The Effectiveness of reducing muscular tension on decreasing the perceived stress in patients with multiple sclerosis

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Abstract: Multiple Sclerosis (MS) is a demyelinating progressive disease which afflicts central nervous system. The cause remains uncertain but various factors such as infection, stress, immune deficiency and environmental factors may contribute to this disease. The purpose of the study was to investigate the effectiveness of muscle progressive relaxation on perceived stress in patients with multiple sclerosis. Material and Method: For this aim, forty of the patients in Tabriz randomly were selected and assigned in two groups (20 in experiment group and 20 in control group). From 20 patients of experiment group, 16 patients completed the treatment. In experimental group, Relaxation with progressive contraction-relaxation method based on the 16 groups of the muscles was administered in 12 sessions. Results: Descriptive indices including mean, standard deviation, mean rank and sum of ranks were provided for research data. . Results of ANOVA showed that relaxation significantly have decreased perceived stress.

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1. Introduction

Multiple sclerosis is a chronic, progressive disease which destroys the myelin of the central nervous system. The various components of Myelin in this disease cover the whole white matter and affects sensorimotor performance (Rubin, 2001). It causes to create sensory disturbances, weakness, cramps, visual disturbances, cognitive dysfunction, fatigue, trembling limbs, impaired urination, defecation, sexual function, numbness, blurred vision, double vision and speech impaired in a patient (Guinness, 1999., Taggart, 1998). The disease is unpredictable and it is one of the most important diseases that changes people's lives, because it damages the best of period of human life and gradually takes the person to the inability. On the one hand, it does not have a definitive treatment (Holland, Madonna, 2005). Two million people around the world (Stuifbergen *et al.,* 2006) and four hundred thousand people in America are infected with MS (Masoudi, Muhammady, Nabavi, 2003). It is estimated that at least twenty thousand people are infected with MS in Iran (Nabavi, Poorfarzam, Ghasemi, 2006). Haussleiter et al., (2009) believe that the demyelization of nerve fibers not only affects the function of sensory and motor systems, but also it may also lead to psycho-pathological symptoms. Empirical literature suggest the high levels of depression and distress, anxiety, subjective well-being and lower quality of life, and social relationship problems in these patients (Dennison, Moss-Moris , Chalder, 2009). Therefore, it seems that there is reciprocal relation between physical diseases and psychological pathology. Health psychology and psychoneuroimmunology have implied how psychological factors change immune system and finally increase risk of illness. Results of researches show how depression, helplessness, and stressful events cause illness along with changes occurrence in individual`s immune system (Rosenhan, Seligman, 2003). Contemporary MS searches emphasize on the relation of the psychological stress with the physical sign and symptoms of the Disease (Shamlo, 2003). Shiels (2004), based on his research, found out that the people who are under stress conditions, suffer from psychological problems and some other health problems due to the stress. Psychopathology creates a special challenge with providing mental health care for patients with a combination of medical-neurological and psychiatric disorders (Buchanan et al, 2006). Goldman consensus Group (2005) suggests the psychotherapy and psychological interventions for depressive syndromes among patients. Regarding the idea of mutual relationship between body and mind, researchers have tried to prove the effectiveness of various methods of psychological intervention on physical symptoms of patients. Also according to this belief, psychological distresses of human will be relieved with the treatment of physical symptoms in non-psychological ways. Research results indicate the

effectiveness of psychological interventions in treating the physical symptoms of different diseases and reducing the stress. Also, other researches propose various interventions in these patients' problems (such as depression, anxiety, stress and physical symptoms). Some of these interventions have applied as a group and some others have applied individually. Cognitive – behavioral methods (Larcombe, Wilson, 1984; Mohr، Stacety, & Goldberg, 2003; Julian and Mohr, 2006; Visschedijk & Collette, 2004), stress management programs (Crawford & McIvor, 1987; Warren and Warren, 1991) relaxation training (Tesar et al., 2003; Maguire, 1996), stress inoculation training (Foley et al.,1987) cognitive - behavioral therapy with telephone (Mohr et al, 2005; Mohr et al 2000), supportive-expressive psychotherapy (Bachar et al 2004; Mohr et al 2001) massage therapy (Hernandez et al., 1998) and symptomatic treatment and neurological rehabilitation (Kesselring & Beer, 2005), are some of the methods used for these patients' problems. Undoubtedly, progressive relaxation therapy is one of the new methods of therapy which forms the central core of anxiety and stress treatment. Relaxation is used in the treatment of various mental and physical Disease. Reducing Stress, the methods of relaxation disrupts the vicious cycle of distress and tension, and changes the physiologic flow of the autonomic nerves to the normal condition Jonbozorgi, Noori (2003). However, a few researches have been done on reducing stress in MS patients. Foley and his colleagues (1987) placed MS patients in stress inoculation training program (including cognitive - behavioral and progressive muscular relaxation). Part of the results of this study demonstrated that patients who were under treatment have less perceived stress and use more strategies of coping with the problem. Hughes et al., (2006) in a research investigated the effectiveness of an intervention of self-management stress method in a group in order to improve the stress and health promotion among women with physical disabilities such as spinal cord injury, arthritis. Group differences in changes in perceived stress indicators and mental health over the time supported the efficacy of treatment. Perception was supported stress as a moderating variable of the effect of treatment on mental health. Mackereth et al (2009) studied the effectiveness of training gradual muscular stress relieve and reflexology on MS patients. In this study, a crossover design with a 4-week interval between the courses of treatment was used. Salivary cortisol levels, the state of anxiety inventory, systolic and diastolic blood pressure and heart rate were collected before and after weekly meetings. All selected indicators except three scales of the short form of 36 questions demonstrated significant changes. On the whole, positive effects of both treatments were reported at the end of the sessions and during the 6 weeks of treatment. Considering the fact that the results of the disease on people, with medical problems, can have psychological complexities; Therefore, the diagnosis and prognosis of patient from various aspects have an influence on him/her (Stewart, & Esposito, 2007) and the time of coping with a new diagnosis of acceptance by the patient is difficult (Sheremata, 2006). Also, MS is associated with many psychological problems like depression, chronic fatigue, self-injury, suicide, mania, pathological laughing and crying, emotional labiality, psychosis, cognitive impairment, panic attacks, bipolar disorder, anxiety and irritability (Jefferies, 2006), and stress-causing events have relationship with the exacerbation of MS (Buljevac et al, 2003). Considering the results of earlier researches regarding the fact that muscular stress relief is effective on reducing the mental stress of people with chronic diseases. The purpose of this study is the impact of gradual muscular stress relief on reducing the tension of MS patients.

