The Severity of Somatic, Anxiety and Depression Symptoms in MS Patients: the Role Predictive of Emotion Regulation Strategies

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Abstract: MS patients suffer from many psychological problems. The purpose of this study was to examine the severity of somatic, anxiety and depression symptoms and the role of emotion regulation strategies on predicting it in MS patients. In this research, 42 MS patients were availability selected in Nahavand and Malayer cities. The method research was correlation. The Cognitive Emotion Regulation Questionnaire (Garnefski et al, 2002) and Psychological Signs Scale (Dura et al, 2007) used for data collection. The Pierson correlation coefficient and multivariate regression was used for analyzing the data. Results showed that 42.8% of MS patient had summarization symptoms, 35.7% depression symptoms and 28.5% anxiety symptoms. Results of correlation indicated that there was meaningful correlation between positive refocusing, positive reappraisal, other-blame, self-blame, rumination, catastrophizing and acceptance and psychological signs. According to regression results, emotion regulations strategies explain approximately 69% the variance of psychological signs in MS patients, and the rumination, self-blame and acceptance have been respectively predicted the psychological signs in MS patients. The results supported the severity of psychological symptoms and meaningful relationship of emotional regulation strategies with those symptoms among MS patients and attending to the role of trainings based emotion regulation in reducing the psychological symptoms of MS patients is specially importance for therapists and researchers of health psychology.
Keywords: emotion regulation, somatic symptoms, anxiety, depression, MS patients

Introduction

MS (Multiple Sclerosis) is a type of progressive neurological disease that causes degeneration of central nervous system and axonal degeneration. Symptoms related to nerve tissues damage in MS include vision problems, loss of balance, changes in emotions, movement disorders, bladder and bowel problems, depression and cognitive impairment (Miller et al, 2012). MS disease course varies, its prognosis is unknown (Strobe & Arnett, 2005) its etiology is unknown, and its treatment under current conditions is considered is a great challenge. The disease is more common in women compared to that in men and age of its onset is early to mid-adulthood (Rao et al, 1992). MS patients are suffering from negative and unpredictable trend and of, change of relations beyond the initial symptoms (neurological lesions that have been formed by direct impact the central nervous system changes) to secondary outcomes of disease such as depression (Sadovnick et al, 1996), fatigue (Bergamaschi et al, 1997) and sleep disorders (Lobentanz et al, 2004). According to these studies, wide range of neuro-psychiatric symptoms including cognitive, mood and anxiety symptoms are seen. MS disease is associated with anxiety symptoms and disorders (Janssens et al, 2004) and according to Philipopolos report (cited by Lishman, 1998), 45% of MS patients reported hysterical, anxiety, or obsessive-compulsive symptoms.

