

## Collaborative Care Model effect on Multiple Sclerosis (MS) patients' lifestyle

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### Abstract

**Introduction:** Multiple sclerosis is one of the lifestyle-altering diseases that cause frequently progressive disabilities. The objective of this study was to evaluate Collaborative care model effect on Multiple Sclerosis (MS) patients' lifestyle.

**Materials & Methods:** In this clinical-trial study, 80 patients with multiple sclerosis which having the inclusion criteria were randomly assigned to case and control groups by block randomization method. The questionnaire of lifestyle of patients with MS Was used as a data collection tool. Following gathering data in the pre-test stage, the steps of collaborative caring model (Motivation, Readying, Involvement and Evaluation) were implemented for case group for three months. The post-test was carried out one month after the intervention. The obtained data were analyzed by SPSS version-19 and inferential statistical tests (T-test, Repeated measures, and Mc Nemar's test).

**Results:** Subsequent to the intervention, case group had a better lifestyle; and data analysis between two groups showed a significant difference between the means of lifestyle score in all dimensions except the sleep dimension ( $p \leq 0.016$ ).

**Conclusion:** The results showed effectiveness of collaborative care model to improve lifestyle of patients with MS; therefore this model can apply by health staff to improve the lifestyle of patients with MS.

**Keywords:** Collaborative Care Model, Lifestyle, Multiple Sclerosis (MS).

### Introduction

Multiple sclerosis (MS), is an inflammatory demyelization disease of central nervous system, and is characterized by triple features: inflammation, demyelization and gliosis(1). The cause of this disease is not known yet. Although, some believe that autoimmune mechanisms play an important role in its creation (2). This disease can be seen in relapsing, remitting, and progressive forms (primary and secondary) (3), and is the most common disease that leads to disability in young adults (4).

According to the National Multiple Sclerosis Association of America (MSAA), 2.5 million

people worldwide have this disease. In Iran, 15 to 30 people in every 100,000 people are diagnosed with the disease (5). Elhamiet al. studied the prevalence of MS in Tehran, and reported that 55.98 in every 100,000 people have this disease, that shows the highest incidence in comparison to previous reports (6). Ghandehari et al. in their study also reported the prevalence of this disease in the Provinces of Khorasan Shomali, Khorasan Jonobi, and Khorasan Razavi, 8.74, 12.89, and 5.34, respectively (7). According to the Iranian Multiple Sclerosis Society, approximately 50000 patients with MS exist in Iran (3, 4).

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This disease has a lot of debilitating complications that imposes high costs on society (8); these disabilities can have a negative effect on patient's lifestyle and their daily functions. Lifestyle is the daily routine and normal activities which people normally have accepted in their life, so that these activities can influence their health (9). Today, health care professionals regard the lifestyle as one of the most important factors that affect health (10, 11), so that according to the research conducted in America, 53%, 21%, 16%, and 10% of deaths are related to the lifestyle's factors, the environmental factors, the inheritance, and the approach of the health care services, respectively (12). The World Health Organization (WHO) regards the term "Lifestyle" as a style of life based on the certain and definable behavioral patterns that is resulted from the interaction between the personal characteristics, the social interactions, the environmental conditions and socioeconomic status. The WHO's definition states that the behavioral patterns regularly match themselves in response to the environmental and social changes; and in addition to promoting health and empowering people to change their behavior and lifestyle should not only focus on individuals but also should consider the social condition as well. The WHO believes that no ideal lifestyle exist, and many of the factors affecting on the individual's lifestyle are his own; thus, the lifestyle should be considered as a complex combination of works and behavioral habits, and with regard to the cultural infrastructure, the socioeconomic conditions and social relations and the character of the individuals and groups (13). Motarrefi, according to the American Heart Association (AHA), states that

the lifestyle has the determinant effects on an individual's health, and any person with having a favorable daily pattern can be enjoyed from the physical and psychological health (14); however, due to changes in behavioral pattern of modern life, having a good lifestyle cannot be easy, and these issues will increase the risk of affliction to the chronic diseases, especially MS (15).

Recent studies show that the roles of behaviors related to the lifestyle are effective in this disease (16). For example, the study of Pekmezovic et al. found that the smoking and coffee consumption in patients with MS are significantly higher than the other people and also a significant relationship exists between excessive alcohol consumption and prevalence of MS (7). In another study by Rapaport et al., the result showed that stress management in patients with MS can slow disease progression and prevent from new damages in these patients (18). However, several studies showed unfavorable lifestyle in patients with MS, particularly in dimensions of sleep, physical activity and exercise and methods of coping with the stress; for instance, the Payamani et al., found, that the lifestyle of these patients was undesirable in different aspects (5). Also Habibi's study on patients with MS, found that 35.7% of patients had sleep disorders (19).

