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Evaluation of obsessive-compulsive disorder prevalence in Iranian patients with multiple sclerosis and its relationship with demographic characteristics

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Ali Keyhani[1,2], Mohammad Javad Shabani[3], Farnaz Etesam[4], Nasim Rezaeimanesh[5], Amirreza Azimi[5], Abdorreza Naser Moghadasi[5]

[1] Student Counseling Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[2] Razi Educational and Therapeutic Psychiatric Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[3] Department of Clinical Psychology, School of Behavioral Sciences and Mental Health, Iran University of Medical Sciences, Tehran, Iran
[4] Department of Psychiatry, Baharloo Hospital, Tehran University of Medical Sciences, Tehran, Iran
[5] Multiple Sclerosis Research Center, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran

Keywords
Obsessive-Compulsive Disorder; Iran; Patients; Multiple Sclerosis

Abstract

Background: The present study examined the prevalence of obsessive-compulsive disorder (OCD) among Iranian patients with multiple sclerosis (MS) and the relationship between OCD and the patient's demographic characteristics.

Methods: The present study used a cluster sampling method to randomly select 297 patients with MS from the patients referred to the MS Clinic and Research Center of Sina University Hospital, Tehran, Iran, during 2018-2019. To gather the required data, a questionnaire consisting of demographic characteristics and disease information sections was used. Moreover, Yale-Brown Obsessive Compulsive Scale (Y-BOCS), Obsessive-Compulsive Inventory-Revised (OCI-R), and Hospital Anxiety and Depression Scale (HADS) were employed in the present study.

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Corresponding Authors: Abdorreza Naser Moghadasi and Amirreza Azimi
Email: abdorrezamoghadasi@gmail.com, amirreza_azimi@yahoo.com

The comparison of qualitative and quantitative values between OCD-positive and negative groups was examined with chi-square test and independent samples t-test, respectively. Binary logistic regression was used as multivariate modeling to adjust the effects of potential confounders that could distort the relation of OCD with intended variables. Data were analyzed using SPSS software. The significance level was considered lower than 0.05.

Results: Of the total of 297 patients, 77.8% were women. Moreover, analysis of the data obtained from the HADS questionnaire revealed that 11.44% (n = 34) and 15.15% (n = 45) of patients had severe depression and severe anxiety, respectively. The results of Y-BOCS indicated that the prevalence of severe OCD among patients was 19.9%. The OCI-R questionnaire revealed that the prevalence of OCD was 47.8%, which was consistent with the total of moderate, severe, and extreme values of Y-BOCS (47.9%). Furthermore, the subscales of ordering-arranging with 69 patients (22.9%) and obsessing with 46 patients (15.5%) indicated the highest frequencies as compared to other subscales. Moreover, OCD had a significant relationship with depression, anxiety, and type of MS in this regard.

Conclusion: In this study, the prevalence rate of OCD among patients with MS was higher than its rate among the general population.

Introduction

Multiple sclerosis (MS) has been recognized as a demyelinating and chronic central nervous system (CNS) disease that involves environmental and genetic factors,[1] causes various psychiatric disorders,[2] and affects over two million people across the world.[3,4] MS is mainly diagnosed in the third and fourth decades of life and is more prevalent among women as compared with men. Moreover, MS has been documented as the most common disabling non-traumatic disorder in young adults.[5,6] According to the presented studies, the prevalence of MS in Iran ranges from 18 to 93.9 per 100000 of the population.[7]

Obsessive-compulsive disorder (OCD) has been specified as a disorder that can cause problems in terms of occupation, quality of life (QOL), social communication, and education.[8,9] It is one of the most common psychiatric disorders in the world that has an international incidence rate of 1.1%-1.8% and the same likelihood of affliction in men and women in adulthood though women, in comparison with men, are slightly more likely to be afflicted with OCD.[10] In Iran, the prevalence of this disorder is estimated to be 1.8%-13%.[11] The etiology of OCD in MS is still unidentified, but some researchers believe that OCD is caused by the degradation of the functional relationship between the cortico-cortical and cortico-subcortical brain areas.[12,13] The presented evidence has indicated that the prevalence of OCD among patients with MS is significantly higher than that of the general population.[11] Moreover, the researchers have reported that the prevalence rate of OCD among patients with MS is 8.6%,[14] while its prevalence rate is 17.5% and 16.1% in Iran.[15,16] As OCD has a negative impact on cognitive-social performance[8,9] and may even cause stress and eating disorders in these individuals,[17] it is of great significance to estimate its precise prevalence rate among the MS population. Moreover, as the available research in this regard has been restricted to case studies with low sample sizes, it seems that specification of the exact prevalence rate of OCD and types of obsession would be more informative using a larger sample size in Tehran, Iran. The prevalence of the dimensions or scales of obsession among patients with MS in Iran and across the world has not been examined yet; thus, the present study has been performed for the first time to address the mentioned issue. In the event of an increase in the prevalence of OCD in patients with MS and determining the specifications of various dimensions of obsession, this study can contribute to the diagnosis and more importantly screening of the afflicted patients and subsequently to their referral to a psychiatrist and clinical psychologist for medication and psychotherapy interventions. Consequently, it is expected that the patients' disorder-induced stress can be reduced, and their cognitive-social performance and QOL can be increased by decreasing and eliminating OCD.