Depression is the greatest psychiatric diagnosis in patients with MS (Solari et al, 2004). Depression risk taking during the life in MS people has been reported from 40 to 60% (Sadovnick et al, 1996). In addition, the 12-month prevalence of depression in MS patients was higher than 25.7 percent (Patten et al, 2003). Depression has been reported in 26.2 percent of women with MS while it has been reported in 10.4 percent of women without MS (Dahl et al, 2009). It has been shown that depression was higher in MS patients than people without MS (Kang et al, 2010). According to the results of a study, depression has been reported 31.1% among men affected with MS, while 29.7 percent of women with MS and 17.4% of non-MS women reported anxiety (Dahl et al, 2009). In Iran, it has been shown that the prevalence of anxiety disorders in patients with MS was 22.4 (Shabani et al., 2007). Emotion regulation strategies are among the variables that can be associated with psychological and somatic symptoms of MS patients. Emotion regulation refers to the ability to understand emotions and adjusting the experience and expression of emotions (Feldman-Barrett et al, 2001). In other words, emotion regulation has been defined as internal and external processes responsible for controlling, evaluating, and modifying emotional reactions of the person in realizing his goals (Thompson, 1994). Adaptive emotion regulation is associated with self-esteem and positive social interaction and an increase in frequency of positive emotional experience leads to effective meditation with stressful situations (Gross, 2002) and it even increases necessary activities in response to social situations (Tugade & Frederickson, 2002). Research shows that some emotion regulation strategies have a positive impact on psychological well-being (Nykliček et al, 2011). Cognitive reevaluation as a positive emotion regulation strategy is positively associated with positive affection and psychological well-being, leading to increased interpersonal performance and positive mood of people (Gross and John, 2003) and reducing the negative affection (Butler et al, 2004; Ochsner et al, 2004). In addition, it has been shown that cognitive regulation of emotion has an important role in predicting membership of people in anxious and depressed people (Amani, Shiri, Valipoor, Shiri 2013). In another study, the significant relationship between emotion regulation strategies and shyness and social anxiety was approved (Mirzaee, Abdullah and Shahgholian, 2013). Related research shows that greatly use of strategy cognitive reevaluation as one of emotion regulation strategies has predicted quality of life and reduced disease severity in MS patients. MS patients have difficulty in understanding emotions and have less control over their emotional perception ((Phillips et al, 2009)). It has been shown that there is positive relationship between perceived social support and positive emotion regulation strategies, including positive refocusing and positive reevaluation. It also has a negative relationship with negative emotion regulation strategies such as self-blame, blame others in MS patients (Ghorbani et al, 2012). MS People are suffering from many physical and psychological problems that studying these psychological issues related to these problems is very important, and research in this area attracts the attention of researchers to this disease and confrontation with its psychological symptoms. As in domestic and foreign research, the relationship between emotion regulation has been limited with psychological symptoms of MS patients, conducting this research is very, causing enhanced science and in practical terms it highlights the need to pay attention to psychological problems of people with MS. Emotion regulation is of one of the variables playing an important role in psychological symptoms of people.Therefore, finding the relationship of this variable with psychological symptoms (somatization, depression and anxiety) in patients with MS can identify predictive variables of their psychological symptoms to health psychologists and consultants who are working in the fields of psychological treatment. Therefore, the main objective of this study was to investigate the relationship between emotion regulation strategies with somatic symptoms, anxiety and depression symptoms in patients with MS. The main question is "if there is a relationship between emotion regulation strategies and somatic, anxiety, and depression symptoms in MS people.

Methodology

Methodology of this study is the correlational because the main purpose of this study was to investigate the relationship between emotion regulation strategies and somatic, anxiety and depression symptoms in MS patients. According to this objective, emotion regulation strategies were considered as predictive variable and somatic, anxiety and depression symptoms were considered as the criterion variable. The population of study included all patients of Nahavand and Malayer that were almost 45 people (N=45). The sample of this study included all patients with MS. All of these patients were invited through a phone call to the hospital that had

admitted previously or had file and they participated in the study. As two people did not answer phone calls and one person refused to participate in research due to lack of consent, the final sample was reduced to 42 people.

Data collection tools: To collect data in this research, the following tools were used:

(A) Cognitive emotion regulation questionnaire: this questionnaire was developed in 2002. It has 36 items, seven of which include positive refocusing / planning, positive evaluation, blaming others, self-blame, rumination, catastrophizing, and acceptance (Garnefski et al, 2002). The response to its items is based on five-point Likert scale from always (5) to never (1). Score of the person in this questionnaire is from 36 to 180. Cronbach's alpha coefficient of the questionnaire has been calculated 0.71 to 0.81 by Garnofsky et al (2002) and test-retest reliability ranged from 0.48 to 61 percent. Samani and Sadeghi (2010) have obtained validity and reliability of this questionnaire in Iran. They reported its sub-scales alpha coefficient 0.75 to 0.88.

(B) Short-form of psychological symptom Questionnaire: the short form of psychological symptoms questionnaire have been developed using confirmatory factor analysis (Dura et al, 2006). Short-form of psychological symptom questionnaire with 18 items is the last and shortest questionnaires to assess psychological distresses. This questionnaire has 18 items measuring three factors of somatization, depression and anxiety. Items of this questionnaire are answered on 5-point Likert scale (never, low, moderate, high and very high) by each individual (Dura et al, 2006). The questionnaire also gives a total score that is highly correlated with its previous version (r =0.90).