Thus, the measures should be taken to improve the lifestyle of these patients, and it is obvious that one of the essential tools for improving the lifestyle of chronic patients, especially patients with MS, is educational programs for patient as a part of the care plan (20). In developed countries, according to the positive results of "patient participation" and the need for better utilization of nursing services, collaborative education has been

proposed to patients as a way for patients to be self-sufficient for caring themselves (21). On the other hand, chronic and progressive feature of disease and its association with a period of relapse and remission, crave a partnership care with cooperation of patient, family, nurses and other caregiver to perform best care management of disease in these patients (22); and to achieve this aim, the approach and concept of "collaboration" can be used in the care of these patients, because collaboration can cause motivation, responsibility and cooperation of patients in team processes. The studies have shown that the applying of this approach in different fields can improve the interpersonal relationships; so "collaborative approach" can serve as a theoretical and practical basis for creation and development of a dynamic care (21). Therefore, it is necessary to find a suitable framework for the realization of this relationship between the main organs of the care; and it is obvious that giving new and proper ways should be with regard to the specific socio-cultural condition of each society. In this regard, the researcher has evaluated the influence of a model called "collaborative caring model" on lifestyle of patients with MS (23).

This model has been designed based on native factors, and has been run on numerous chronic diseases, and has shown its impact. For example, Khooshabin his study indicated that the care of patients with heart failure based on the collaborative caring model improved their quality of life in overall aspect as well as physical, psychological and socio-economic aspects (24). Poorhossein also, showed that by implementation of collaborative care model, quality of life of school-age  $\beta$ -thalassemia children is improved. Morgan et al., also have

conducted a study on patients with heart failure and diabetes, based on collaborative care and the results showed that collaborative care program has improved depression, reduced the risk of cardiovascular disease, and provided a considerable treatment during 12 months. Thereupon, using of collaborative care by nurses in primary cares seems very beneficial (25). Most important features of this model including; a balance and interact view with competencies and abilities of individuals in process of care. The strengths of implementation of this model is engaging of patient, nurse, physician and other persons in a collaborative process both mentally and emotionally. This involvement is encouraged and motivated them to help the health care team to achieve gregarious goals and share themselves in responsibility of that and also attempt to Actualize the most important purpose of the health care team, namely improvement and preferment of patient health (21). The structural commonalities of this model with main goals of care in the treatment of patients with MS, as well as the shortage of attention to the impact of interventions in promoting these patients' lifestyle in Iran, caused the researcher decide to assess the impact of this model on lifestyle of MS patients.

### **Materials and Methods**

This study is a clinical trial that was conducted in two case and control groups. The study population included all patients with MS who were members of The MS Society of Khuzestan in 2012. Considering that, the researchers, had no similar study on patients with MS, in the assistance of a primary study of a sample of 20 patients who had the same

conditions of the subjects, the means and standard deviations were calculated for the sample with  $\alpha = 0.05$  and  $\beta = 0.2$ , and using the formula, a sample size of 14 patients per group was estimated that was increased to 40 persons in order to increase the accuracy of the study and the possibility of loss of samples.

The inclusion criteria included: Ages 20 to 55 years, MS confirmed by a neurologist, Expanded Disability Status Scale (EDSS) 2 to 3, no relapse during the six weeks before the study; and the exclusion criteria were as follows: Failure to attend the training sessions (the absence of a session of the motivation or a session of preparation or two sessions of the involvement or a session of the evaluation), pregnancy, relapse or disease progression in the way that increase EDSS at least 1 score (this case was determined and assess by a physician).

The data gathering tool in this study was the demographic and lifestyle questionnaire of patients with MS. The questionnaire's validity has been approved in the Payamani et al's Study, by 14 faculty members of Tehran and Iran universities of medical sciences; and its reliability has been approved using test-retest method with the Cronbach alpha of 0.95(5). In this study, also the reliability of this questionnaire was evaluated by the test-retest method, so that the questionnaire was completed twice with in two weeks by 20 patients with MS, who had inclusion criteria; and the reliability of the questions was evaluated by the Pearson correlation coefficient method. The correlation coefficient of the questions in two turns was 0.85. The questionnaire totally has 42 questions in Likert (each question has a ranges from one to three), and examines the various aspects of life style

in patients with MS, including six aspects: self-care (three questions), nutrition (23 questions), physical activity and exercise (five questions), smoking (one question), sleep patterns and rest (six questions), and methods of coping with stress (four questions).

