Multimodal Psychotherapy in Patients with Multiple Sclerosis (MS)

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ABSTRACT

Objective: The main purpose of this study was to investigate the effectiveness of Lazarus Multimodal Psychotherapy (MMT) on perceived stress in individuals with Multiple Sclerosis (MS).

Methods: Through a quasi-experimental design, forty patients in Qazvin city in Iran were selected by convenient sampling and then divided into two groups: experimental and control groups. After group assignment, Cohen's perceived stress questionnaire and clinical interview based on DSM-IV were administered. Among 20 patients in experimental group, 16 patients completed the treatment. MMT was implemented in twelve 90- minute sessions in a period of 3 months. All subjects completed perceived stress questionnaire before (pretest) and after 3 and a 1 month follow-up periods.

Results: Results of Multivariate Analysis of Covariance (MANCOVA) showed that MMT had a significant effect on perceived stress. Results of Analysis of Covariance (ANCOVA) showed that MMT could significantly decrease negative perception and increase positive perception scores. The results of negative perceived stress had remained low in experimental group in follow-up period, but two groups did not differ in positive perceived stress in follow-up assessment.

Conclusion: Lazarus Multimodal Psychotherapy may be effective in increasing positive perceived stress and can decrease negative perceived stress in patients with MS.

1. Introduction

Multiple Sclerosis (MS) as a demyelinating disease of central nervous system is one of the most frequent neurological diseases. It is also the most disabling illness in adolescents (Werring and Thampson, 1998). This disease results many signs and symptoms which include fatigue, tremor, bladder and bowel dysfunction, sexual disorder, numbness and many other clinical manifestations including the cognitive disorders (Guiness & Peters, 1999; Taggart, 1999). The cause of MS is unknown and it has not responded to an absolute treatment. New hypothesis about the etiopathogenesis in MS is explaining its etiology as a chronic cerebrospinal venous insufficiency (Sunderstorm & colleagues, 2010). In USA, more than 350 thousand people affected by MS and 1000 people get affected every year (Marvin, 2000). In Iran, nearly 20 thousand people have been affected by the illness (Nabavi, Poorfarzam, & Ghasemi, 2006).

A group of researchers claims that demyelinating of nervous system not only influences motor and sensory systems function but also causes psychopathological signs and symptoms (Haussleiter, Brune, & Juckel, 2009). Empirical literature shows high rates of psychological problems in these patients (Dennison, Moss-Moris, & Chalder, 2009).

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It seems that there is a reciprocal relation between physical diseases and psychological pathology. Health psychology and psychoneuroimmunology have implied the way 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 research emphasize on the relation of the psychological stress with the physical sign and symptoms of the disease (Shamloo, 2003). Hans Selye (1950) also regarded stress as a general response to an external stimulation (Sarafino, 2008). Lazarus believes "stress is an external condition which imposes unsuitable demands on individual" (Jonbozorgi & Noori, 2003). Walter Cannon (1932) did the first comprehensive study about relations between stress and diseases. He showed that stimulating autonomic nervous system particularly sympathetic system results in bodily responses and in this way, illness is initiated in individuals (Sadock & Sadock, 2007).

Most researchers after Folkman and Lazarus believe that stress is a condition more than a general response to stimulation. According to this cognitive view, an event cannot automatically have any meaning out of human mind. The human mind interprets and evaluates the condition. While a situation may be stressful for a given person, it may be neutral for another one (Abolghasemi & Narimani, 2005). However, there is not strong evidence about relations among stress and psychological factors with MS. Although there is poor evidence regarding the causal relationship, the role of psychological factors in exacerbating the symptoms of MS has been widely demonstrated (Hessen, Mohr, & Huitigna, et al., 2007).

