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Original Article

The Effect of Emotional Intelligence Training on Self-efficacy in Women with Multiple Sclerosis

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Abstract

Background: Multiple sclerosis (MS), a chronic disease of the central nervous system (CNS), causing progressive nerve damage, has disabling symptoms, and undermines self-efficacy beliefs. Due to the importance of self-efficacy modified in adaptation and coping with stress, this study was conducted with the aim to investigate the effect of emotional intelligence training on self-efficacy in women with MS. **Materials and Methods:** This randomized clinical trial was conducted on 70 women referring to the Multiple Sclerosis Clinic of Kashani Hospital, Isfahan, Iran. The participants were randomly assigned to two groups through minimization method. In the experimental group, emotional intelligence training was performed within 8 weeks, once a week for 90 minutes, in groups of 8–9 individuals. Data were collected using the Multiple Sclerosis Self-efficacy Scale (MSSS) before, immediately after, and 3 months after the intervention in both groups. Data were analyzed using independent *t*-test and repeated measures ANOVA in SPSS. **Results:** The results of independent *t*-test showed no significant difference between the groups in terms of mean self-efficacy scores before the intervention ($p > 0.05$). However, there was a significant difference between the groups in this regard immediately after and 3 months after the intervention ($p < 0.05$). Repeated measures ANOVA showed a significant difference in the mean score of self-efficacy and its components between the groups at different times ($p < 0.05$). **Conclusions:** It seems that emotional intelligence training is effective on the improvement of self-efficacy of women with MS. Hence, this method can be recommended as an effective and affordable technique.

Keywords: *Emotional intelligence, multiple sclerosis, self-efficacy, women*

Introduction

Multiple sclerosis (MS) is a chronic, inflammatory, and autoimmune disease that causes progressive nerve damage and disabling symptoms.[1] Approximately 2.5 million individuals around the world suffer from MS. It is the most prevalent cause of neurological disability among young adults.[2] Numerous demographic studies have reported a sudden increase in the incidence and prevalence of MS in Iran.[3] In a review study in Isfahan, Iran, the annual incidence rate and prevalence of MS were, respectively, reported as 0.68–9.1 and 5.3–74.28 per 100,000 persons.[4] The peak of incidence of MS is at 20–40 years of age.[4] Its total incidence rate is increasing, especially among women, due to unknown causes.[1] The MS of relapsing-remitting prevalence ratio of women to men was reported as 3 to 1.[5]

MS causes psychosocial challenges such as mood changes, cognitive and emotional disorders, social isolation, and dependence.[6] Patients experience high levels of mental disorders such as depression, stress, cognitive disorders, irritability, and emotional instability, which greatly affect their emotional recognition.[7]

The disease process of MS and emotional response to this process impact all aspects of the individual's performance. Moreover, negative emotions result in the inability to achieve desirable compatibility, increased stress, and impairment in immune system regulation.[8] Ozura and Segasa found that the ability to cope with stress among patients with MS was significantly low.[9] They also reported that deficiency in adaptive-emotional skills plays a role in these patients' abilities in decision-making, problem-solving, organization of everyday experiences, and emotional management.[9] Self-efficacy is one of the mental factors affected by MS process, an effective factor in coping with the disease, and an adjustable factor.[10]

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Self-efficacy is one of the components of Bandura's social cognitive theory (SCT) that is effective on the physiological responses of the immune system to stress and catecholamine secretion level.[11] It is also a predictor of psychological recovery in individuals with chronic diseases such as MS.[12] The results of previous studies have shown that high self-efficiency is a predictor of health-related behaviors such as treatments acceptance, reduced depression, and increased participation in physical activity.[11,13] Schmitt *et al*. believed self-efficacy to be an important predictive factor for the physical, cognitive, and social performance of patients with MS, and to have an important role in the patients' adaptation to the disease.[10] Self-efficacy beliefs impact individuals' thoughts, way of confronting problems, adaptability, emotional health, decision-making, and ability to cope with stress and depression.[10,12,14,15] Previous studies have found a significant relationship between self-efficacy and emotional responses.[11] In other words, individuals who are unable to understand their own emotions and that of others have lower self-efficacy and sense of empowerment. Management of emotions is the most effective way to control feelings and adapt to new and stressful situations. It begins with the identification of emotions and continues with the use of emotions for problem-solving (the 4-stage emotional intelligence model).[16]