In this study, 80 patients with MS, members of the MS Society of Khuzestan, which had inclusion criteria, were selected; after obtaining their written consent to participate in the study, they were divided into two groups of the test and control by block randomization method; then, each sample received lifestyle and demographic questionnaires and gave them necessary training about completing them. Following gathering data in the pre-test stage, steps of collaborative care model (motivation, preparation, involvement and evaluation) were implemented for case group for three months:

**1-The motivation phase:** Subsequent to initial evaluation, results were analyzed by researcher and treating physician; and then, the results were discussed in the presence of patients. This was based on the participation philosophy, and all team members, including patients, physicians and nurses were involved from beginning to end. On the other hand, the discussion on the results of the initial review has increased patient's awareness and consideration and motivation to pursue and continue the health –medical care programs. In this phase, the care problems of patients in each group were defined and approved in the form of care diagnosis.

**2-The preparation phase:** In this phase, team members were divided in to groups for training; the training schedule was presented; and the following explanations were given to patients: About the visits aims, the nature of

the visits, as well as the duration of each visit. The nature of the visits including: Three sessions of educational participatory visits, (two weeks apart from each other) about the nature and treatment of disease, a healthy life style and mental issues and two sessions of follow up participatory visits (one week apart from each other and a week from the third training session). In follow up participatory visits, researcher reviewed the positive and negative results and providing the necessary guidance to correct the errors.

**3-The involvement phase:** This phase that involved the implementation of educational participatory visits and follow up participatory visits designed at the previous steps was most important and critical strategic objective of the model. The previous episodes were somewhat the subjective aspect; but, this episode was the executive and effective aspect of the model. This phase was carried out in as three educational participatory visits, and two follow up participatory visits that its content was mentioned above.

**4-The evaluation phase:** At the beginning and end of each visit, sectional evaluation was done by asking questions about the educational content of previous visits and process of the disease and its complication and if it was necessary, education repeated about the patient's problems. In addition at the beginning of the intervention the researcher gave all participants a contact number for the possible communication and received an answer for their to the question if they were dealing with a problem. In the final evaluation, to assess the effectiveness of collaborative care model on patients' lifestyle, the lifestyle in the experimental group was examined again by measurements. This same method of evaluation was used for the control group simultaneously, too. This stage was

performed one month after the end of education for all patients. Then the data were analyzed using the SPSS version 19.

### **Ethical considerations**

This study was conducted after obtaining the confirmation of the Ahvaz Jundishapur Ethics Committee and the informed consent from all subjects participating in the study.

### **Results**

The mean age of patients in the test and control groups were  $31.5 \pm 9.02$  and  $31.7 \pm 7.09$  years, respectively. The mean of disease duration in the test and control groups were  $4.3 \pm 4.19$  years and  $4.2 \pm 3.84$  years, respectively. The statistical test of T-test showed no significant differences between two groups.

The women with 75% and 80% of the frequencies in the test and control groups, respectively, had the highest frequency in the both groups. In terms of educational attainment, the highest frequency in both groups was pertained to the diploma and sub-diploma (67.5% in the test group and 60% in the control group). In terms of the marital status, the married women were the most frequent (62.5% and 67.5% in the test and control groups, respectively). Chi-square test between two groups showed no significant differences, and two groups were similar in these cases ( $p \geq 0.48$ ).

Furthermore, results showed that before the intervention and using T-test, with the exception of sleep and rest dimension, there was no a significant statistical difference between the mean scores of other dimensions of lifestyle in two groups ( $p \geq 0.077$ ); however, after the intervention, the mean scores of lifestyle in the test group in all dimensions was reported more favorable than before intervention as well as more favorable than mean scores of lifestyle in

control group. The statistical test of T-test showed significant differences between the mean scores of the two groups after intervention in all dimensions excepting the dimension of sleep and rest ( $p < 0.05$ ). Moreover, statistical test of repeated measure showed significant differences between the mean scores of the two groups before and after intervention in all dimensions excepting the dimensions of sleep and rest, and

stress management ( $p \leq 0.048$ ) (Table1). Subsequent to intervention, patients' lifestyle in the smoking dimension in the test group was improved than before while no change was seen in the control group. The statistical Mc Nemar's test showed a significant difference between smoking consumption before and after the intervention in the test group ( $p = 0.016$ ) (Table 2).