Range of scores for each scale is from 0 to 24 and the total score of scale is between 0 and 72. Cronbach's alpha coefficient of the questionnaire was reported to be 0.89 and correlation coefficient between its long and short form was reported to be 0.82 (Dora et al., 2006). Modanloo (1388) in a preliminary study on 40 respondents among the bereaved women obtained Cronbach's alpha coefficient and split-half reliability of the scale 0.88 and 0.80, respectively. In this study, Cronbach's alpha coefficient of the whole scale was obtained 0.82. The procedure of study: After approving of this study, researchers referred to Malayer Nahavand Hospitals after obtaining the letter from Islamic Azad University of Hamedan. After determining the patients affected with MS, they were invited to hospital where they had file or they had referred to it already. Before implementing the questionnaires, the questionnaire related to their full consent to participate in the study was completed by them. One of them had not consent and questionnaire was not provided for him. Other patients completed the research questionnaires during 30 minutes to 45 minutes. Finally, data were analyzed by Spss-20 software using Pearson correlation and regression coefficient.

Findings

Descriptive results showed that 69.0 percent of MS patients were female and 31.0 of them were male. Additionally, 42.5 percent of them had education level lower than high school diploma, 40.5 percent of them has high school diploma, 11.5 percent of them had associate degree, 2.4 percent of them had BA degree, and 2.4 percent of them did not reported their educational degree. 40.5 percent of patients reported their economic status poor, 38.5 of them moderate, 19.0 percent of them good, and 2.4 percent of them excellent. The mean age of patients with MS in the study was equal to 38/9 ± 9/43 and the mean of duration affected with this disease was 6.93±5.41. In this study, for evaluation of somatic, depression and anxiety symptoms severity, scores 2 SD above the mean were used, because in the questionnaire of Dora et al (Dura et al, 200) shear point was not considered for this scale. Since mean of somatic symptoms scores was 16.90 ± 2.17, the severity of symptoms was considered higher than 21/24 for somatic symptoms, the mean of depression was 14/23 ± 2/82 and severity of depressive symptoms in this study scores higher than 19.87 were considered. Additionally, as mean of anxiety was 12.24 ± 2.64, scores higher than 17.52 were evaluated as anxiety symptoms severity. The results showed that 42.8 percent of MS patients have somatic symptoms severity, 35.7 percent of them have depression symptoms severity, and 28.5 of them have anxiety symptoms severity (Table 1). Table 2 shows the mean and standard deviation of variables of study.

Table 1- Frequency distribution of somatic, depression and anxiety symptoms in patients with MS

Group	Frequency	Percentage
With somatic symptoms severity (scores higher than 21.24)	18	42/8
Without somatic symptoms severity (scores lower than 21.24)	24	57/2
With depression symptoms severity (scores higher than 19.87)	15	35/7
Without depression symptoms severity (scores lower than 19.87)	27	64/3
With anxiety symptoms severity (scores higher than 17.52)	12	28/5
Without anxiety symptoms severity (scores lower than 17.52)		71/5
	30	

Table 2- The mean and standard deviation of age, disease duration, emotion regulation strategies and psychological symptoms in patients with MS

	Variable	Mean	SD
emotion regulation strategies	Positive refocusing/planning	22/95	10/04
	Positive evaluation, larger vision	14/07	4/88
	Blame others	6/785	3/68
	Self-blame	7/24	3/47
	Rumination	14/19	3/34
	Catastrophizing	8/90	3/45
	Acceptance	12/095	3/93
psychological symptoms	Somatic symptoms	16/90	2/18
	Depression	14/23	2/82
	Anxiety	12/24	2/64
	Total	41/38	7/35

Table 3 shows that there is negative correlation between positive refocusing / planning, positive evaluation / larger vision, and acceptance and psychological symptoms (total) and somatic symptoms. There is also positive relationship between blame others, self-blame, rumination and catastrophizing and psychological symptoms (total). There is a significant positive relationship between positive refocusing / planning, blame others and acceptance and depression, and there is positive and significant relationship between self-blame, rumination and catastrophizing and depression. In addition, there is negative relationship between positive refocusing / planning, positive evaluation / larger vision and acceptance with anxiety, and there is significant positive relationship between blame others, rumination, and catastrophizing and anxiety. However, no significant correlation was found between blame others and somatic symptoms, between positive evaluation / larger vision and depression, and between self-blame and anxiety.

