group did not receive any training. In this study, a program of cognitive-behavioral stress management was used (12). The content of the training sessions as follows: Session 1: The introduction of the educational program, familiarity with other participants, introduced the first component of stress and finally the first exercise of muscle relaxation in progressive groups for 16 muscles. Session 2: Stress and awareness, muscle relaxation. Session 3: Communicating thoughts and emotions. Session 4: Negative thoughts, cognitive distortions and diaphragmatic breathing. Session 5: Replacing rational thoughts, the difference between rational and irrational self-talking. Sessions 6 and 7: Efficient coping, implementation of an efficient coping response. Session 8: Aggression management. Session 9: Learning to communicate effectively. Session 10: creating and maintaining social support networks. The training topics were then summarized, and the post-test was performed. The pre-test and post-test results were also gathered

from patients in the control group without any intervention. Data were processed and analyzed using SPSS16 software to check the assumptions of covariance analysis, such as the linearity of the relationship between such variables, homogeneity of variance test (Levene test) and a Normality post-test Kolmogorov-Smirnov covariance.

Results

Twenty four female MS patients participated in this study. The mean and standard deviation of patients'

ages were (29.20 ± 3.90) respectively. 67.3% of participants were high school graduates or less, and 32.7% of the patients had a University degree. 58.3% of them were housewives and 41.7% were employed.

In Table (1), the mean and standard deviation of the two groups in pre-test and post-test are presented. A comparison of the two groups shows that the post-test mean of the experimental group is lower than the control group.

Table 1. Mean and standard deviation of the experimental and control groups at pre-test and post-test

Variables	Group	Pre-test			Post-test	
		Number	Mean	SD	Mean	SD
Anxiety	Experimental	12	23.75	3.22	17.83	3.58
	Control	12	21.00	5.25	20.50	6.31

To review and approve the assumption of linearity between independent variables and the dependent variable, homogeneity of variances was seen using the Levene (Table 2) and Normality test of Kolmogorov-Smirnov (anxiety in the pre-test and

541%). Table (2) examines the test power. A rate (significance level) which is closer to 1 indicates that the test power is higher. Based on the table, the test power is moderate.

Table 2. Levene test for homogeneity of variances of the variable examined anxiety

Variables	F	Freedom degree1	Freedom degree2	Significance level
Anxiety	0.365	1	22	0.451

As can be seen in Table (3), the effect on the intervention group, while eliminating and

controlling pretest variables, is statistically significant in the variable of anxiety. (P≤0.05).

Table 3. Results of the analysis of covariance (comparing the post-test anxiety scores of the groups)

Source of variance	Freedom degree	Sum of means	F	SIQ
Pre test	1	217.78	12.69	0.002
Group	1	117.32	6.80	0.016
Error	21	17.23		
Total	24			

Discussion

The aim of this study was to investigate the effectiveness of cognitive-behavioral stress management training on reducing anxiety in women who had multiple sclerosis. In accordance with this aim, two groups were studied after the intervention by using the anxiety scale in pre-test and post-test. The findings obtained in this study indicate significant differences between the experimental group and the control group (anxiety (P≤0.05). By neutralizing other effects with the pre-test anxiety scores, it can be said that this difference was caused by altering the independent variables in the experimental group. In other words, this training program is effective in reducing the anxiety of

women with MS, thus confirming the hypothesis proposed in this study. This finding is consistent with previous findings that have reported reduced anxiety after a cognitive-behavioral intervention (14). In addition, other studies have reported a reduction in anxiety by using stress management techniques (10,11,15,16). Moreover, other studies have also demonstrated the effect of cognitive-behavioral techniques for reducing anxiety in patients with multiple sclerosis (9) and other groups (17,18). Therefore the findings of this study are consistent with the research cited above.

To help explain these results, it can be said that stressors and their related processing methods, may influence the mental-neuro-cognitive and safety

processes that can lead to anxiety. However, cognitive-behavioral-based stress management can be effective on these processes through an increased sense of control, self-esteem, adaptive coping and social support, while reducing anxiety in these patients. In this study, by using behavioral strategies such as relaxation, stress management and relaxation of muscle tension, patients' anxiety was reduced. Also, with regard to stress-related physical symptoms, patients were able to identify and to understand that relaxation is incompatible with stress, thus reducing their anxiety (19). Finally, it can be said that multiple sclerosis, like other chronic diseases, has both physical and psychological symptoms. However, previous research and the present study have shown that cognitive-behavioral stress management training has an impact on reducing the levels of anxiety and improving the quality of life in the intervention group, as compared with the control group. As a result of this, cognitive-behavioral stress management training appears to be useful in improving these patients' psychological problems.

The results of the present study suggest that patients should attend stress management training sessions and other such meetings. The therapist is recommended to use the content of these stress management workshops with target groups of patients. Patients' families and support agencies are recommended to provide support and to cooperate with the patients, due to the inability of some patients to effectively participate in treatment programs for women.

This study faced some limitations; most important were the loss of patients and the use of a quasi-experimental design. Therefore the authors encourage other researchers to also conduct other studies with other educational interventions, including positive thinking skills training and stress inoculation training. They also suggest that in future studies use experimental study designs, and to increase the number of additional samples or educational groups for both women and men, in order to increase the generalizability of the findings.

Conclusion

To sum up, it can be concluded that teaching stress management skills, relaxation, diaphragmatic breathing, muscle relaxation, meditation, identifying negative automatic thoughts and cognitive distortions, replacing logical thinking, learning effective coping strategies, anger management, and expressiveness can reduce levels of anxiety and depression. Thus, cognitive-behavioral stress management group training reduces the anxiety of women with MS.

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