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Original Article

Effectiveness of group metacognitive therapy in self-efficacy and defense styles in women with multiple sclerosis

Elahe Asgharkhah[1]; * Hossein Shareh[2]

[1]*MA. in clinical psychology, Islamic Azad University of Neyshabur, Neyshabur, Iran.*
[2]*Assistant professor of clinical psychology, Hakim Sabzevari University, Sabzevar, Iran.*

Abstract

Introduction: This study aims to investigate the effectiveness of group metacognitive therapy in self-efficacy and defense styles in women with multiple sclerosis (MS).

Materials and Methods: In this clinical trial (code: IRCT2015091624054N1), from among all the patients suffering from multiple sclerosis, who were referred to the MS Society in Khorasan Razavi in 2014, 30 women were selected through available sampling method and were randomly assigned to two groups: an experimental group and a control group. The experimental group received metacognitive therapy for eight weeks while the control group spent the routine process of the sessions held by the MS Society. For data collection, Sherer General Self-Efficacy Scale (GSE) and Defense Styles Questionnaire (DSQ) were administered in the pretest, posttest and follow-up test. Repeated-measures ANOVA with a significance level α of 0.05 were conducted for data analysis.

Results: The results showed that group metacognitive therapy led to a significantly higher level of self-efficacy (P<0.001) and use of mature defense mechanisms (P<0.001) compared to control group. The results maintained over one-month and three-month follow-ups.

Conclusion: It seems that group metacognitive therapy can improve self-efficacy and increase the use of mature defense mechanisms in women with multiple sclerosis.

Keywords: Defense style, Group therapy, Metacognition, Multiple sclerosis, Self-efficacy, Women

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Introduction

Multiple Sclerosis (MS) is a chronic disease and destructive to the central progressive nervous system, which affects sensory and motor functions (1,2)and leads to limitations in the physical, social and cognitive functioning of individuals(3). Around 2.5 million people worldwide suffer from this disease (3). This amount is on the rise, and it is referred to as the disease of the century. The cause of this disease is still unknown and it has no definitive treatment and prevention (4-6). Isfahan and Mashhad have the highest rate of Multiple Sclerosis in Iran (7). The age of onset is between 18-40 years (8), and the prevalence rate among women is nearly twice as higher as among men (9). The annual cost of

***Corresponding Author:**
Department of clinical psychology, Hakim Sabzevari University, Sabzevar, Iran
hsharreh@yahoo.com.au
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treatment in the U.S. is 2.5 billion dollars, and it has been estimated to be over 30 percent of the pharmaceutical budget of the Health Ministry in Iran (11). Over the past two decades, the rate of death as a result of this disease has increased by 25% in the U.S.A. (12). Studies have shown that people with M.S. suffer from high rates of mental health problems and depression (13) and experience a lower quality of life and greater anxiety (14,15).

Self-efficacy is accompanied by the quality of life and overall health in M.S. patients, and high self-efficacy leads to enhanced quality of life and overall health and reduces their pain, fatigue, depression, and stress (16). Self-efficacy includes the individual's belief in his own ability to apply the behaviors required for creating desired effects and effective performance in a range of stressful situations (17-19). Self-efficacy is recognized as an important concept in chronic disease management (20). The promotion of self-efficacy increases life expectancy and modifies health behaviors (21) and is associated with the control of symptoms, treatment of physical complications, and psychosocial issues of chronic patients (22). Self-efficacy makes the greatest overall impact on mental health through the mediation of metacognition (23).

According to the psychoanalysis approach, individuals use certain defense styles in the face of mental stress, each including special defense mechanisms. These styles are divided into three groups: 1) immature defense styles, 2) neurotic defense styles, and 3) mature defense styles (24). Defense styles facilitate the individual's confrontation with psychological changes and stressful environmental stimuli and lead to continued compatibility of people (25-28). Adaptive defense mechanisms and styles are related to physical and mental health consequences and maladaptive defense mechanisms and styles are associated with many negative health indicators such as personality disorders and depression (29-31). Mood disorders, especially depression, are further associated with immature defenses and anxiety disorders which are related to neurotic and immature defenses (32-34). Negative emotions are associated with immature and neurotic defenses. When emotional information is not properly received and not evaluated through cognitive processing, helplessness and vulnerability of the individual are predictable. This helplessness can, in turn, lead to impairment of cognition and emotions of the individual and can increase the possibility of using neurotic and immature mechanisms in stressful situations (35-37).