High emotional intelligence has a relationship with sense of self-efficacy, coping with stressful situations, and evaluation of stressful occurrences as challenges and learning opportunities rather than threats to safety.[17] A psychological aspect in patients with MS which can modify stress and negative emotions is emotional control and management training.[18] Emotional intelligence training strengthens emotional self-awareness, motivation, independence, empathy, responsibility, stress tolerance, and social skills, and consequently, results in effective behavior and improved mental health.[8,17–19] Emotional intelligence training prevents many issues in individuals' relationships, and increases individuals' adaptability and ability to create productive and positive family and social relationships through the identification of their own and others' emotions, recognition of the cause of these emotions, and efficient management of emotions.[20,21] Moreover, emotional intelligence training has a positive relationship with life satisfaction, improved quality of life (QOL), and social interactions. In addition, the use of emotions in thoughts and actions facilitates the acceptance of the illness and compliance to treatment.[8,22]

Training of patients is the most important element among standard care services provided by nurses. It can increase the patients' satisfaction, improve their QOL, ensure the continuity of care, decrease anxiety among patients, decrease the occurrence of complications, increase their independence in activity daily life, improve care services, and decrease costs.[23] The outcomes of this disease include reduced QOL due to depression, helplessness, hopelessness, isolation, withdrawal, physical and psychological stress, emotional instability, denial, resentment, and family conflicts. Due to these outcomes, the growing prevalence of MS,[4] and the role of emotional intelligence in understanding, controlling, and managing emotions, the present study was conducted with aim to determine the effect of emotional intelligence training on self-efficacy of women with MS.

Materials and Methods

This randomized clinical trial was conducted on 70 women with MS referring to the Multiple Sclerosis Clinic of Kashani Hospital in Isfahan in 2015. The data collected in this study has been registered in the Iranian Registry of Clinical Trials with the code IRCT 2015120117387N4. The required sample volume was determined with 95% confidence interval, 80% test power, and consideration of 10% sample loss (40 individuals in the experimental group and 40 individuals in the control group). In the experimental group, one individual due to hospitalization for plasmapheresis, one individual due to recurrence of disease, four individuals due to lack of morale and lack of regular attendance of sessions were eliminated from the study. In the control group, four individuals were eliminated from the study due to lack of completion of the questionnaire and attendance of sessions [Figure 1]. Finally, the study was conducted on 70 patients (35 individuals per group). The inclusion criteria consisted of being a woman of over 18 years of age with MS (relapsing-remitting multiple sclerosis, primary and secondary progressive MS) with a definitive diagnosis by a neurologist based on the McDonald criteria, and the passage of a minimum of 1 year since the diagnosis, lack of recurrence in the past 3 months, self-report of the physical ability and morale to take part in the study, a minimum education level of secondary school diploma, willingness to participate in the study, an Expanded Disability Status Scale (EDSS) score of less than 4.5,[24] lack of cognitive disorders and diagnosed mental illness based on physician's approval and medical records, lack of addiction to drugs and psychotropic substances, lack of pregnancy, and lack of simultaneous participation in another similar study. The exclusion criteria were lack of willingness to continue participation in the study, absence

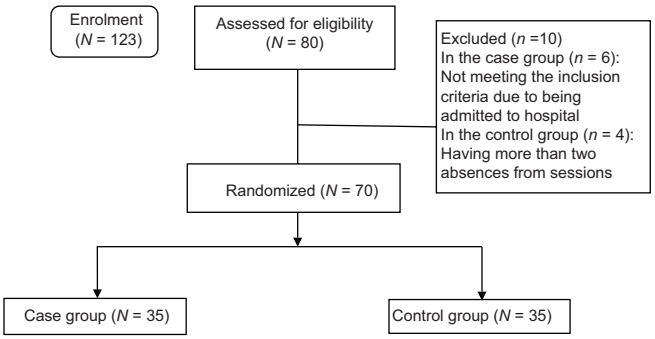

Figure 1: Consort diagram

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from one session, and lack of active cooperation in two sessions.

The subjects were selected through simple non-random sampling. After obtaining informed written consent from all participants, they were divided into experimental and control groups through random minimization using MioniPy software. The intervention implemented in the experimental group consisted of an educational emotional intelligence program in 8 sessions (90 minutes each), one session per week for 8 weeks, in groups of 8–9 individuals. The educational program was implemented by the researcher. During each session, 60 minutes were devoted to training of emotional intelligence, 10 minutes to rest and catering, and the final 20 minutes of each session to the practicing of the taught skills, answering of participants' questions, and the final evaluation of the session. In these sessions, lecture, discussion, problem-solving using past experiences of the participants, question and answer, and individual practice and learning methods were used. The subjects were required to actively participate in the tasks during the whole session. Based on the eclectic (combined) Bar-On model, the training plan began with the familiarization of participants with each other, the method of participation in the research process, and responsibility for and active participation in the group. It continued with the discussion on everyday emotional problems and the mechanism of effect of these problems on their illness status. Subsequently, the impact of emotions on individuals' performance in everyday life and emotions as an integral part of each individual's life experiences were discussed. The content of sessions was the same for both groups. All participants received an educational pamphlet based on the content of each session and were asked to do their assignments at home for the next session. To ensure that the participants practiced and performed their assignments, the researcher contacted them through phone calls once a week during the intervals between sessions. In the control group, only one session of group discussion was held on disease process and etiology, and medical care services simultaneously to the intervention in the experimental group. The questionnaire was completed by the researcher for both groups before, immediately after, and 3 months after the intervention.