Brown and his colleagues (2006) emphasize that acute events, not chronic problems, and acute stressors, not their intensity are very important in recurrence of MS. People in primary phases of disease are at higher risk for relapse. Because of this prepositional vulnerability, providing mental health care to patients with combined neuromedical and psychiatric illness presents a special challenge (Buchanan and his colleagues, 2006). It is suggested that diverse psychotherapy methods are to be applied for treating psychological problems and managing stress in MS.

WHO defines health as the status of physical, psychological and social well-being. Acceptance of bio-psycho-social conception of health and diseases has proved to be a basic assumption of complex health care (Sevcikova et al., 2001). According to this concept of health, individuals should be assessed and examined in all aspects and dimensions (Bardshaw & Rose, 2008). Regarding numeral problems of this group of patients in diverse dimensions and reciprocal influence of neuropsychological symptoms, a treatment with a multimodal approach seems to be necessary for them.

One of the non-pharmachotheraputic interventions that have considered different dimensions of health is Lazarus multimodal therapy. Lazarus multimodal therapy is applied in a comprehensive range of disorders and problems successfully (Jonbozorgi & Noori, 2003). Lazarus believes that seven dimensions (behavior, affect, sensation, imagery, cognition, interpersonal relationship and drug-biology) could describe human personality entirely (Dryden & Mitton, 1999). Lazarus proposed model has been developed by other researches such as Palmer and Dryden. It is applied to controlling stress and anxiety (Jonbozorgi & Noori, 2003).

A study with 3 years follow-up after administrating MMT on 20 types of complex problems (including, OCD, agoraphobia, anxiety, panic, depression, alcohol dependency and marital and family problems) showed that 14 cases maintained therapeutic results, 2 cases needed medicine occasionally, and 3 cases relapsed (Rahimianboger & Shareh, 2008). Jonbozorgi (1999) investigated the effectiveness of MMT on stress and anxiety with control group. Results of this study showed that stress and anxiety levels in experiment group significantly were decreased.

In another research, Dabbaghi, Dadsetan, and Saatchi (2002) compared MMT and progressive muscle relaxation on reducing student's anxiety with a control group. Two interventions separately were administered separately in two groups for 10 sessions. Results showed that both methods have significantly effect on reducing global anxiety, explicit anxiety and state anxiety. MMT also was more effective in reducing fundamental and deep factor such as anxiety trait than relaxation. In another study, Biabangard (2002) used a 3 group experimental design for reducing test anxiety. He assigned 83 students in 5 groups (MMT, Ellis rational-emotive therapy, relaxation, placebo, and control). Results of the study showed that all the four groups were significantly more effective than control group. There was not significant difference between multimodal and rational-emotive therapy. In addition, MMT significantly was more effective than relaxation, placebo, and control group in reducing test anxiety.

In fact, Lazarus MMT seems to be a comprehensive and effective intervention. Considering MS is among the diseases that can affect extensive dimensions of human personality, providing such psychotherapeutic service for these patients seems to be necessary. As a result, the aim of present study was to investigate the effectiveness of Lazarus MMT on perceived stress in patients with MS.

Table 1. Sessions of MMT.

Sessions	Activities
First	1. Greeting and introducing; 2. Review of rules, aims and necessity of the work that had been told in a session before constituting the group; 3. Communal discussion and focusing on the problems; 4. Describe interactional model; 5. Describe the method and its logic; 6. Summarize the session and responding the questions; 7. Assignment and homework.
Second	1. Review of assignments; 2. Review of previous session; 3. Communal discussion; 4. Explaining about individuals' problems and application of MMT; 5. Describing modality profile; 6. Summarizing and responding to questions; 7. Assignment and homework.
Third	1. Inquire assignments; 2. Review previous session; 3. Describe structural profile and provide it for everyone and the whole of group; 4. Summarize the session and response to questions; 5. Assignment and homework.
Fourth	1. Review of assignments; 2. Review of previous session; 3. Communal discussion; 4. Explaining the firing order of problems and provide it for patients; 5. Summarizing the session; 6. Home work (self-monitoring and provide firing order for all problems.
Fifth to twelfth	1. Review homework and review previous session; 2. Describe a technique regarding modality and structural profiles; 3. Practice and training the technique relating given modality based on group total profile; 4. Bridging to other modality regarding group needs and practice and training another technique; 5. Explaining the second order of modalities and their order while patients problem have not been solved and applying new techniques; 6. Summarizing the session and response to questions; 7. Homework (self-monitoring, writing, and recording observations about applying some techniques.