Recently, metacognition has been examined as the basis of many psychological problems and embraces the knowledge, processes, and strategies that assess monitor, and control cognitions (40-42). In the metacognitive approach, it is assumed that people with cognitive and emotional disorders are involved in extreme control over the relevant information, such as thoughts, physical states, temperament, and external threats. These processes prevent the attention to new information which may not approve the negative beliefs, resulting in disturbing the subsequent behaviors and maintaining distress (43). Psychological dysfunction is maintained by a cognitive-emotional management style called cognitive attentional syndrome (C.A.S.), which consists of maladaptive coping strategies like repetitive thinking, threat monitoring, suppression, and avoidance and causes the negative thoughts and emotions to continue (44). Cartwright-Hatton and Wells (45) revealed in a study that false metacognitions, especially negative beliefs about uncontrollability and danger, have the greatest correlation with a set of vulnerability-related measures.

Metacognitive therapy (MCT) is a new approach that has been widely welcomed in the world due to having regular structure, the limited number of therapy sessions, emphasis on the process of cognition instead of its content, designing special techniques such as detached mindfulness (D.M.) and attention training techniques (ATT) and providing specific models for each disorder and their experimental evaluation (43). This approach has been highly effective in understanding and treating disorders such as Generalized Anxiety Disorder (46), Post-traumatic Stress Disorder (46,47), Obsessive-Compulsive Disorder48,49)), Social Anxiety Disorder (50), and Depressive Disorder (51).

Given that self-efficacy makes the greatest overall impact on mental health through the mediation of metacognition (23) and is

recognized as an important concept in chronic disease management (20) and since defense mechanisms are associated with emotion regulation which is the main factor in metacognition theory and plays a crucial role in the health of people (25), it seems that self-efficacy and defense mechanisms are related to metacognition and the possibility to promote self-efficacy and defense styles provided by improving the metacognitions. M.S. is associated with emotional disorders like anxiety and depression (13-15). Metacognitive therapy has a great impact on emotional disorders such as depression and anxiety (46,51). Hence, it can be concluded that probably metacognitive therapy can affect the mental states of M.S. patients and lead to increased self-efficacy and patients' use of mature defense styles and prevent M.S. exacerbation. Based on the foregoing, the present study was conducted to investigate the effect of group metacognitive therapy on the self-efficacy and defense styles of females with multiple .clerosis

Materials and Methods

This study has been conducted with the approval of the research deputy of Neyshabour Islamic Azad University and has been registered on the Iranian clinical trial website with the code IRCT2015091624054N1. The present research is a clinical trial that was carried out using a pretest-posttest design with a control group together with a two-step follow-up with an interval of one month and three months after the completion of therapy sessions. In this project which lasted from October to March 2014, after making necessary coordination with the authorities of the M.S. Society in Khorasan Razavi and obtaining permission to do the research, all the patients referred to the M.S. Society of Khorasan Razavi who were interested in participating in the study were enrolled for one month and were given demographic and medical records questionnaires. Then, of the enrollees (54 individuals), 30 women with M.S. were selected through the convenient sampling method based on demographic data, medical records, and inclusion and exclusion criteria and were randomly assigned into two experimental (metacognitive therapy) and control groups. The inclusion criteria consisted of (1) final diagnosis of M.S. development by a neurologist, (2) signing a written consent form for participation in the research, (3) having at least a diploma, and (4) obtaining a score between 1 and 4 in EDSS (Expanded Disability Status Scale) based on the neurologist's opinion. The exclusion criteria consisted of (1) receiving psychological treatments at least one month before entering the study, (2) having a history of metabolic diseases such as thyroid, and (3) the absence of more than two metacognitive therapy sessions. Of 54 registered patients, some were excluded from the study: 7 subjects due to EDSS scores of greater than 5, 8 subjects because of education below the standard of a diploma degree, 5 subjects due to absence of more than two sessions, and 4 subjects because of receiving psychological treatments before starting the interventions. Finally, 30 people remained in the sample. The subjects were told that they could leave the study whenever they wanted while they were assured about the confidentiality of their personal information.