In this study, content validity was used to determine the scientific validity of educational content. The researcher developed and organized the educational content based on books and articles available in this regard and by considering the study objectives based on the eclectic (combined) Bar-On model. After revision, the educational content was distributed among a number of faculty members of Isfahan University of Medical Sciences, Isfahan, and their views were obtained and the necessary modifications were made. After approval of the validity of the educational content, and attending a 50-hour emotional intelligence course and an emotional intelligence workshop, the educational program was implemented. After explaining the intervention to the participants, they were asked to attend educational sessions weekly on predetermined dates in the Multiple Sclerosis Clinic of Kashani Hospital in groups of 8–9 individuals.

The data collection tool was a three-part questionnaire consisting of a demographic characteristics form (age, marital status, occupation, and education), illness status form (disease duration, clinical course, and severity), and the Multiple Sclerosis Self-Efficacy Scale (MSSS). The MSSS is a multidimensional, self-report questionnaire developed for adults and consists of 11 items. Its subscales consist of independence and activity (items 5, 6, 10, and 11), self-control (items 1, 4, and 9), and concern and interest (items 2, 3, 7, and 8). The items of this scale are scored based on a 6-point Likert scale (strongly disagree = 1, somewhat disagree = 2, disagree = 3, agree = 4, somewhat agree = 5, and strongly agree = 6), and items 2, 3, 7, 8, and 11 are reverse scored. The total score of the scale is calculated through the summation of the scores of the 3 subscales. Higher scores in each subscale represent a better status in that subscale. Yarahmadi *et al*. reported high validity and reliability (Cronbach's alpha = 0.78–0.90 for dimensions of MS self-efficacy, and Cronbach's alpha = 0.86 for the whole scale) for this scale.[25]

Data were analyzed using descriptive (mean and standard deviation) and inferential statistics [Mann–Whitney U, Chi-squared, and Fisher's exact test, independent *t*-test, repeated measures ANOVA, and least significant difference (LSD)] in SPSS software (version 20, SPSS Inc., Chicago, IL, USA). The significance level was considered as lower than 0.05.

Ethical considerations

The researcher conducted the study after introducing herself, explaining the objectives of the study and the study method to the participants, and obtaining written informed consent forms from all subjects. The subjects were insured of the confidentiality of their information and anonymity. They were informed that they could leave the study at any stage. This study was conducted with the ethical code ir.mui.rec.1394.3.583.

Results

There was no significant difference between the two groups in terms of demographic characteristics (age, marital status, employment status, and education) and disease-related characteristics (duration of disease and degree of disability) and the two groups were matched ($p > 0.05$) [Table 1].

Independent *t*-test showed no significant difference between the groups in terms of mean score of self-efficacy and its components before the intervention. However, this difference was significant immediately after and 3 months after the intervention [Table 2]. Repeated measures ANOVA was used to compare the mean score

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Table 1: Comparison of mean and frequency of demographic and disease characteristics between the groups before the intervention

Statistical test	Variable	Mean (SD)				*p*-value
		Experimental group		Control group		
Independent *t*-test	Age (year)	32.60 (8.52)		33.57 (6.87)		0.60
	Duration of disease (year)	5.50 (3.60)		6.70 (3.50)		0.15
	Expanded disability status	1.58 (0.81)		1.62 (1.14)		0.85
Chi-square	Marital status	*f*	*p*	*f*	*p*	0.08
	Single	8	22.90	6	17.10	
	Married	24	68.60	29	82.90	
	Other*	3	8.60	0	0	
Mann-Whitney	Employment status					0.38
	Employed	8	22.90	8	22.90	
	Unemployed	3	8.60	2	5.70	
	Homemaker	24	68.60	25	71.40	
Fisher's exact test	Pattern of disease					0.50
	RRMS	34	97.10	35	100	
	SPMS	1	2.90	0	0	

SD: Standard deviation; other*: (Divorced or widowed); f: Frequency; P: Percentage; RRMS: Relapsing-remitting multiple sclerosis; SPMS: Secondary progressive multiple sclerosis

Table 2: Comparison of mean scores of self-efficacy components before, immediately after, and 3 months after the intervention in the groups