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2. Methods

The present study is a quasi-experimental research with pretest-posttest design. Participants were divided in two groups: treatment (experimental) and control. Participants were selected from all patients with MS in Qazvin. Exclusion criteria were to be diagnosed as antisocial personality, obsessive-compulsive, bipolar, psychotic, and paranoid disorder because such patients may decrease the energy of group (Corey & Corey, 2006). Inclusion criteria included acquiring the score of 23 and more in general health questionnaire (GHQ-21), reporting high stress in Cohen stress scales, and become affected by multiple sclerosis. We used the SCID interview to screen axis 1 and 2 of DSM- IV clinical disorders.

Forty patients (20 in treatment and 20 in control group) were selected after primary assessments. Total mean and standard deviation of age were 28.19 and 7.30 respectively. Sex, marriage, and educational variables were matched between two groups (treatment: M=29, SD=8.50; Control: M=27.55,

Table 2. Demographic data of the whole sample.

Statistical indices	Group		Frequency
Group	Treatment		16
	Control		20
Sex	Treatment	Male	9
		Female	7
	Control	Male	10
		Female	10
Marital status	Treatment	Married	8
		Not married	8
	Control	Married	9
		Not married	11
Type of MS	Treatment	Remitting-relapsing	4
		Secondary progressive	11
		Clinical isolation syndrome	1
	Control	Remitting-relapsing MS	3
		Secondary progressive	13
		Clinical isolation syndrome	4

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Table 3. Mean and standard deviation of perceived stress.

Stress levels	Group	Stage	Mean	Standard deviation	n
Positive perceived stress	Treatment	Pretest	13.5625	4.63276	16
		Posttest	15.2500	4.59710	16
		Follow-up	14.6250	4.12916	16
	Control	Pretest	13.1500	3.68889	20
		Posttest	12.7500	3.61102	20
		Follow-up	13.2500	3.73990	20
Negative perceived stress	Treatment	Pretest	18.2500	4.58258	16
		Posttest	12.7500	4.25049	16
		Follow-up	12.8750	4.17732	16
	Control	Pretest	17.7500	3.40085	20
		Posttest	18.1000	3.21018	20
		Follow-up	185000	2.66557	20

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SD=6.35). Comparing between two groups by t-test demonstrated that there was no significant difference in age ($F_{(1, 37)}$=0.366; $P>0.05$). Four patients in treatment group did not complete the treatment because of motor illness-related problem, moving to other cities, and personal reasons. The dropped patients were experiencing relapse periods and generally were older than other patients.

Measure

Cohen Perceived Stress Scale (1983) is a 14-item scale in which each item is to be rated on a Likert scale from 0 (not at all) to 3 (completely true). The scale assesses two subscales: (1) negative perceived stress and (2) positive perceived stress. Internal consistency was acquired by calculating Cronbach alpha which was from 0.84 to 0.86 (Abolghasemi & Narimani, 2005).

MMT was administered in treatment group in a course of 12 weekly sessions. Table 1 shows a summary of treatment activities:

Many techniques were used relating given modality for treating problems (driven from Dryden & Myton, 1999; Jonbozorgi & Noori, 2003). Data were analyzed by MANCOVA and ANCOVA test.

3. Results

Demographic data including sex, marital, educational status, and type of illness are presented in Table 2. According to Table 1, single participants are affected with remitting-relapsing type of MS more than married ones. Results of mean and standard deviation of research vari-

Table 4. MANCOVA for effectiveness of MMT on perceived stress.