Research instrument

A) Expanded Disability Status Scale (EDSS): EDSS was developed by Kurtzke in 1961, which is used as an indicator to assess the severity of disability in M.S. patients. This questionnaire measures different states and functions of the central nervous system in eight functioning systems of the body (pyramidal, cerebellar, brainstem, sensory, bowel, bladder, visual and cerebral). On this scale which is scored by a neurologist, patients receive scores from 0 to 10 (depending on the amount of damage to the central nervous system). A score of 0 indicates normality, and a score of 10 represents MS-induced death. The greater the damage, the higher the obtained score will be. Scores 1 to 4.5 show M.S. people with normal walking, and scores 5 to 9.5 represent M.S. patients with walking difficulty (52). The internal consistency is between 0.32 and 0.76 for EDSS and between 0.23 and 0.58 for functioning systems of the individual, and inter-rater repeatability (I.C.C. [1]) was equal to 0.78, and intra-rater repeatability was reported to be between 0.62 and 0.94 (53). In the study by Nunnally, Cronbach's alpha coefficient was obtained to be 0.70, and the repeatability result was 0.70 in group comparison and 0.90 to 0.95 in individual comparison (54). In Iran, Farahani, Azimian, Fallahpour, and

Karimlou (55) obtained Cronbach's alpha coefficient to be 0.96. In their study, the I.C.C. coefficient to examine the relative repeatability of the Persian version in testing times was estimated to be 0.93.

B) Sherer General Self-Efficacy Scale: This scale has been developed by Sherer and Maddux (56) and includes 23 items. Of these 23 items, 17 are related to general self-efficacy, and 6 are associated with self-efficacy experiences in social situations. In this research, a 17-item general self-efficacy questionnaire is used which is scored on a 5-point Likert scale (strongly disagree= 1 to strongly agree= 5). Items 3, 8, 9, 13, and 19 are inversely scored, and higher scores suggest greater self-efficacy (57). In 1982, Sherer and Maddux reported Cronbach's alpha to be 0.86 and assessed the construct validity of the self-efficacy scale. They used its correlation with Rotter Internal-External Locus of Control Scale -) Personal Control Subscale by Gurin, Lao, ,(0.287 and Beattie (-0.355), Marlow-Crowne Social Desirability Scale (0.431), Barron Ego Strength Scale Esteem -and Rosenberg Self (0.290) Scale (0.451) (56). In general, based on the investigations conducted, there is an average negative correlation between self-efficacy scores with the internal-external locus of control scale and personal control subscale and an average positive correlation between self-efficacy scores with social desirability, ego strength, and self-esteem scales (56,58).

In assessing the construct validity of this test, Barati obtained its correlation with Rosenberg's self-esteem scale to be 0.61. He reported the Cronbach's alpha of self-efficacy test to be 0.80 in students. Further, he obtained the reliability coefficient of this scale to be 0.76 through the Spearman-Brown method and the Guttman split-half method (57).

C) Defense Styles Questionnaire (DSQ): This scale was developed by Andrews, Singh, and Bond (59) and consisted of 40 items, which evaluates 20 defense mechanisms based on three mature, neurotic and immature defense styles on a 9-point Likert scale (from strongly agree to strongly disagree). The individual's mean score is calculated in these three defense styles and the highest mean indicates the individual's defense style. Defense styles and mechanisms assessed by DSQ are as follows: Mature defense styles, including defense mechanisms of sublimation, humor, anticipation, and suppression; neurotic defense styles, including defense mechanisms of undoing, pseudo-altruism, idealization, and reaction formation and immature defense styles, including defense mechanisms of projection, passive-aggressive behavior, acting-out, isolation, devaluation, autistic fantasy, denial, displacement, dissociation, splitting, rationalization, and somatization. In 1993, Andrews et al. reported the correlation between the two stages of the test run to be between 0.46 and 0.86 and estimated Cronbach's alpha coefficients of 0.68, 0.58, and 0.80, respectively, for mature, neurotic, and immature defense styles. The psychometric properties of the Persian version of the defense styles questionnaire have been investigated and approved in several studies. Cronbach's alpha coefficients for mature, immature, and neurotic defense styles were respectively between 0.83 and 0.94, 0.81 and 0.92, and 0.79 and 091. Test-retest reliability coefficients of the defense styles questionnaire were obtained for patient samples (n=107) and normal samples (n=248) in two stages with an interval of 2 to 6 weeks, which are as follows: 0.73 to 0.87 for the immature style, 0.71 to 0.84 for the mature style and 0.69 to 0.78 for the neurotic style. Convergent validity and discriminant (divergent) validity of the Persian version of the defense styles questionnaire were obtained and approved regarding different samples from two patient and normal groups through concurrent implementation of the Mental Health Inventory, Interpersonal Problems Scale, neuroticism, and extraversion subscales of N.E.O. Personality Inventory-Revised, Self-Esteem Rating Scale, Self-Efficacy Scale, Toronto Alexithymia Scale and Positive and Negative Affect Schedule (56). Below are the correlation coefficients of mature defense style: with psychological well-being 0.51, psychological distress -0.42, interpersonal problems -0.37, neuroticism -0.48, extraversion 0.50, self-esteem 0.44, overall self-efficacy 0.45, alexithymia 0.47, positive affect 0.42 and negative affect -0.43. Correlation coefficients of immature defense style are as follows: with psychological well-being 0.49, psychological distress 0.46, interpersonal problems 0.41, neuroticism 0.38, extraversion 0.47, self-esteem 0.41, overall self-efficacy 0.48, alexithymia 0.45, positive affect -0.39 and