Table 3 summarizes the findings of Pearson correlation to investigate the relationship between emotion regulation strategies and psychological symptoms in patients with MS

				Criterion variable
Predictive variable	psychological symptoms	Somatic symptoms	Depression symptoms	Anxiety symptoms

	Correlation	p	Correlation	p	Correlation	p	Correlation	p
Positive refocusing/planning	-0/527	0/001	-0/58	0/001	-0/304	0/05	-0/58	0/001
Positive evaluation, larger vision	-0/452	0/001	-0/49	0/001	-0/263	0/09	-0/427	0/005
Blame others	0/396	0/01	0/204	0/196	0/455	0/002	0/35	0/023
Self-blame	0/437	0/004	0/434	0/004	0/433	0/004	0/265	0/09
Rumination	0/808	0/004	0/733	0/001	0/715	0/001	0/646	0/001
Catastrophizing	0/426	0/005	0/398	0/009	0/386	0/012	0/398	0/009
Acceptance	-0/519	0/001	-0/497	0/001	0/333	0/031	-0/522	0/001

As Table 4 shows, according to R2 value, the dimensions of emotion regulation (positive refocusing / Planning, Positive evaluation / larger vision, blame others, self-blame, rumination, catastrophizing and acceptance have explained approximately 69% of the variance in scores of psychological symptoms in MS patients (F (41, 7), P=0.001). Thus, according to the beta value, only rumination (beta=-0.762), self-blame (beta=-0.260) and acceptance (beta=-0.272) could predict psychological symptoms in MS patients (p>0.05).

Table 4- Multivariate regression analysis for the prediction of psychological symptoms in patients with MS through the dimensions of emotion regulation

Predictive variables	Non-standardized coefficients		standardized coefficients	T	p
	B	Std. Error	Beta		
(Constant)	1/661	5/362	-	0/310	0/759
Positive refocusing/planning	-0/037	0/269	-0/026	-0/138	0/891
Positive evaluation, larger vision	-0/792	0/416	-0/324	-1/902	0/066
Blame others	0/006	0/426	0/002	0/015	0/988
Self-blame	1/076	0/450	0/260	2/391	0/022
Rumination	2/047	0/436	0/762	4/696	0/001
Catastrophizing	0/319	0/411	0/077	0/776	0/443
Acceptance	-0/991	0/484	-0/272	-2/046	0/049
Note: (R=0/862 و R^2=0/744 ADJ. R^2 0/69)					

Discussion

This objective of the current was to investigate the relationship between emotion regulation strategies and somatic, anxiety and depression symptoms in patients with MS. Descriptive results showed that based on scores 2 SD above the mean for assessing the severity of psychological and somatic symptoms, 42.8 MS percent of patients have somatic symptoms severity, 35.7 percent of them have depression symptoms severity,

