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The Role of Depression in Predicting the Presence of Fatigue in Patients with Multiple Sclerosis

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Abstract

Introduction: Multiple sclerosis is one the most common diseases of the central nervous system. Fatigue and depression are common symptoms of the disorder. The identification of the factors associated with fatigue can help to solve this problem and subsequently, reduce the problems of these patients.

Objective: This study aimed to determine the predictor role of depression in patients with multiple sclerosis fatigue.

Materials and Methods: This is a cross-sectional, descriptive and analytical study. The study was carried out in the special diseases centre of Kerman University of Medical Sciences. In this study, 170 patients with multiple sclerosis were enrolled, by using available sampling in 2014. In order to collect the data, three demographic questionnaires, the Fatigue Severity questionnaire (FSS = Fatigue Severity Scale) and Zung Depression were used. The validity and reliability of the instruments had been confirmed in Iran. The data was analyzed by using descriptive and analytical statistics (chi-square regression multivariate logistic).

Results: In the study, 75.3% of participants were women and 24.7% were men. Of them, 70% were married and 21.8% were single. Additionally, the results of this study showed that 65.3% of the participants complained of fatigue and 51.8% had depression. The results of the regression showed that the risk of fatigue in people who suffer from depression is 2.75 times than those who do not have depression ($p < 0.002$, CI 95%: 1.43-5.30).

Conclusion: The results of this study revealed that depression can predict the onset of fatigue in patients with multiple sclerosis. It is necessary to reduce and control the symptoms of depression, which is a symptom of multiple sclerosis. Accordingly, fatigue as a common symptom in patients can be reduced, resulting in a higher quality of life in this chronic disease.

Keywords: **Depression, Fatigue, Multiple Sclerosis**

Introduction

Multiple sclerosis (MS) is a central nervous system disorder. This disease causes non-traumatic neurological disability in young people [1, 2]. MS lesions are the second-most common cause of neurological disability after trauma in early to mid-adulthood [3]. The global and regional statistics on MS show that about a thousand people per 100 teachers have the disease [4]. The prevalence of MS in all countries, including Iran, has been growing so that there are about 5.2 million people affected by MS all over the world [5]. The prevalence of this disease has been reported as about 15 to 30 people per 100,000 cases [6]. Studies have shown that the incidence of MS in women is three to four times more than men [7] and more in people between the ages 20 and 40, which are the years for shouldering the most common familial and social responsibilities [3, 8].Several symptoms occur in patients with MS, among which vision loss, paralysis of limbs and spastic ataxia, tremor, impaired sphincter control, erectile dysfunction, speech disorders, epilepsy, and depression can be mentioned [9]. Among all the signs which occur following MS, fatigue is mentioned as the most common symptom and the main complaint in these patients [10]. About 67- 95% of patients with MS report fatigue. Many of the symptoms associated with the disease may also lead to fatigue, including depression, pain, lack of sleep, and the motor problems [11].

The occurrence of depression and other symptoms of MS depend on the severity of the disease, the plight of lesions, the neurological symptoms and the severity of the patient's disability, and depression causes many disabilities and exacerbates the severity of the illness [3].

Depression occurs in 50-60% of the patients, which can be due to the reactions against the disease or due to the internal causes as a part of the disease and leads to the disease [6].

Some studies have been conducted on the relationship between fatigue and depression in patients with MS. Khezri Moghaddam et al. in their study stated that fatigue is related to the anxiety and depression; [12], as well as the results of Ghajarzadeh et al. have shown that depression causes fatigue in patients with MS [13].

Since fatigue is a common symptom of nursing diagnosis in these patients and can be resolved with interventions other than medical interventions, hence the determination of the associated factors can be helpful. On the other hand, the symptoms and signs in relation to fatigue are suspicious. This study was conducted to determine the predictor role of depression causing fatigue in patients with multiple sclerosis. Accordingly, the results can be used to reduce, modify or improve fatigue through nursing interventions.