2. Research design

The present research is a semi-experimental study with pretest - posttest with control group. The population of this study is all patients with MS in Tabriz. The necessary sample is 40 subjects (20 in experimental and 20 in control groups) are. The mean and standard deviation of patients' ages are 29/31 and 8/40, respectively. At the end of the study, 4 patients did not complete the treatment for personal reasons. In order to collect samples from MS patients, who volunteered to participate in the research, 40 people who had the quality to enter the group, were selected and then randomly divided into experimental and control groups. The criteria to enter the study was Being an MS patient and criteria of exclusion was the identification of having personality disorder, antisocial, compulsive, bipolar, violent people, aggressive, monopolistic, and suffering from psychosis and paranoid. These people are not affected by the group, and weaken the energy of group in order to undermine a useful activity (Corey, Corey, 2008).

3. Measuring Tools

Cohen Perceived Stress Questionnaire was used to measure the stress of people. The questionnaire was built in 1983 by Cohen and his colleagues. This scale has 14 items and each item is answered on a five-degree Likert scale (none, low, medium, high and very high). This questionnaire measures the two subscales: (a) the negative perception of stress, (b) the positive perception of stress. The internal reliability consistency coefficient of the scale is calculated through the two range Alpha coefficient of Cronbach from 0.84 to 0.86 in two groups of students and a group of smokers with

quitting program. (Cohen et al, 1983; Shytz et al, 1993; cited in Abolghasemi,Narimani , 2006).

4. Methods of implementation

After selecting the people, a meeting was formed with the sample group, and a general explanation about the treatment methods was presented. Then the participants were randomly divided into two equal groups. All evaluations of pretest were administered in this session. The program of gradual muscular stress relief of 16 groups of muscles in the form of 12 sessions stress relief was performed in the two experimental groups for 6 weeks. After that, 16 groups of muscles were relived from tension. Insuring that the subjects have learned the stage 16 very well, we taught the integrated of muscles and continued the work with method 7. At this stage, when the subjects were able to achieve deep relaxation, again more muscles were integration and the stress relief program was continued with the method 4. Then with removing the contraction of muscles, stress relief was pursued with the same 4 groups of muscles. This work was done to remind and deepen the relaxation. At the end, the relaxation of all muscles was trained with 10 numbers. Finally, in all the above-mentioned exercises, observations whether at home or in the meeting sessions were recorded by the subjects. After practicing the above exercises, whether at home or on the observation sessions were recorded. All exercises done in therapy sessions were also performed by the subjects using the tape at home. After finishing the sessions, the subjects completed the questionnaire of perceived stress.

5. Results

Demographic data about the sample group, including a number of individuals in both experimental and control groups, gender, marital status, educational status is given in Table 1.

1. Table1. Demographic Characteristics

variables		frequency	Statistic indicators Percent
group	experimental	16	44.4
	control group	20	55.6
gender	man	18	50.0
	Woman	18	50.0
marital status	married	18	50.0
	Single	18	50.0
education status	under diploma	7	19.4
	diploma	20	55.6
	associate degree	3	8.3
	BA	6	16.7

Table 2. Statistical indicators of stress in the pre-test and posttest levels and follow-up period (n=36)

Stress levels	Group	Stage	Mean	SD
Positive perception of stress	Experimental	Pre-test	12.5322	4.7124
		Posttest	14.3141	4.6107
		Follow-up	13.6021	4.1392
	Control	Pre-test	12.1314	3.5881
		Posttest	11.7121	3.5941
		Follow-up	12.3017	3.7081
Negative perception of stress	Experimental	Pre-test	18.3114	4.4952
		Posttest	13.6951	4.3184
		Follow-up	13.8316	4.2119
	Control	Pre-test	18.7552	3.4814
		Posttest	19.1437	3.2115
		Follow-up	19.4814	3.0121