and 28.5 percent of them have depression symptoms severity. In the case of somatic symptoms of MS patients in this study that 42.8 percent of them have reported its severity, it can be said that MS patients suffer from common somatic symptoms including fatigue, problems related to tactile (touching) as numbing or tingling of fingers or feet, dizziness, pain, muscle spasms, difficulty in walking, loss of balance and coordination, and loss of muscle strength and physical activity (Multiple Sclerosis Society, 2008). Hence, the presence of somatic symptoms in them is justified. However, it may be surprising that 57.2 percent of them had no somatic symptoms. This could be due to the use of drugs that patients are taking, since these drugs can reduce the severity of somatic symptoms in them. Since 35.7 percent of MS patients had symptoms of depression, it can be said that this result is in line with results of previous study conducted by Solari et al (2004) who showed that 40 to 60 percent of MS patients experience depression in their lifetime. Moreover, this result is in line with previous findings about the prevalence of 26.2% (Dahl et al, 2009) and 25.7% (Patten et al, 2003) of depression among MS patients. To explain this finding, it can be said that MS patients suffer from many somatic and psychological (negative perception of the disease and the negative predictions about the future) and social (social isolation) problems and many of them have experienced of being crippled by the disease. Therefore, these problems may increase severity of depressive symptoms in them because previous research has shown that widespread symptoms of MS (Feinstein et al, 2004), experienced pain (Bair et al, 2003) and negative perception and understanding of the disease (Evers et al, 2001) in them can lead to high rates of depression in these patients. As 28.5 percent of the MS patients reported anxiety symptoms severity, we can say that this result is in line with previous findings that showed that 31.1 percent of males and 29.7 percent of females with MS reported the anxiety (Dahl et al, 2009). It is also in line with findings of other studies (Shaban et al., 2007) where the prevalence of anxiety disorders in patients with MS was reported 22.4 percent. To explain these findings, it can be said that MS disease is a terrible disease, and in some cases, it is incurable, recurrent and has negative developments. Therefore, anxiety in these patients is justified because belief in negative consequences in MS causes that patients to consider it catastrophic and as symptoms of anxiety are usually created against threatening risks, the risk of deterioration in these patients can increase the severity of the symptoms. One of the reasons for the difference between the amount of the severity of the symptoms of depression and anxiety in patients with MS in this study and previous studies is likely due to use the self-reporting questionnaire, because psychological symptoms have been used in this short-form questionnaire (Dura et al, 200). Therefore, researchers used 2 scores higher than SD of depression and anxiety scores in this study. The results of the Pearson correlation showed that there is negative correlation between positive refocusing / planning, positive evaluation / larger vision and acceptance and somatic symptoms, and there is positive relationship between the self-blame, rumination and catastrophizing and somatic symptoms. However, there was no significant relationship between blaming others with somatic symptoms. This result is in line with previous studies (Phillips et al, 2009) that showed that cognitive reevaluation strategy as one of the dimensions of emotion regulation has predicted the reduced pain of MS disease. In addition, it can be said that this result was in line with previous findings that has been demonstrated that emotion regulation helps to physical health (John and Gross, 2004). In explaining this finding, it can be noted that positive emotion regulation, especially its positive strategy including positive refocusing / planning, positive evaluation / larger vision and accepting negative situations of life reduces the negative emotions and increases positive emotions and adaptive behavior (Gross and John, 2003). Therefore, positive emotion regulation strategies in MS patients reduce their negative emotions by correct use of emotions, awareness of emotions and accepting them and expressing emotions, particularly positive emotions, in life situations, followed by reduced somatic symptoms in them. In other words, it can be said that the MS patients due to mental and physical problems, may be unaware of their positive and negative emotions use negative emotion regulation strategies such as self-blame, rumination, and catastrophizing when exposing to life situation. It is due the fact that their physical and psychological problems cause that they evaluate themselves negative in their social situations and get themselves less involved in social situations of life. Therefore, its negative impacts are manifested in the form of physical problems such as headaches, numbness, muscle problems, difficulties and problems related to immune system. The results of Pearson correlation showed negative relationship between the positive refocusing / planning and acceptance and depression symptoms, and a positive correlation between blaming others, rumination, and catastrophizing and depression. This result is in line with previous findings (Phillips et al, 2009), which showed that cognitive reevaluation strategy as one of the cognitive emotion regulation strategies has predicted the quality of life of MS patients. It is also in line with the findings of Yousefi (Yousefi, 2007) who referred to predictive role of