Materials and Methods

In this study, 297 patients with MS were selected using the cluster sampling method during 2018-2019. All patients referring to MS clinic as the referral hospital were included in the study. Moreover, the inclusion criteria consisted of having at least a middle school degree, an Expanded Disability Status Scale (EDSS) score of 0-7, a diagnosis of the disease by a neurologist, and presentation of informed consent to participate in the study. In addition, any acute disease requiring hospitalization, any non-MS related physical disabilities, and a period of less than six months of the disease history were considered the exclusion criteria. Regarding the 95% confidence interval (CI)

level and the results of a similar study in this regard, we considered a sample size of 297 patients, which was higher than that of the previous studies. To gather the required data, a questionnaire consisting of demographic characteristics (gender, age, marital status, and educational degree) and disease information (duration of the disease, number of relapses, frequency of hospitalization, EDSS, type of disease, and family history) sections was used. Moreover, Yale-Brown Obsessive Compulsive Scale (Y-BOCS), Obsessive-Compulsive Inventory-Revised (OCI-R), and Hospital Anxiety and Depression Scale (HADS) were employed in the present study.

Research instruments

Y-BOCS: We used the validated Persian version of the Y-BOCS questionnaire.[18] The mentioned normative tool is used to evaluate the severity of obsessive-compulsive symptoms, having ten items for the evaluation of obsessions and compulsions, each consisting of five items. The mentioned five-point scale is scored from zero (asymptomatic) to four (very severe). The inter-rater reliability was 0.98, and the coefficient of internal consistency (alpha coefficient) was 0.89.[18]

OCI-R: The mentioned 18-item self-report questionnaire developed by Foa et al. (2002) measures the symptoms of OCD.[19] The instrument has six subscales of washing, checking, neutralizing, obsessing, ordering, and hoarding. Each of the mentioned subscales contains three items. In this questionnaire, respondents are asked to select a number from a five-point scale that best describes the degree to which that experience has distressed or bothered them during the past month. The internal consistency of the total scale and its subscales were 0.93 and 0.65-0.90, respectively. According to the available evidence, the validity of the questionnaire in Iran was 0.85.[20]

HADS: The mentioned scale is a 14-item self-report scale designed to screen the presence and severity of symptoms of depression and anxiety in patients. This scale consists of two subscales, each with seven items that address depression and anxiety. Each item on the scale is scored from zero to three. Therefore, the scores of depression and anxiety subscales in the HADS questionnaire range from zero to 21. For both subscales, scores ranging from 0-7, 8-10, 11-14, and 15-21 indicate normal, mild, moderate, and severe status, respectively.[21]

The Persian version of the HADS questionnaire was validated in 2009.[22] The correlation coefficient of the quantitative clinical evaluation of this questionnaire in Iran with the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) is $r = 0.70$ ($P < 0.001$) and $r = 0.72$ ($P < 0.001$), respectively. Moreover, Cronbach's alpha values for the seven-item depression and anxiety subscales were 0.70 and 0.85, respectively.[22]

Initially, we calculated the mean and standard deviation (SD) for continuous variables, and frequency (%) was obtained for nominal variables. The comparison of qualitative and quantitative values between OCD-positive and negative groups was examined with chi-square test and independent samples t-test, respectively. Binary logistic regression was used as multivariate modeling to adjust the effects of potential confounders that could distort the relation of OCD with intended variables. The obtained data were analyzed using SPSS software (version 24, IBM Corporation, Armonk, NY, USA). The significance level was considered lower than 0.05.

Results

The baseline characteristics of participants in total and based on OCD condition are presented in table 1. The mean age of the patients was 35.72 ± 8.47 years old with the mean EDSS of 1.53 ± 1.00. Of the total number of 297 patients, 77.8% (n = 231) were women (female to male ratio: 5:3). In terms of education, the diploma had the highest frequency among the patients (42.4%). In terms of marital status, the majority of the patients were married, and 12.1% were divorced and widowed. Moreover, 80.5% of patients (n = 239) had no family history of OCD.

