# Personality disorders in pateints with multiple sclerosis: Prevalence and association with depressive and anxiety disorders and clinical features

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### Abstract

*Objective:* This study examines the current prevalence of mood, anxiety and personality disorders in patients with multiple sclerosis (MS), the impact of personality disorders on clinical features of MS and the existence of depressive and anxiety disorders. *Methods:* The study sample comprised of 55 patients with relapsing-remitting MS and 56 control subjects. Axis I diagnoses including mood and anxiety disorders and personality disorders were ascertained by means of the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, *Fourth Edition /* Clinical Version and the Structured Clinical Interview for *DSM, Revised Third Edition* Personality Disorders, respectively. The Expanded Disability Status Scale (EDSS) was used to determine degree of disability due to MS. *Results:* The prevalence of any mood, any anxiety and any personality disorders in patients with MS were 40.0%, 38.2% and 45.5%, respectively, which are significantly higher than the control subjects. Major depression, generalized anxiety disorder, avoidant personality disorder and obsessive-compulsive personality disorder were more frequent in patients with MS compared to the controls. In comparison to MS patients without personality disorders, MS patients with personality disorders had a more frequent occurence of any mood disorder, any anxiety disorder, major depression, posttraumatic stress disorders and MS attacks, and higher scoresof EDSS.
*Conclusions:* Mood, anxiety and personality disorders are frequently seen in patients with MS. The results also suggest that personality disorders may negatively affect the existence of mood and anxiety disorders as well as the clinical course of MS in the patients.

## INTRODUCTION

Multiple sclerosis (MS) is a chronic inflammatory demyelinating neurological disease with an onset age primarily between 20 and 55 years, which may lead to different degrees of disability and reduction in quality of life of patients.[1-4] The annual incidence of MS is 7.6 per 100,000 people.[5] Despite considerable advances in the treatment, MS is considered one of the commonest causes of nontraumatic disabilities in young people in developed countries.

MS is associated with not only physical disabilities (e.g., visual loss, bowel and bladder incontinence) but also a high prevalence (up to 80.0%) of neuropsychiatric symptoms.[6] Various studies have suggested that patients with MS showed higher levels of depressive and anxiety symptoms comparedto control subjects.[7-12] Major

depression appears to be the most common psychiatric disorder with prevalence rates between 30% and 50% in MS patients. [8,12-15] Psychiatric disturbances are also important factors affecting the quality of life in MS patients.

Although personality aspects of MS patients are better understood over the last decade, personality features or disorders were less frequently investigated in comparison to mood and anxiety disorders. Various studies have reported that patients with MS showed personality traits such as more anxious avoidant, neuroticism, and reduction in empathy, agreeableness and conscientiousness.[16-18] Previous studies have also suggested the clinical importance of personality features in these patients. Neuropsychiatric complications and poor treatment adherence in MS was related to neuroticism and low

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conscientiousness.[19,21] Akbar *et al.* reported that conscientiousness contributes to patients' perceptions of their cognitive failings.[20] In addition, personality characteristics may also affect the patients' employment status.[22]

However, almost all of the available studies on personality disturbances are were based on personality scales rather than structural clinical interviews. On the other hand, personality traits are seen as the underpinnings of personality disorders and are themselves not necessarily pathological.[23] In the current study, we aimed to examine the frequency of personality disorders and their impact on clinical features of MS and risk of mood and anxiety disorder in the patients.

## METHODS

The study included 55 patients who were admitted to the Necmettin Erbakan University, Meram Faculty of Medicine, Clinic of Neurology in Konya, Turkey, and who were diagnosed with relapsing-remitting MS according to the criteria of McDonald *et al*.[24] Inclusion criteria for the patients were the following: age between 18 and 65 years, literacy, and willingness to participate in the study. Patients with any neurological diseases except MS, a history of schizophrenia or related psychotic disorders, a history of severe head trauma, significant concomitant medical illnesses such as uncontrolled endocrine abnormalities, rheumatological diseases, cardiovascular and respiratory system diseases, mental retardation, and patients receiving corticosteroids, interferon therapy or any psychotropic medication were excluded from the study. The study sample also included 56 healthy control subjects who were gathered from the hospital staff, and their relatives who were matched for sociodemographic characteristics of the patients with MS. They had the same exclusion criteria as those of the patient group.