negative affect 0.40. Additionally, correlation coefficients of neurotic defense style include the following: with psychological well-being 0.38, psychological distress 0.36, interpersonal problems 0.35, neuroticism 0.42, extraversion 0.37, self-esteem 0.40, overall self-efficacy 0.33, alexithymia 0.38, positive affect 0.38 and negative affect 0.48. Results of confirmatory factor analysis also approved the construct validity of the Persian version of the defense styles questionnaire by determining three factors of mature, neurotic, and immature defense styles (60). The method of implementing the study was as follows: First, both experimental and control groups took a pretest. Then, group metacognitive therapy was administered in the experimental group based on Wells's general metacognitive step-by-step therapy model, and the summary of sessions has been provided in Table 1. In this study, patients stayed in contact with the therapist by telephone during the interval between the sessions and while doing home assignments, and the therapist guided them. According to the research procedures, no intervention in the field of metacognitive therapy was conducted on the control group until the second follow-up. Just to observe the ethical principles, the subjects of the control group were told that they would be placed on a waiting list to receive treatment for about 6 months. It should be noted that all the assessments were made by an independent appraiser who was not involved in the treatment of patients, and an attempt was made that the subjects of both groups remain unaware of the fact that they were being compared with each other. The participants of the two groups were tested in four stages (pretest, post-test, and one-month and three-month follow-ups) and the results of the tests were analyzed through the analysis of variance with repeated measures using SPSS-22.

Table 1. Summary of group metacognitive therapy sessions

First session	Implementation of pretest, organization of the group and basic familiarity of members with each other and the leader, patients' initial assessment, understanding the principles and rules of the group, familiarity with MS, explaining the role of psychological factors in MS development and progression
Second session	Introduction of the metacognitive models and preparations for the treatment, formulation of the case, suppression test, training and practicing attention training techniques (ATT), completing the paper including the summary of attention training techniques
Third session	ATT training, introducing and practicing detached mindfulness (DM)
Fourth session	Practicing ATT, DM and stating metaphors from detached mindfulness, introducing the postponement of rumination and worry as a test for changing the belief in uncontrollability
Fifth session	Practicing ATT and DM, examining and challenging the negative beliefs about the uncontrollability of rumination and worry, changing threat-monitoring and evaluating the level of activity and presenting recommendations for its improvement (reviewing and forbidding other maladaptive coping methods such as oversleeping and overeating)
Sixth session	Practicing ATT and DM, challenge with positive beliefs about rumination and worry, postponement of rumination, behavioral test to challenge the risk-related beliefs (like a test for increasing and decreasing the level of worry), emphasis on reversing any remaining non-adaptive strategies, home assignments (ATT practicing, expanding DM application, postponing rumination and worry, reversing avoidance of worry behaviors, loss of control test)
Seventh session	Practicing ATT and DM, working on the development of final treatment program for relapse prevention including identifying the factors triggering the symptoms and encouraging the members to replace the old program by the new one
Eighth session	Investigating the challenges of the treatment program (relapse prevention), predicting the future stimulators, strengthening the alternative program, implementation of the posttest

Results

The age of the participants was between 30 and 40 years, with a mean of 34.71 and a standard deviation of 7.92. The sample included married subjects with an education level of diploma and above. Mean and standard deviation and percentage of changes in self-efficacy and defense styles scores of both groups have been provided in Table 2, which show that this deviation in the experimental group has considerably changed in the post-test and follow-ups compared to the pretest while the means of the control group have not significantly changed in the four stages (Table 2).