There were no significant differences between the two OCD-positive and negative groups in terms of age, sex, educational level, marital status, EDSS, annual relapse rate, type of MS, disease duration, family history, and times of hospitalization ($P > 0.05$).

Moreover, analysis of the data obtained from the HADS questionnaire revealed that 11.44% (n = 34) and 15.15% (n = 45) of patients had severe depression and severe anxiety, respectively. Furthermore, the relationship between depression and OCD [odds ratio (OR) = 2.06, 95% CI: 1.46-2.91] as well as anxiety and OCD (OR = 1.36, 95% CI: 0.98-1.87) was significant.

The severity and prevalence of OCD in patients with MS were determined using the Y-BOCS and OCI-R (Table 2). The prevalence of severe OCD using the Y-BOCS was observed to be 19.9% (n = 59).

Table 1. Frequency distribution and percentage of patients with multiple sclerosis (MS) and its relationship with obsessive-compulsive disorder (OCD)

Variable	Total	OCD		P
		Positive (n = 173, 58.2%)	Negative (n = 124, 41.8%)	
Sex [n (%)]				
Women	231 (77.8)	134 (58.0)	97 (42.0)	0.87
Men	66 (22.2)	39 (59.1)	27 (40.9)	
Education level [n (%)]				
Middle school	43 (14.5)	29 (67.4)	14 (32.6)	0.50
Diploma	126 (42.4)	67 (53.2)	59 (46.8)	
Associate's degree	27 (9.1)	15 (55.6)	12 (44.4)	
Bachelor's degree	76 (25.6)	47 (61.8)	29 (38.2)	
Master's degree	25 (8.4)	15 (60.0)	10 (40.0)	
Marital status [n (%)]				
Single	79 (26.6)	47 (59.5)	32 (40.5)	0.69
Married	182 (61.3)	107 (58.8)	75 (41.2)	
Other	36 (12.1)	19 (52.7)	17 (47.2)	
Subtype of MS [n (%)]				
Relapsing-remitting MS	194 (65.3)	120 (61.9)	74 (38.1)	0.17
Primary-progressive MS	51 (17.2)	28 (54.9)	23 (45.1)	
Secondary-progressive MS	52 (17.5)	25 (48.9)	27 (51.9)	
Family history [n (%)]				
Positive	58 (19.5)	39 (67.2)	19 (32.8)	0.12
Negative	239 (80.5)	134 (56.1)	105 (43.9)	
Age (year) (mean ± SD)	35.72 ± 8.47	35.86 ± 8.56	35.53 ± 8.39	0.74
EDSS (mean ± SD)	1.53 ± 1.00	1.56 ± 1.04	1.49 ± 0.94	0.52
Annual relapse rate (mean ± SD)	1.23 ± 0.54	1.24 ± 0.56	1.20 ± 0.51	0.51
Disease duration (years) (mean ± SD)	2.47 ± 0.85	2.50 ± 0.85	2.43 ± 0.86	0.45
Times of hospitalization (mean ± SD)	1.47 ± 0.53	1.51 ± 0.51	1.41 ± 0.54	0.09

The comparison of qualitative and quantitative values between OCD-positive and negative groups was examined with chi-square test and independent samples t-test, respectively. OCD was determined by Yale-Brown Obsessive-Compulsive Scale (Y-BOCS).
OCD: Obsessive-compulsive disorder; MS: Multiple sclerosis; EDSS: Expanded Disability Status Scale; SD: Standard deviation

Table 2. The severity of obsessive-compulsive disorder (OCD) in patients with multiple sclerosis (MS)

OCD	Severity	Total [n (%)]
Y-BOCS	None	117 (39.4)
	Mild	38 (12.8)
	Moderate	81 (27.3)
	Severe	59 (19.9)
	Extreme	2 (0.7)
OCI-R	No (> 21)	155 (52.2)
	Yes (≤ 21)	142 (47.8)
Washing	No (< 7)	270 (90.9)
	Yes (≥ 7)	27 (9.1)
Obsessing	No (< 7)	251 (84.5)
	Yes (≥ 7)	46 (15.5)
Hording	No (< 7)	279 (93.6)
	Yes (≥ 7)	19 (6.4)
Ordering	No (< 7)	228 (77.1)
	Yes (≥ 7)	69 (22.9)
Checking	No (< 7)	277 (93.3)
	Yes (≥ 7)	20 (6.7)
Neutralizing	No (< 7)	281 (94.6)
	Yes (≥ 7)	16 (5.4)

OCD: Obsessive-compulsive disorder; Y-BOCS: Yale-Brown Obsessive-Compulsive Scale; OCI-R: Obsessive Compulsive Inventory-Revised

The OCI-R questionnaire revealed that the prevalence of OCD was 47.8%, which was consistent with the total of moderate, severe, and very severe values of Y-BOCS (47.9%). Furthermore, the subscales of ordering-arranging with 69 patients (22.9%) and obsessing with 46 patients (15.5%) indicated the highest frequency as compared to other subscales.