Materials and Methods

In this descriptive, analytical, cross-sectional study, the study population included all patients with MS who were in the centre of Kerman special diseases (1026 cases). The sample was determined using the sample size formula, 134 (confidence of 0.95 and test power of 0.06) and the risk of fatigue p = 0.8) [13] was modified to achieve more accurate results based on 25% loss, and the sample size was increased to 170. The measures such as the lack of neurological disorders including mental retardation and extrapyramidal organs diseases and brain tumours except for MS, the passage one month after the acute phase of the disease, and the age of 18 years and above were considered as the criteria for inclusion. In addition, people with conditions such as the treatment with corticosteroids during the last two weeks and the use of antidepressant drugs during the last six months were excluded from the study. In order to achieve the research objectives, the questionnaire consisted of three parts; sociodemographic characteristics (age,

sex, occupation, employment status, family history of the patient, location, marital status, education level and onset of disease), Fatigue Severity Scale questionnaire (FSS = Fatigue Severity Scale) and Zung Depression Scale.

The FSS questionnaire consists of nine questions, out of which five questions examine the quality of fatigue, and three questions are related to the physical exhaustion, mental and results fatigue on the social status of the person, and the final question compares the severity of fatigue and other symptoms in patients with multiple sclerosis. Each of the items of this questionnaire is set to a scale between 1 and 7, so the score 1 represents the "opposition" and a score of 7 indicates the "consent" of the person. The final score is obtained from the division of the total scores by 9, and the result ranges between 1 and 7, so that the score of 7 represents the highest level of fatigue and score 1 is indicative of low fatigue in the person. In order to distinguish between the patients with fatigue and the patients with no fatigue, a score higher than 4 indicates fatigue and a score of less than 4 is considered as lack of fatigue [14]. The instruments psychometric has been examined in Iran [15].

The Zung depression questionnaire was used to assess depression. This questionnaire includes 20 questions about the various aspects and the scores range from 1 (I agree) to 4 (I do not agree). Some questions (positive emotions) had reverse scores. The participants were asked to mark any sentence which is closest to her inner feelings in the past two weeks [16]. The overall depression score was between 20 and 80. A score less than 50 demonstrates normal psyche without psychopathology, 50-59 indicates mild to moderate depression, 60-69 indicates obvious moderate depression, and a score of more than 70 indicates severe depression [17]. In this study, to evaluate the validity, content validity was used, and the coefficient was estimated between 0.8 and 1, and reliability was estimated as 0.91 using Cronbach's alpha.

After the project was approved by the Ethics Committee and after obtaining permission, the sampling began. After an adequate description of the research objectives and obtaining verbal consent from the participants, the questionnaires were distributed among the patients who had enrolled in the study. In some cases where the patient did not have the ability to complete the questionnaire, data was collected by the researcher through an interview. Sampling was as available and was continued till the sample size was achieved. All questionnaires were completed in full and none of the samples was excluded from the study. The data was analyzed using SPSS version 18, with a central tendency and dispersion, chi-square test, and multivariate logistic regression. In this study, the significance level was considered 0.05.

Results

Most (75.3%) participants in the study were female and 70% were married. Additionally, the mean (SD) age of the subjects was 30.0. (91.6) with a range of 30 to 39 years. The frequency distributions of the individual and social variables are listed in Table 1.The findings of this study showed that 65.3% (n = 111) of participating patients had symptoms of fatigue, and 51.8% (88) reported the symptoms of depression.

According to the results, 76.1% (n=67) of the studied subjects stated that their depression had an effect on their fatigue, and it was found that this relationship is statistically significant ($p < 0.002$) (Table2). Additionally, the results showed that the risk of fatigue in people who are depressed is 2.75 times more than those who do not have depression ($p < 0.002$, CI 95%: 1.43-5.30) (Table 3). This means that fatigue may be an appropriate predictor of depression in the study.