self-blame cognitive strategies, rumination, positive reevaluation, catastrophizing, and blaming others in predicting the depression in non-MS samples. It can be said that as high levels of positive emotions and reduced negative emotions play an important role in positive self-judgment and perception (Kuiper et al, 2000), having emotion regulation and its positive strategies including refocusing / planning to solve the problem, positive evaluation / larger vision lead to moderation of negative and positive emotions. It is also followed by moderated judgment and positive self-perception in MS patients. This can be helpful in reducing their scores in depression. It can be also pointed out that MS patients would not likely use their emotions effectively in various situations of their life and this might lead to another problem such as negative perception of to be useful, and this led to other problems, including the negative self-perception, concern on social situations and depression. However, positive emotion regulation skills have made them taught them to express emotion in various situations and they can improve negative perception of themselves. These skills also help them to participate in social situations and consider themselves as useful and effective person by accepting their emotions, timely expressing and controlling its negative dimension. However, negative emotion regulation strategies such as self-blame in negative life situations, rumination on negative situations, and catastrophizing these situations would probably lead that MS patients report their depression higher. The results of Pearson correlation showed that there is negative correlation between positive refocusing / planning, positive evaluation / larger vision and acceptance and anxiety, while there is positive correlation between blaming others, rumination, and catastrophizing and anxiety. However, no significant correlation was found between self-blame and anxiety. The result would be in line with previous findings (Phillips et al, 2009) that showed that cognitive reevaluation strategy, as one of emotion regulation strategies, could predict the quality of MS patients. It also in line with findings of Yousefi (2007) who showed that cognitive strategies of self-blame, focus on thinking, positive reevaluation, catastrophizing, and blaming others in non-MS samples were important predictors of anxiety. It can be also said that this result can confirm findings of previous studies that showed correlation between emotional reevaluation as emotion regulation strategy and high well-being and mental health (Gross, 2002) is. In explaining this finding, it can be said that positive emotion regulation strategies such as positive refocusing/planning, positive evaluation/larger vision, and acceptance lead that MS patients predict the future positively and not regard the future worrying and thereby reduce their anxiety level. However, if MS patients blame others for negative situations in their life and have rumination on their disease and problems associated with it and catastrophize their life situations, they would have higher anxiety on their future. The results of multiple regression analysis showed that considering the value of R2, emotion regulation dimensions (positive refocusing / planning, positive evaluation / greater vision, blaming others, self-blame, rumination, catastrophizing and acceptance) have explained approximately 69% of variance in psychological symptom scores of MS patients. Therefore, considering the beta value, only rumination, self-blame and acceptance could predict psychological symptoms of MS patients. Due to usefulness of emotion socially and their effectiveness in conveying the emotions to others, social interaction and creating, maintaining and breaking the relationship with the others (Chambers et al, 2009), appropriate regulation of them through emotion regulation strategies plays important role in reducing psychological symptoms of MS patients because emotions act as solutions to face with challenges, stresses, and life problems. In other words, as emotions play important role in life, regulating the emotion is correlated with moderating the emotions, self-esteem, and social interactions (Gross, 2002). It leads to effective mediation with stressful situations (Saarni, 1990) and increased activity in response to social situations (Tugade & Frederickson, 2002). Therefore, enjoying positive aspects of it, including accepting the emotions can play an important role in reducing the psychological symptoms by making the patients aware of positive and negative emotions and timely expression of them. However, negative strategies such as rumination and self-blame likely lead to exacerbated psychological symptoms in them. Some of limitations of this study included the use of self-reported questionnaire to assess variables, sample of study limited to Nahavand and Malayer MS patients, cross-sectional collection of data (three months), and lack of using non-MS comparison group. Considering the above limitations, we should treat with caution in generalizing the results and repeated results in this area are necessary. Considering the limitations of the present study, it can be concluded that results support the severity of psychological symptoms in patients with MS and the relationship between emotion regulation strategies and psychological symptoms (somatic, depression and anxiety symptoms) in these patients. Therefore, based on the results, it is recommended that the role of positive and negative emotion regulation strategies in the psychological symptoms of MS patients to be considered. In addition, equipping health psychologists with psychological training and treatment including

treatments based on emotion regulation to reduce psychological symptoms of these patients will be useful and important. It also recommended that diagnostic interviews, larger samples in a wider temporal and spatial range to be used in future studies. It is also recommended that non-MS patients and healthy people to be used to compare them with MS patients.

Acknowledgments

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