After explaining the objectives and procedures of the, written informed consent was obtained from the subjects. After neurological assessments were completed and the sociodemographic features were recorded, the patients were referred to the psychiatry outpatient clinic of the same hospital. During the neurological assessments, the Expanded Disability Status Scale (EDSS) was used to determine the degree of disability due to MS.[25] The number of MS attacks was obtained from clinical records. Mood and anxiety disorders were ascertained by means of the Structured Clinical Interview for the Diagnostic

and Statistical Manual of Mental Disorders, *Fourth Edition* / Clinical Version (SCID-I/CV).[26] Personality disorders were diagnosed with the Structured Clinical Interview for *DSM, Revised Third Edition* Personality Disorders (SCID-II).[27]

Statistical analyses were performed with SPSS 16.0 for Windows (Statistical Package for the Social Sciences, Chicago, IL).For comparisons between the study groups *t* test and Mann-Whitney U test were used for continuous variables and $\chi^2$test or Fisher's exact test for categorical variables.All significant levels were 2-tailed and set at the level of 0.05.

## RESULTS

Table 1 summarizes the sociodemographic characteristics of the patients and controls. The mean age of the study sample (n=111) was 35.1±9.4 years. The participants were mostly female (n=96, 86.5%), married (n=72, 64.9%) and unemployed (n=78, 70.3%). Approximately half of the sample (n=54, 48.6%) were primary school graduates. The mean disease duration was 75.6±51.9 months andthe mean number of MS attacks was 5.8±3.9 in the patient group.The differences between the study groups in terms of sociodemographic features were not statistically significant.

Table 2 shows the current prevalence rate of mood, anxiety and personality disorders in study patients and the control subjects.Thirty-three (60%) subjects with MS met the criteria of at least one mood or anxiety disorder according to SCID-I. Of patients with MS, 22 (40%) had a mood disorder and 21 (38%) had an anxiety disorder. The most common specific psychiatric diagnoses among the patients were major depression (n=19, 35%) and generalized anxiety disorder (GAD) (n=9, 16%). The prevalence rate of any mood or anxiety disorder, any mood disorder, any anxiety disorder, and specifically major depression and GAD was significantly higher in the patient group as compared to the controls. On the other hand, similar prevalence rates were observed in the study groups for other specific psychiatric disorders examined.

The SCID-II interview demonstrated that the prevalence of personality disorders in the patient group was 46% (n=25), while the rate was 14% (n=8) in healthy controls. The difference was statistically significant (P<0.001). The most frequent Axis II diagnoses were obsessive-compulsive and avoidant personality disorders, and these were significantly more frequent in the

**Table 1: Sociodemographic characteristics of the study sample**

|  | Patient group n=55 | Control group n= 56 | P value |
|---|---|---|---|
| Age, mean±SD, years | 34.07±8.16 | 36.12±10.39 | 0.250[a] |
| Gender, n (%) |  |  | 0.788[b] |
|   Female | 47 (85.5) | 49 (87.5) |  |
| Education, n (%) |  |  | 0.169[c] |
|   Primary school | 25 (45.5) | 29 (51.8) |  |
|   Secondary school | 13 (23.6) | 18 (32.1) |  |
|   University | 17 (30.9) | 9 (16.1) |  |
| Employment status, n (%) |  |  | 0.538[b] |
|   Unemployed | 37 (88.9) | 52 (86.7) |  |
| Marital status, n (%) |  |  | 0.468[c] |
|   Single | 18 (32.7) | 13 (23.2) |  |
|   Married | 34 (61.8) | 38 (67.9) |  |
|   Widowed, divorced or seperated | 3 (5.5) | 5 (8.9) |  |