Stage		Value	F	Hypothesis df	Error df
Post-test	Pillai's trace	0.554	14.257*	2	23
	Wilks' lambda	0.446	14.257*	2	23
	Hotelling's trace	1.240	14.257*	2	23
	Roy's largest root	1.240	14.257*	2	23
Follow-up	Pillai's trace	0.531	13.025*	2	23
	Wilks' lambda	0.469	13.025*	2	23
	Hotelling's trace	1.133	13.025*	2	23
	Roy's largest root	1.133	13.025*	2	23

Note: * $P<0.0001$.

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ables in studied groups in pretest, posttest, and follow-up phases have been presented in Table 3.

Table 3 demonstrates that there was not significant difference in pretest mean scores of positive and negative perceived stress between two groups. However, scores of positive perceived stress of experiment group in posttest and follow-up were more than their pretest scores. Meanwhile, scores of this group in this variable had been decreased in comparison to posttest. Positive perceived stress scores of control group in posttest stage is lower than pretest but there was not very difference between follow-up and pretest scores of this group in this variable.

In addition, negative stress scores of experiment group in posttest and follow-up was decreased. There was not very difference between scores of posttest and follow-up. Scores of control group in this variable have increased in posttest and follow-up stage. MANCOVA was applied to examine difference between groups in perceived stress (Table 4).

Considering Table 4, after moderating pretest scores, MMT had significant effect on perceived stress in posttest [Wilk's lambda=0.446, $F(2, 23)=14.257$, $P<0.0001$] and follow-up period [Wilk's lambda=0.469, $F(2, 23)=13.025$, $P<0.0001$].

To determine which level of perceived stress resulted in significant difference between two groups, an ANCOVA was followed by MANCOVA in every level of stress. Bonferrone correction was applied to avoid type 1 probability error (Table 5).

Based on results of ANCOVA, analyzing each level of perceived stress using Bonferrone correction (0.025) and after moderating pretest scores, MMT had significant effect on positive perceived stress in posttest stage [$F(1, 24)=10.218$, $P=0.004$] and on negative perceived stress in posttest [$F(1, 24)=26.025$, $P=0.0001$] and follow-up [$F(1, 24)=26.865$, $P<0.0001$]. MMT had not significant effect on positive perceived stress in follow-up. In conclusion, MMT has increased positive perceived stress and decreased negative perceived stress in posttest stage and

scores of negative perceived stress have remained low in follow-up stage.

4. Discussion

The aim of this study was to investigate the effectiveness of Lazarus multimodal therapy on perceived stress in patients with multiple sclerosis. Two groups filled Cohen perceived stress questionnaire in pretest, posttest, and follow-up period. Results of research showed that MMT had significant effect on perceived stress in patients with MS. Investigating levels of perceived stress showed that MMT had significantly increased positive perceived stress and decreased negative perceived stress. Results of negative perceived stress remained stable after 1 month. Although the mean scores of positive perceived stress of treatment group were higher than control, we did not find significant difference between two groups in this variable in follow-up period.

Illness is one of the interpersonal sources of stress which can impose demands to biological and psychological systems. Individuals' evaluation of stress consists of current problems and future worries such as probability of disability and death (Sarafino, 2008). Using their experiences, individuals learn coping skills- including strategies which they have applied themselves or observed others but sometimes they might learn skills which is inappropriate in coping with new intense or chronic stressors. In some conditions such as alcohol or substance dependency, their methods are effective in decreasing stress just for a short term but these methods may increase stress. In long term, these types of problems happen in individuals who experience high levels of stress because of low social support and personal control. When individuals could not cope with problems effectively, they need to learn how to cope with stress. There are many methods to control stress which some of them are psychological. Some methods target behavior and some focus on thought process. People who use these methods report them entirely effective (Sarafino, 2008).

Table 5. ANCOVA for effectiveness of MMT on levels of perceived stress.