Table 2. Mean and SD of self-efficacy and defense styles

Variable	Group	Pretest		Posttest	First follow-up	Second follow-up	Percentage of changes
		Mean (SD)	T statistic (Sig.)	Mean (SD)	Mean (SD)	Mean (SD)	
Self-efficacy	Experimental	46.3 (6.23)	0.453	70.3 (5.24)	65.7 (6.14)	64.0 (5.57)	44%
	Control	47.8 (10.15)	(0.807)	49.0 (9.15)	49.1 (9.25)	49.1 (9.23)	3%
Immature defense style	Experimental	11.0 (1.46)	2.422	8.9 (1.62)	8.6 (1.22)	8.6 (1.21)	-20%
	Control	9.5 (1.59)	(0.024)	10.1 (1.49)	10.1 (1.49)	10.1 (1.48)	7%
Mature defense style	Experimental	10.4 (1.44)	1.367	13.3 (1.05)	13.5 (1.09)	13.4 (1.16)	29%
	Control	8.9 (3.52)	(0.192)	9.3 (2.85)	9.2 (2.81)	9.3 (2.88)	5%
Neurotic defense style	Experimental	11.3 (3.14)	0.807	9.3 (2.64)	8.7 (1.85)	8.8 (1.81)	-21%
	Control	10.3 (2.65)	(0.428)	10.7 (2.39)	10.8 (2.40)	10.8 (2.44)	4%

Results of independent t test to investigate the mean difference of the two groups in terms of the variables under study before the treatment revealed that the experimental and control groups do not show significant difference in the studied variables (Table 2).

Examining the results of Kolmogorov-Smirnov test for self-efficacy and defense styles in the two groups in each testing stage suggested that the data related to self-efficacy and defense styles follows normal distribution (Table 3). Besides, by examining the Levene's test for the equality of error variances, the assumption of the equality of variances was observed and error variances of the dependent variables were equal in all groups (P>0.05). Investigating the results of M-Box's test of equality of covariance matrices also indicated that the assumption of homogeneity of variance-covariance matrix is established and observed covariance matrices of the dependent variables are equal in all groups (Table 4). Therefore, the assumptions of using the analysis of variance with repeated measures have been observed.

Table 3. Results of Kolmogorov-Smirnov test

Variable	Group	Z statistic (significance level)			
		Pretest	Posttest	First follow-up	Second follow-up
Self-efficacy	Experimental	0.649 (0.794)	0.980 (0.293)	0.966 (0.308)	0.577 (0.893)
	Control	0.510 (0.957)	0.573 (0.898)	0.559 (0.913)	0.560 (0.913)
Immature defense style	Experimental	0.795 (0.553)	0.693 (0.723)	0.681 (0.742)	0.948 (0.330)
	Control	0.409 (0.996)	0.449 (0.988)	0.522 (0.948)	0.449 (0.988)
Mature defense style	Experimental	0.690 (0.727)	0.472 (0.979)	0.614 (0.845)	0.681 (0.743)
	Control	0.570 (0.901)	0.587 (0.881)	0.574 (0.897)	0.597 (0.869)
Neurotic defense style	Experimental	0.849 (0.466)	0.516 (0.953)	0.763 (0.605)	0.831 (0.494)
	Control	0.653 (0.787)	0.575 (0.895)	0.563 (0.909)	0.559 (0.914)

Table 4. Results of M-Box test to establish the assumption of homogeneity of variance-covariance matrix

		Self-efficacy	Immature defense style	Mature defense style	Neurotic defense style
Equality of covariance matrix	M-Box	82.880	76.077	39.969	85.605
	F statistic	6.701	6.088	3.198	6.850
	Significance	0.001	0.001	0.001	0.001

Results of Mauchly's sphericity test in connection with self-efficacy (P<0.001) and mature defense style (P<0.001) reject the establishment of the condition of sphericity as multivariate statistics do not require the observance of sphericity and thus, with no assumption of sphericity, modification of Greenhouse-Geisser test was used to carry out ANOVA test with repeated measures for examining the interactive effects of time (repeating the measures in the form of pretest, posttest and follow-up tests) and groups under study (experimental and control). Results of this test (Table 5) confirm the existence of a statistically significant difference between the four measures concerning all the variables (P<0.001); that is, there is significant difference at least between the mean of two of the implementations. Moreover, a significant interaction was observed between factor scores (pretest, posttest and follow-up tests) and groups in self-efficacy and mature defense style (P<0.001); that is, there is significant difference between the mean of the groups at least in one of the four repeated measures. These results indicate that group metacognitive therapy is effective in enhancing self-efficacy and using mature defense style. Statistical powers in Table 4 suggest significant accuracy in these causal relationships.