According to the obtained data, the relationship between disease phenotype (OR = 0.71, 95% CI: 0.51-0.99) was significant but the family history (OR = 0.82, 95% CI: 0.41-1.62) was not related to OCD.

Considering the significant relationship between depression, anxiety, and the type of disease with OCD, the statistical method of regression analysis was used to determine the role of these variables in the prediction of OCD (Table 3).

Table 3. The results of linear regression

Predictive variable	P	95% CI	OR
Constant	0.34		0.46
Depression	< 0.01	1.46-2.91	2.06
Anxiety	0.05	0.98-1.87	1.36
Family history	0.56	0.41-1.62	0.82
Type of MS	0.04	0.51-0.99	0.71

Binary logistic regression analysis for prediction of obsessive-compulsive disorder (OCD) based on depression, anxiety, family history of OCD, and type of disease

Discussion

Regarding the high prevalence of OCD among psychiatric disorders, its associated problems in terms of occupation, QOL, social communication, and education, and its high prevalence in Iran,[23] the present study examined the prevalence of OCD, the frequency of various types of obsession, and predictor variables of OCD among patients with MS in Iran. Of the 297 patients with MS that filled out the questionnaire, 173 patients (58.2%) had the OCD diagnostic criteria, of whom 77.45% (n = 134) were women. There was no significant difference between the patients with OCD in terms of their gender. The mentioned finding is consistent with other findings addressing adults with OCD in the general population.[24] In addition, it can be stated that the prevalence of OCD in patients with MS is higher than that of the general population in Iran.[9,10]

Few studies have been conducted addressing the prevalence of OCD in patients with MS. In a study conducted by Feinstein et al. in Canada, the percentage of OCD in 150 patients with MS was reported to be 15.9%.[25] Moreover, the studies conducted in Turkey indicated that the percentage of OCD was 14.9% in 74 patients with relapsing-remitting MS (RRMS).[26] In 2006, the percentage of OCD that was determined using interviews and Y-BOCS was reported to be 17.5% in 40 patients with MS in Iran.[16] In another study conducted in Mashhad, Iran, with 112 patients, the prevalence of OCD among patients with MS was 16.1%.[14] Therefore, the results of this study are in part consistent with those of previous studies.

Moreover, for the first time, the frequency of six OCD subscales including washing, checking, neutralizing, obsessing, ordering, and hoarding was examined. Regarding the obtained results, the subscales of ordering-arranging and obsessing indicated the highest frequency as compared to other subscales. Therefore, it can be stated that ordering-arranging and obsessing are the most common OCD subscales in patients with MS. Obsessive symptoms can be related to the involvement of the cortical-subcortical pathways as well as the autoimmunity mechanisms that have been proposed for them. The mentioned symptoms are expected in patients with MS that have an autoimmune disease and are mostly affected by white matter and subcortical pathways. Due to some underlying common causes such as negative self-concept and avoidance function,[27] the high prevalence of depression and anxiety in patients with MS, and comorbidity of the mentioned disorders with OCD,[28,29] depression and anxiety were examined as the predictor variables in the present study. The obtained results revealed that the relationship between depression and anxiety with OCD was significant. The loss of protective covering surrounding the nerve fibers in the part of the brain that controls emotion, the treatment process, the unpredictability of disease attacks, the reduction of previous abilities, problems such as loss of occupation, and complications of taking medications that are used during the treatment can be considered as the causes of depression in patients with MS.[30,31] In this study, the relationship between the type of disease and OCD was found to be significant, which is consistent with the results reported by another pertinent study in this regard.[14] In addition, the results of the present study revealed that there was no significant relationship between OCD and demographic variables such as age, gender, educational degree, marital status, duration of disease, and hospitalization ($P > 0.05$). Furthermore, in contrast with the findings of previous studies,[14] there was no significant relationship between EDSS and OCD.

Among the limitations of this research, the cross-sectional nature of the research, lack of the control group, and administration of self-report questionnaires for the diagnosis can be mentioned. Studies addressing the etiology and pathology of OCD in patients with MS, the association of this disorder with MS, and the use of psychotherapy and pharmacotherapy are suggested to be performed.

Conclusion

In this study, the prevalence rate of OCD in patients with MS was higher than its rate in the general population. Moreover, the subscales of ordering-arranging and obsessing had the highest frequency among these patients. OCD had a significant relationship with depression, anxiety, type of disease, and family history of the disorder. Furthermore, there was no significant relationship between OCD and other variables.

Conflict of Interests

The authors declare no conflict of interest in this study.

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