Perceived stress	Stage	F
Positive	Posttest	10.218**
	Follow-up	4.587*
Negative	Posttest	26.025**
	Follow-up	26.865**

Note: ** $P<0.01$; * $P<0.05$.

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Today, efficacy of multidimensional and integrative psychotherapies, which combine diverse types of therapies including relaxation to CBT, has been well documented in anxiety and stress reduction as well as coping skills promotion (Jonbozorgi, 1999). Results of this study confirm the effectiveness of an integrative (especially MMT) psychotherapy in treatment and control of stress.

Results of the study are consistent with results of research administered by Foley, Bedell, Larocca, Reznikoff and Scheinberg (1987). They assigned patients with MS in a stress inoculation program (including CBT and muscle progressive relaxation). It seems that patients who were treated tend to use more problem-oriented coping strategies.

Results of our study are also consistent with other researches (Hughes, Robinson-Whelen, Taylor and Hall, 2006) who investigated the effectiveness of a self-management intervention on stress reduction and health enhancement in women with physical disabilities such as spinal impairment, and MS. Differences between groups in perceived stress and mental health changes support the effectiveness of therapy. It seems that perceived stress play as a moderating factor in psychotherapy of mental problems. Meanwhile, stress and anxiety are not separate structures. This problem is more represented in psychological literature. Although, stress seems to be related to external factors and is more conscious in comparison with anxiety, treatment methods of anxiety are mainly applied to stress reduction because of their similarity (Lazarus & Abramovitz, 2004). Our results are also consistent with the study of Biabangard (2002) in which, a three-group experimental design was used to decrease test anxiety. A part of results showed that MMT was effective in decreasing test anxiety.

Based on results of our study, stress of patients significantly decreased. It implied that patients were able to cope more effectively with life stressors during treatment and follow-up period and have positively evaluated and perceived stressors, which they experienced in their lives (particularly illness). In other words, patients who treated with MMT did not underestimate their coping skills facing stressors anymore or did not overestimate demands of the events and situations. Of course, we anticipated decreasing stress and changing in cognition system and perception, because MMT regards all theories about stress (for example, stimulation, response, and transactional) with mixing diverse techniques in seven interactional modality including behavior, affect, sensation, imagery, cognition, interpersonal relationship, and drug-biology (BASIC ID).

In addition, considering the vicious circle of anxiety and stress, one can find three levels for stress and anxiety (1) neuro-glandular (2) motor-muscle-visceral (3) cognitive-conscious level. When aroused in individual, anxiety involves the glands and neurons first. Then neural and glandular arousal involves motor-muscle-visceral system and if stress and anxiety continue, cognitive-conscious level will be involved. Evaluation of anxiety in this level is possible. In this level, emotional arousal has a feedback state. That is, when the neuro-glandular level is aroused, motor-muscle-visceral level also become activated because of integrative activity of sympathetic nervous system. This arousal causes increased arousal of neuro-glandular level and finally results in arousal in second level with a circular movement. Similarly, third level also is aroused. Therefore, anxiety and arousal level causes activation in neuro-glandular, motor-muscle-visceral and cognitive-conscious levels and then arousal of these levels caused to more involvement of stress and anxiety.

Therapists alter the movement of this circle in order to treat the anxiety and stress with chemical and pharmacological interventions (glands and neurons) in the first level, physical and behavioral interventions in the second level, and cognitive interventions in the third level. So regarding to this model, Lazarus MMT is one of the interventions that has a special status in the treatment of anxiety and stress (Jonbozorgi & Noori, 2003).

This study had some limitations. Patients' physical disabilities were not assessed by neurology experts. Because MS is one of the diseases with recurrence features, the illness result in some periodic physical limitations and final drop out from the study which may itself affect analyzing data.

Finally, it is recommended the whole MMT course (at least 50 sessions) can be administered for MS patients. It is also recommended that effectiveness of MMT should be compared with other approaches such as CBT. The effectiveness of MMT should also be studied on other chronic diseases such as hypertension.

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