Table 5. Results of the analysis of variance with repeated measures

Variable	Test	Source of changes	Sum of squares	Degrees of freedom	Mean Square	F statistic	Significance level	Effect size	Test power
Self-efficacy	Between subjects	Group	4124.1	1, 23	4124.1	17.896	0.001	0.44	0.98
	Within subjects	Factor	2306.7	1.3, 29.6	1790,6	111.250	0.001	0.83	1.00
		Factor & group	1854.3	1.3	1439.5	89.433	0.001	0.79	1.00
Immature defense style	Between subjects	Group	10.9	1, 22	10.9	1.394	0.250	0.06	0.20
	Within subjects	Factor	11.5	1.8, 39.6	6.4	18.589	0.001	0.46	1.00
		Factor & group	38.3	1.8	21.3	61.792	0.001	0.74	1.00
Mature defense style	Between subjects	Group	288.8	1, 22	288.8	14.546	0.001	0.40	0.95
	Within subjects	Factor	53.5	1.4, 30.7	38.3	39.116	0.001	0.64	1.00
		Factor & group	31.3	1.4	22.4	22.869	0.001	0.51	1.00
Neurotic defense style	Between subjects	Group	30.4	1, 22	30.4	1.415	0.247	0.06	0.21
	Within subjects	Factor	18.4	1.5, 32.4	12.5	7.202	0.005	0.25	0.84
		Factor & group	36.0	1.5	24.5	14.115	0.001	0.39	0.99

Results of paired comparisons (mean difference of the two experimental and control groups) through Post hoc Bonferroni test of the research groups demonstrated that there is significant difference between the subjects of both groups in terms of self-efficacy and defense styles (P<0.001). Further, pairwise study of the mean difference of the three stages of posttest and one-month and three-month follow-up tests compared to the pretest in the experimental group revealed that a significant difference exists between each of the three stages and the pretest in the experimental group (P<0.001) and the greatest

amount is respectively in the posttest, one-month follow-up and three-month follow-up (P<0.001).

Figures 1 to 4 display the process of changes in defense styles and self-efficacy scores in both groups.

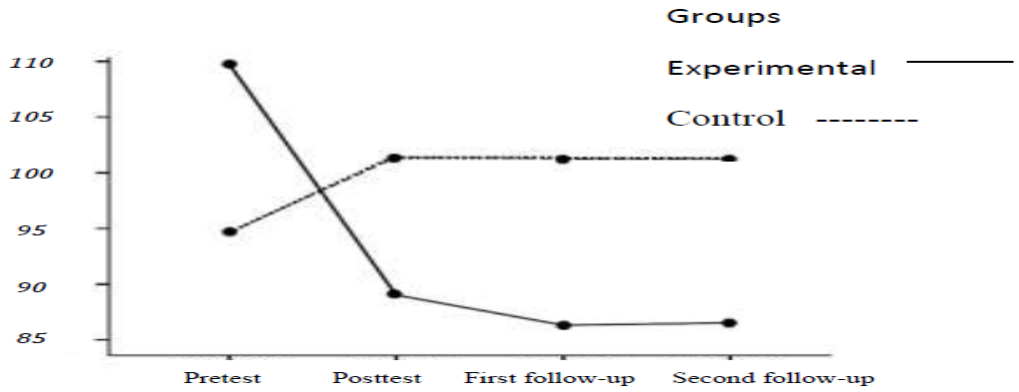

Figure 1. Mean of immature defense style scores in the experimental and control groups