**Table 1: Comparison of mean scores of lifestyle dimensions in test and control groups**

Variable	Group	Before intervention		After intervention		p-value
		Test	Control	Test	Control	
Self-Care		2.5 ± 1.96	2.9 ± 1.69	4.3 ± 1.74	2.3 ± 1.78	0.035
p-Value			0.275	<0.001		
Nutrition		46.4 ± 3.91	48.2 ± 4.7	52.1 ± 3.65	47.1 ± 3.56	0.048
p-Value			0.077	<0.001		
Physical activity and exercise		5.4 ± 2.52	4.7 ± 2.74	6.7 ± 2.27	4.2 ± 2.54	0.004
p-Value			0.293	<0.001		
Sleep and rest		12.3 ± 1.98	13.4 ± 2.39	13.9 ± 2.06	13.3 ± 1.7	0.555
p-Value			0.036	0.197		
Coping with stress		10.05 ± 0.5	10 ± 1.56	10.82 ± 0.67	10.3 ± 0.88	0.156
p-Value			0.848	0.005		
Total (overall)		76.7 ± 6.86	77.3 ± 6.88	82.9 ± 4.62	76.5 ± 6.67	0.033
p-value			0.674	<0.001		

**Table 2: Comparison of lifestyle in smoking dimension in test and control groups**

Group	Test		Control	
	Before Number(Percent)	After Number(Percent)	Before Number(Percent)	After Number(Percent)
Smoking				
Has	8 (20)	1 (2.5)	2 (5)	2 (5)
Has not	32 (80)	39 (97.5)	38 (95)	38 (95)
p-Value		0.016		0.999

## **Discussion**

The results of this study showed that the use of Collaborative care models in the intervention group than the control group has had a more significant impact in improving the lifestyle of the MS patients. This study was consistent with the studies of Bombardier et al. (26), and Van der Voort et al. and Nasrabadi et al. (20, 27).

The results of this study showed that before the intervention and using of the statistical test of T-test, the difference of the mean score of the lifestyle between two groups in dimension of sleep and rest was significant; this could be due to be lower mean scores in the test group compared with the control group; however, after the intervention, this difference disappeared due to improving mean scores of the test group. However, this increase was not enough to make a significant difference between two groups.

The study of Payamani et al. on patients with MS determined that lifestyle of the majority of patient (45%) in dimensions of sleep and rests were unfavorable. Many patients with MS were not satisfied with their nocturnal sleep due to the anxiety or physical symptoms of disease(5). Ghavidel et al. in their study titled, "the effect of using collaborative care model on quality of life of hemodialysis patients", after the intervention, could improve the sleep quality of these patients by 40.6% that was consistent with the results of this study(28).

In this study, after the intervention, mean scores of the lifestyle in the aspects of self-care and feeding in the test group were more favorable than the control group. The statistical tests showed that the difference mean of lifestyle scores in these aspects

between two groups were significant. Tolijamo and Hentinen believed that adherence to self-care and managing it in the people with chronic diseases is important and these people should be empowered with self-care (29). Masoodi quotes Annie Payne: "diet has special advantages in clinical management of MS disease; with the diet correction, complications such as constipation, weight gain, urinary tract infection, swallowing trouble, malnutrition, pressure sores and fatigue will be controlled"(30). In study of Vahedian Azimi et al. that aimed to study the effect of the family-centered empowerment model for lifestyle of patients with myocardial infarction, also an aspect of nutrition, improved after the intervention in the test group that was consistent with the results of the present study(31).

The results of this study showed that the post-intervention scores of life style in aspects of physical activity and exercise and methods of coping with stress in the test group were more favorable than the control group, and there were significant differences between the means of lifestyle scores in these dimensions between two groups. Payamani et al, in their study on patients with MS showed that lifestyle of the majority of participants in the aspect of physical activity and exercise was at an unfavorable level(5). The study of Motel et al. showed that intensification of MS symptoms was closely associated with physical activity and patients with MS were more sedentary compared with other people. He increased physical activity and the time of activity in these patients by an internet-base intervention (8, 32).

Rapaport and Karceski reported that if patients with MS control their life stress, they

will encounter fewer attacks (18). Ebadi Fard Azar et al. in their study to determine the effect of stress management education based on BASNEF model to promote behaviors of patients with Multiple Sclerosis disease also showed that stress management in these patients was useful and effective (22).

The results of these studies showed that patients' life style in smoking aspect in the test group was significantly improved after the intervention.

Sol et al. conducted a study aimed to determine the effect of a self-management intervention to reduce vascular risk factors in patients with manifestations of vascular diseases; they showed that this program has been effective in reducing smoking consumption in these patients (33).

In this study, the education program in the form of the Collaborative care model that was designed and implemented based on the needs of patients (based on data obtained from the questionnaire), led into a significant improvement in overall score of life style and also in scores of self-care, nutrition, physical activity and exercise, smoking, and methods of coping with stress aspects; because, whatever the knowledge of patients and

caregivers be more, their attitudes will be changed and will have more willing to participate in their care; and at the same time, their performance will be better and more efficient. On the other hand, more collaboration can lead to motivation, responsibility, and cooperation and involving patients and all of their caregivers in the care of these patients, so that management of disease and the care of these patients will be performed in the best way.

Among the limitations of this study we can point to implementation of rehabilitation activity in these patients, as a part of the care, which it was uncontrollable for the researcher due to the ethical issues.

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