Variables		Mean (SD)		Independent *t*-test	
		Experimental	Control	*t*	*p*
Concerns and interests	Before	16.42 (4.40)	15.74 (3.52)	0.71	0.470
	Immediately after	18.08 (4.28)	15.25 (3.23	3.11	0.003
	Three months after	17.86 (4.47)	15.14 (3.16)	2.94	0.004
Self-control	Before	12.40 (3.42)	12.05 (3.01)	0.44	0.650
	Immediately after	14.51 (2.76)	11.57 (3.19)	4.11	<0.001
	Three months after	14.60 (2.18)	11.60 (3)	4.78	<0.001
Independence and activity	Before	16.11 (3.22)	15.62 (3.64)	0.59	0 550
	Immediately after	18.68 (4.10)	15.25 (3.58)	3.72	<0.001
	Three months after	18.60 (3.93)	15.37 (3.90)	3.44	0.001
Overall self-efficacy score	Before	44.94 (7.86)	43.42 (6.54)	0.87	0.380
	After	51.28 (8.85)	42.08 (6.87)	4.85	<0.001
	Three months after	51.05 (8.57)	42.09 (6.75)	4.85	<0.001

of self-efficacy and its components (concern and interests, self-control, and independence and activity) before, immediately after, and 3 months after the intervention separately in each group. In the experimental group, a significant difference was observed in mean score of components of self-efficacy before, immediately after, and 3 months after the intervention ($p < 0.05$). Nevertheless, no significant difference was observed in the control group in this regard ($p > 0.05$).

Discussion

The results of the present study showed that emotional intelligence training caused a significant difference in the self-efficacy of patients with MS immediately and 3 months after the intervention. The rate of self-efficacy had increased in the experimental group compared to the control group. These findings are in agreement with the findings of the studies by Yalcin *et al*.,[20] Yarahmadi *et al*.[25] Soltani *et al*.,[26] Hajloo and Eyvazi,[27] Forouhar *et al*.,[28] Beyrami,[29] and Shahbazzadegan *et al*.[30] The results of these studies showed that emotional intelligence training improved individuals' ability to express and manage emotions, understand the relationship of emotions with thoughts and performance, and create positive and constructive relationships, and strengthened their sense of empathy. Improvement of emotional intelligence skills, such as emotional self-awareness, adaptability, self-motivation, efficient management of emotions and impulses, effective communication skills, empathy, stress management, self-assertion, realism, self-actualization, and problem-solving skills, helps individuals with chronic diseases achieve a positive mental status. This is closely related to emotional and cognitive aspects of

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individuals' strategies for adaptation to diseases, and has a positive effect on their health-related behavior.

Emotional intelligence training plays a role in the improvement of self-efficacy through the facilitation of individuals'communication with and acceptance of others, and improvement of their ability to face unanticipated events, form friendly relationships, and show empathy.[30] Ghajarzadeh *et al*. also found that emotional intelligence is a variable which is effective on the physical and mental health of patients with MS.[31] Gholami *et al*. reported that emotional intelligence training has an effective role in individuals' general health and decreases the negative effects of stress and anxiety.[32] Emotional intelligence is correlated with neurosis, openness to experience, extraversion, being experienced, and adaptability in patients with MS. Thus, emotional intelligence training can be an effective measure in regard to reduction of depression and anxiety, forming of interpersonal relationships, and reduction of cognitive impairments in these patients.[33] Moreover, individuals with high emotional intelligence have a greater sense of self-efficacy, and emotional intelligence components training can increase self-efficacy beliefs and reduce stress.[28,29] The results of the study by Beyrami were also suggestive of the positive impact of emotional intelligence skills training on self-assertion, self-efficacy, and improved mental health.[29]

Based on the results of the present study, it can be concluded that emotional intelligence training can improve individuals' ability in the dimensions of independence and activity, concern and interest, and self-control, and thus, has a positive impact on self-efficacy beliefs of women with MS. This, in turn, can play a role in the improvement of their adaptation models, adherence to treatment, and active participation in society. Individual differences in learning, and performance of the intervention in only women with MS and EDSS score of less than 4.5 were the limitations of the present study. Hence, it is recommended that future studies be conducted in both men and women with higher EDSS scores.

Conclusion

Due to their long-term treatment, defects in self-care models, and the chronic and debilitating effects of their disease, patients with MS, in addition to pharmaceutical treatments, require psychological support, strengthening of social skills, and regulation and management of emotions. The results of the present study showed that mental intelligence training increases individuals' ability in regard to self-control, concern and interest, and independence and activity and improves their self-efficacy beliefs.

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Conflicts of interest

There are no conflicts of interest.

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