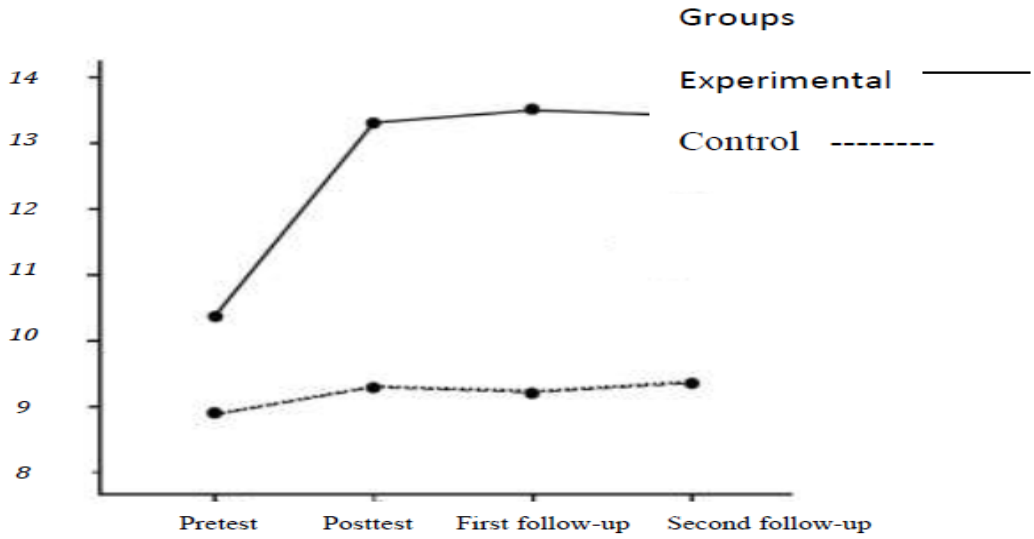

Figure 2. Mean of mature defense style scores in the experimental and control groups

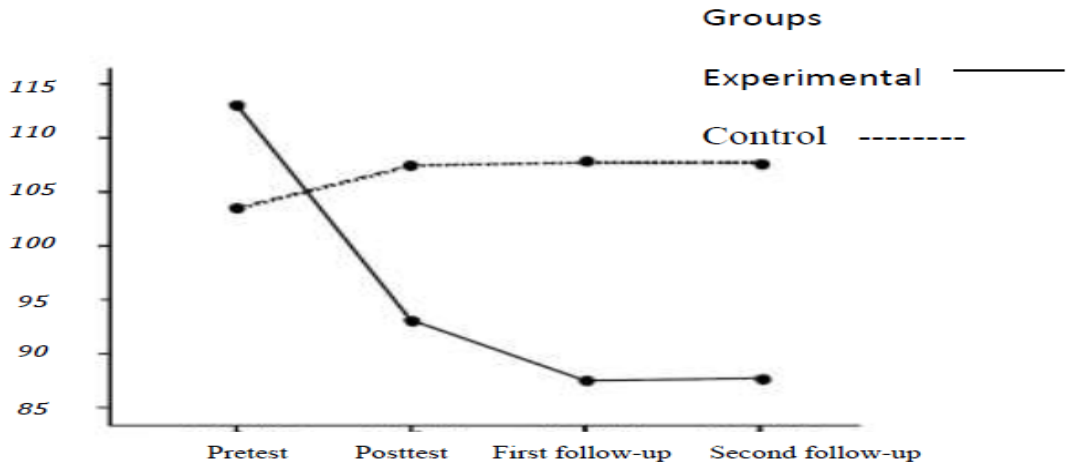

Figure 3. Mean of neurotic defense style scores in the experimental and control groups