Table 1. Distribution of the individual characteristics of patients with multiple sclerosis

Demographic characteristics		Number	Percent
Gender	Female	128	75.3
	Male	42	24.7
Marital status	Married	119	70
	Single	37	21.8
	Widowed or divorced	14	8.2
Education	Reading and writing	16	9.4
	Cycle to school	64	37.6
	Diploma to Bachelor	65	38.2
	Bachelor's Degree or higher	25	14.7
Employment	Housewife	84	49.4
	Working	12	7.1
	Employee	35	20.6
	Student	10	5.9
	Free	29	17.1
Family history of MS	Yes	33	19.4
	No	137	80.6
Location	Other cities	37	21.8
	Kerman	133	78.2
Employment Status	Official	27	15.9
	Contractual	5	2.9
	Contractual	23	13.5
	Private	13	7.6
	None	102	60
Time of disease onset	1 to 5 years	95	55.9
	5 to 10 years	39	22.9
	More than 10 years	36	21.2

Table 2. the relationship between fatigue and depression in patients with multiple sclerosis

Variable		Fatigue				Total	Sig*
		Number	Percent	Number	Percent		0.002
Depression	**YES**	67	76.1	21	23.9	100	
	NO	44	53.7	38	46.3	100	
Total		111	65.3	59	34.7	100	

* Chi-square test

Discussion

The results of this study showed that most participants in the study had symptoms of fatigue, which is similar to the results of the study by Bakhshayesh Eghbali et al. [4], while the findings of Nabavi et al. showed that 100%, that is, all 60 patients with MS participating in their study had reported fatigue [18]. Findings of other studies showed that 80% of people with this disease suffer from fatigue [19]. The exact cause of fatigue in MS is unknown, but studies have shown increased prevalence of fatigue following an attack of MS, as a result of the increased activity of the immune system, cytokine production or dysfunction of the nervous [20,21]. Kos et al. had identified the high demand of brain power to reorganize as the cause of fatigue in patients with MS cortex [22]. The difference is probably due to the degrees of prevalence of fatigue. The environmental factors can also be a reason for this.

The study also showed that more than half of the subjects had depression. In this regard, Nagaraj et al. in a prospective

study reported the prevalence of depression in 51.6% patients with multiple sclerosis [23]. Moshtagh et al. quoted from Rena and colleagues who suggest that the prevalence of depression in people with MS is more than 54%, so that the prevalence of depression in MS patients is twice that of the patients suffering from other chronic diseases [24]. The incidence of depression in patients with MS can cause chronic diseases, reduce the level of activity, and render future life uncertain.

In this regard, Ghajar Zadeh et al. found in their research that depression is one of the predictors of fatigue in patients with multiple sclerosis and the patients with MS who are depressed experience fatigue three to six times more than the non-depressed people [13]. Pittion-Vouyovitch et al. concluded in their study that fatigue and depression in these patients had a significant relationship [25]. Penner et al. reported that fatigue can be a symptom of depression [26], which is confirmed by other studies too [27, 28]. Also, to explain the relationship between depression and fatigue, it can be said that fatigue as a major problem in MS can be associated with depression in the form of a multi-dimensional pattern. On the one hand, fatigue causes the loss of physical force in patients and thereby reduces the bodily functions, while on the other hand, the decline in physical ability and the inability to participate in the related areas cause symptoms such as the inability to perform social functions, especially in performing their social roles, which causes depression [14].

The results of this study are contradictory to the results of some researches. In this case, the results of Pazukian et al. can be noted; they demonstrated that fatigue is not related to the aspects of depression in these patients and had no effect on cognitive ability, anxiety, and depression [29]. The findings of this research are contradictory with the results of another study which determines the exact relationship between fatigue in MS patients and its related factors [30]. These differences can depend on factors such as the use of different tools to measure fatigue, depression, and the differences in the provision of care and treatment in the patients, and probably the situation and stage of the disease.

In this study, due to the physical and mental conditions of the patients, hardly any sampling was carried out, which is considered as a limitation of the study. The generalization of the study results should be done with caution. Further studies are recommended with larger sample sizes which can be generalized more by controlling factors such as the stage of disease intervention, the patient's age, and the relationship between fatigue and depression.

Finally, given that the results of this study showed that depression can predict the onset of fatigue in patients with MS, it is necessary to reduce and control the depression through proper planning. Accordingly, fatigue as a common symptom in patients with MS and should be reduced, resulting in a higher quality of life in this chronic disease process. In this context, it is recommended that organizations such as the Association of MS Patients that support the patients should implement training programmes for psychological problems including depression caused by this disease. The patients can learn the coping strategies, resulting in the improved ability of the patients to combat and reduce depression. The nurses, too, play important roles here.

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