Table3. Test results for the analysis of covariance for Perceived Stress levels in the pre-test stage

Stress levels	df			F	sig
	Group	Error	Total		
Positive perception of stress	1	24	35	10.119	0.004
Negative perception of stress	1	24	35	25.919	0.005

Based on the results of the ANCOVA, the analysis of each level of perceived stress alone, using the Ben froni alpha levels (0.025) and after adjusting the pretest scores, the gradual muscular stress relief on positive perceived stress was ($F(1 \&24) = 10.119$ & $p = 0.004$) and on negative perceived stress was ($F(1 \&24) = 25.919$ & $p = 0.005$). Thus the null hypothesis at the significance level of 0.05 is rejected. In other words, with 95% confidence, the gradual muscular stress relief increases the positive perception of stress and decreases the negative perception of stress. Adjusted mean scores of stress suggest that the treatment group had more positive perception of stress and less negative perception of stress in comparison with control groups.

Table 4. Test results for the analysis of covariance for Perceived Stress levels in the post-test stage

Stress levels	df			F	sig
	Group	Error	Total		
Positive perception of stress	1	24	35	4.48	0.004
Negative perception of	1	24	35	27.01	0.005

stress					

Based on the results of the ANCOVA, the analysis of each of the levels of perceived stress alone, using the Ben froni alpha levels (0.025) and after adjusting for pretest scores, the gradual muscular stress relief on positive perceived stress was F (1 &24) = 4.478 & p = 0.044) which was not significant on negative perceived stress was F (1 &24) = 27.015 & p = 0.005) in the was significant. Adjusted mean scores of stress suggest that the treatment group had more positive perception of stress and less negative perception of stress in comparison with control groups in continuing level.

6. Discussion

The study tries to investigate the effectiveness of the gradual muscular stress relief reducing the perceived stress in MS patients. The results of the research showed that the above-mentioned therapy method has a significant effect on the patients' perceived stress. In other words, the gradual muscular stress relief had a significant effect on decreasing the negative perception of stress and a significant effect on increasing the positive perception of stress in the experimental group. On the other hand, the stress in control group not only reduced but also increased slightly.

The results of the study results are in line with the results of the researches by Hughes et al, (2006), Mackereth et al, (2009), Masoudi, Muhammady, Nabavi (2003). Disease, which is one of the sources of stress within the individual, imposes some requirements on the biological and psychological systems. The evaluation of stress through the adult patients usually involves the present problems and future concerns, such as the likelihood of disability or death (cited in Sarafino, 2008). Benefiting from their experiences, people learn the coping skills, including the strategies that they have used earlier or they have seen their usage by others. However, sometimes it is possible that they have learned some skills that are not appropriate for dealing with new or ongoing severe stress. Based on the results of the first hypothesis, the stress in MS patients who were treated with a multifaceted Lazarus approach reduced significantly. The research findings demonstrate that patients during the treatment period and even in the follow up period were able to cope with the life stress and had more positive evaluation and perception about the stress makers that they experienced in their life (more important that all of their physical illnesses). In other words, treated people do not underestimate their power to deal with stress maker or do not overestimate the requirements of a stressful event in dealing with it. Bnstvn believes that the stress relief is a unified physiological response, and its specification is a generalized reduction in the sympathetic nerve responses and the metabolism of human body. Therefore, the responses of the autonomous system as a whole are reduced due to the effect of stress relief.

In this way, a person's stress level can be reduced with a direct attack to the symptoms of disease. Also, a vicious cycle of anxiety and stress can be used in explaining and demonstrating the results of the search. According to this cycle, three levels can be outlined for stress and anxiety levels and also for other emotions: 1) neurological-glandular level, 2) the level of motion-muscles-visceral level, 3) consciousness-cognitive level. When anxiety is aroused in human being, primarily it involves the glands and nerves, Nerve and glandular arousals leads to the involvement of motor-muscular-visceral system. And if the stress persists, a person's consciousness-cognitive level will be involved (Kaplan and others, 1995). Assessment of anxiety in these three levels is clearly possible. The movement of emotions in these three stages has a feedback status. It means that when the neurological-glandular level is aroused, the motion-muscle-visceral level is also aroused due to the integral sympathetic nervous system. This arousal leads to the increase of the level of nerve-gland arousal, and it also arouses the second level in a circular motion. Similarly, the third level is also stimulated, and regarding the Jacobson's words, it takes a screw motion. Thus, the level of anxiety and arousal leads to the arousal of above-mentioned levels and the arousal of those levels leads to the arousal of more stress and anxiety. If we stop this feedback system anyway, the stress and anxiety level a patient will be reduced significantly. Then, this situation will make the authorities more comfortable, relax and powerful to deal with problems appropriately (Kamer, 2001, cited in John Bozorgi and Noori, 2003).

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