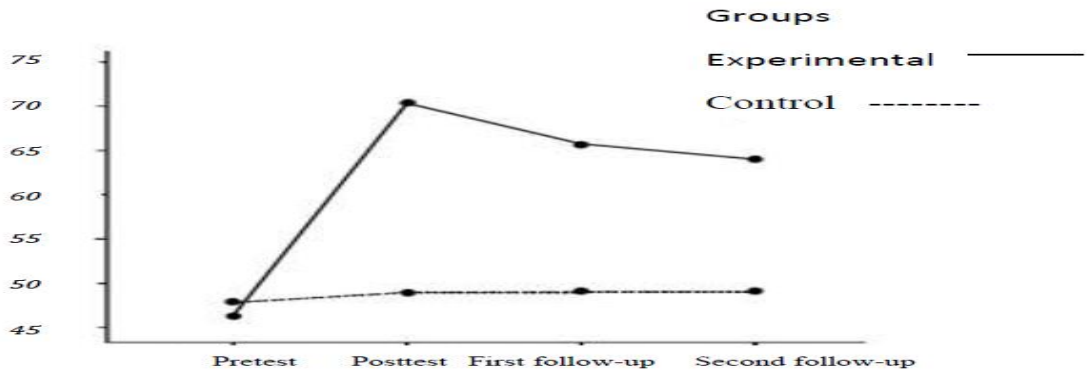

Figure 4. Mean of self-efficacy scores in the experimental and control groups

Discussion

The present study was conducted with the aim of investigating the effectiveness of group metacognitive therapy in the self-efficacy and defense styles of women with multiple sclerosis. The obtained results indicated that group metacognitive therapy leads to enhanced self-efficacy in M.S. women. These results are relatively consistent with the findings obtained by Veenman and Vanhoutte (61), Wells (62), Maleki (63), Cole (64), Ghobari and Adamzadeh (65) and Pourheydari (66) stating that training cognitive and metacognitive strategies can improve self-efficacy of individuals. Additionally, studies by Frei, Svarin, Steurer-Stey and Puhan (20) and Lorig and Holman also revealed that the promotion of self-efficacy in chronic diseases increases life expectancy and moderates health behaviors and leads to the control of symptoms, treatment of physical issues, and improvement of psychosocial effects of chronic patients. By improving metacognition, metacognitive therapy helps the patients better go through a thought process in the face of problems based on information processing and with decentralization from the problem and its consequences towards attention to oneself. This, in turn, leads to the individual's more favorable behavior and prevention of subsequent injuries. In other words, changes in the individual's thought process help him be alert to available useful resources, and awareness of useful resources probably increases optimism and, finally, self-efficacy in the person. Besides, metacognitive therapy and improvement of metacognitions direct the individual's thinking in the face of problems and problem-solving (67), which can result in the improvement of self-efficacy. Since the results of treatment were also sustained in the follow-ups, it can probably be said that metacognitive therapy helps the patients form a new relationship with their thoughts and enables them to modify the metacognitions that increase the maladaptive style of repetitive negative thoughts. Moreover, during the sessions, some methods were taught to the patients, who can use them when necessary in the future in order to cope with worries, and this is another reason for the sustainability of treatment results after follow-up (68). It can be concluded from the findings of this research that the new metacognitive therapy can be an effective treatment to prevent the escalation and possibly incidence of psychosomatic diseases like M.S. due to facilitating the change in beliefs and thoughts and preventing the individual from being involved in the content of thought.

Furthermore, the results of this study suggested that metacognitive therapy can increase the use of mature defense style in M.S. patients. Herzog et al. (69), Vaillant (70), and Cramer (71) believe that although defenses are stable and resistant to change, it is expected that they undergo changes in the situations like treatment. Numerous studies, including Hersoug et al. (69), Vaillant (70), and Offer et al. (72), have investigated the relationship between defense styles and mental health, and in some other studies, such as the research conducted by Bond and Perry (28), the impact of dynamic psychotherapy on defense mechanisms in mental disorders has been examined; but no research has been conducted so far about the effects of metacognitive therapy on defense styles of physical patients especially

M.S. people and the present study is the only one in this regard. Multiple studies have shown that people with chronic diseases experience great tension as soon as their illness is diagnosed, and on the other hand, the use of immature and neurotic defense mechanisms makes the treatment process more difficult since the individual's ability for general adaptation is reduced and this negatively affects the immune system of the patient's body and their ability to improve physically. Given that ego defenses, as psychological mechanisms, have been conceptualized to manage debilitating emotions (35), in explaining the results of this study, it can be mentioned that the inability to regulate and manage emotions causes individuals to use immature defense styles in the face of their problems. Hence, when emotional information is properly perceived and evaluated in the cognitive processing, the organization of the individual's emotions and cognitions will have optimum performance and consequently, the likelihood of using mature defense mechanisms in stressful situations will increase. The use of mature defense mechanisms, in turn, raises the capacity for the individual's emotional management (73). In this way, people create immunity for themselves against physical and mental disorders by not suppressing and extremely disinhibiting emotions, logically dealing with tensions, and properly responding to emotions (74). Implementation of this study on a small sample of M.S. women in Mashhad can limit the generalizability of the results to all M.S. patients. Further, lack of examination of emotional disorders before starting the treatment and separation of patients based on the disorder type were other limitations of the study. It is recommended that future research be conducted on a larger number of patients, including men and women and in different cities, whose findings are generalizable to other patients. In this way, the best treatment to reduce the complications of this disease is identified by comparing metacognitive therapy with other psychological treatments. Besides, it is recommended that in a study, emotional disorders in M.S. patients be initially evaluated, and then patients are placed in treatment groups with regard to the disorder type. In addition, a study on the effectiveness of group metacognitive therapy in other physical and psychosomatic illnesses can approve and expand the results of the present research.

Conclusion

The findings of this study demonstrated that group metacognitive therapy leads to improved self-efficacy and defense styles -against stress causing factors in M.S. women. It seems that by efficacy, and -changing the metacognitions, self even defense styles canbe improved, and in this way, we can contribute to mental health, especially in chronic patient populations, including MS. Easy training, no need for special equipment, an easy implementation by patients, short-term treatment, clarity and simplicity of techniques, simple assignments between sessions, enabling the clients to withdraw from the treatment and also performing the treatment on a group basis were among the factors that led to the client's cooperation and significant effectiveness of this therapy in changing the mental status and maintaining the results in the follow-ups.

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