[a] t test
[b] Fisher Exact Test
[c] $\chi^2$ Test

**Table 2: Current prevalence rate of mood, anxiety and personality disorders in the study groups**

| Psychiatric disorders, n (%) | Patient group n=55 | Control group n=56 | Odds ratio (95% Cl) | P value[a] |
|---|---|---|---|---|
| Any mood disorder | 22 (40.0) | 5 (8.9) | 4.48 (1.83-10.98) | <0.001 |
|   Major depression | 19 (34.5) | 3 (5.4) | 6.44 (2.02-20.56) | <0.001 |
|   Dysthymic disorder | 7 (12.7) | 2 (3.6) | 3.56 (0.77-16.40) | 0.094 |
|   Bipolar disorder | 0 (0) | 0 (0) | - | - |
| Any anxiety disorder | 21 (38.2) | 6 (10.7) | 3.56 (1.55-8.15) | 0.001 |
|   Panic disorder | 1 (1.8) | 1 (1.8) | 1.00 (0.95-1.05) | 1.000 |
|   Obsessive-compulsive disorder | 4 (7.3) | 1 (1.8) | 4.07 (0.47-35.29) | 0.206 |
|   Social phobia | 7 (12.7) | 4 (7.1) | 1.78 (0.55-5.74) | 0.360 |
|   Spesific phobia | 4 (7.3) | 2 (3.6) | 2.03 (0.39-10.67) | 0.438 |
|   Posttraumatic stress disorder | 4 (7.1) | 1 (1.8) | 4.07 (0.47-35.29) | 0.206 |
|   Generalized anxiety disorder | 9 (16.4) | 1 (1.8) | 9.16 (1.20-69.92) | 0.008 |
| Any mood or anxiety disorder | 33 (60.0) | 9 (16.1) | 3.73 (1.97-7.05) | <0.001 |
| Any axis II disorder | 25 (45.5) | 8 (14.3) | 3.18 (1.57-6.43) | <0.001 |
|   Avoidant | 9 (16.4) | 2 (3.6) | 4.58 (1.04-20.26) | 0.029 |
|   Dependent | 3 (15.5) | 1 (1.8) | 3.05 (0.32-28.47) | 0.364 |
|   Obsesive-compulsive | 16 (29.1) | 2 (3.6) | 8.14 (1.96-33.77) | <0.001 |
|   Passive-aggressive | 1 (1.8) | 1 (1.8) | 1.00 (0.95-1.05) | 1.000 |
|   Paranoid | 2 (3.6) | 0 (0) | - | 0.243 |
|   Schizotypal | 1 (1.8) | 0 (0) | - | 0.495 |
|   Schizoid | 0 (0) | 0 (0) | - | - |
|   Histrionic | 1 (1.8) | 1 (1.8) | 1.00 (0.95-1.05) | 1.000 |
|   Borderline | 1 (1.8) | 1 (1.8) | 1.00 (0.95-1.05) | 1.000 |
|   Narcissistic | 0 (0) | 0 (0) | - | - |
|   Antisocial | 0 (0) | 0 (0) | - | - |

[a]Fisher's exact test

**Table 3: Sociodemographic and clinical characteristics, and psychiatric diagnoses in MS patients with and without personality disorder**

| | Patients with personality disorder n=25 | Patients without personality disorder n=30 | P value |
|---|---|---|---|
| Gender, n (%) | | | 0.446[a] |
|     Female | 20 (80.0) | 27 (90.0) | |
| Education, n (%) | | | 0.666[b] |
|     Primary school | 13 (52.0) | 12 (44.0) | |
|     Secondary school | 5 (20.0) | 8 (26.7) | |
|     University | 7 (28.0) | 10 (33.3) | |
| Employment status, n (%) | | | 0.257[a] |
|     Unemployed | 19 (76.0) | 18 (60.0) | |
| Marital status, n (%) | | | 0.896[b] |
|     Single | 8 (32.0) | 10 (33.3) | |
|     Married | 16 (64.0) | 18 (60.0) | |
|     Widowed, divorced or seperated | 1 (4.0) | 2 (6.7) | |
| Age, mean±SD, years | 33.1±8.1 | 34.9±8.3 | 0.415[c] |
| Age at onset of disease, mean±SD, years | 26.4±8.0 | 28.8±8.6 | 0.286[c] |
| Disease duration, mean±SD, months | 80.2±51.9 | 71.8±52.5 | 0.557[c] |
| Numbers of disease attack, mean±SD | 7.5±4.5 | 4.4±3.1 | 0.001[d] |
| EDSS score, mean±SD | 3.4±1.8 | 1.2±1.3 | 0.000[d] |
| Psychiatric diagnoses, n (%) | | | |
| Any mood disorder | 16 (64.0) | 6 (20.0) | 0.002[a] |
| Major depression | 13 (52.0) | 6 (40.0) | 0.022[a] |
| Dysthymic disorder | 5 (20.0) | 2 (6.7) | 0.226[a] |
| Bipolar disorder | 0 (0) | 0 (0) | - |
| Any anxiety disorder | 15 (60.0) | 6 (20.0) | 0.005[a] |
| Panic disorder | 1 (4.0) | 0 (0) | 0.455[a] |
| Obsessive-compulsive disorder | 2 (8.0) | 2 (6.7) | 1.000[a] |
| Social phobia | 3 (12.0) | 4 (13.3) | 1.000[a] |
| Spesific phobia | 1 (4.0) | 3 (10.0) | 0.617[a] |
| Posttraumatic stress disorder | 4 (16.0) | 0 (0) | 0.037[a] |
| Generalized anxiety disorder | 8 (32.0) | 1 (3.3) | 0.008[a] |
| Any mood or anxiety disorder | 21 (84.0) | 12 (40.0) | 0.001[a a] |

Fisher's exact test
[b]$\chi^2$ test
[c] t test
[d] Mann-Whitney U test

patient group compared to the controls. None of the patients or the control subjects met the criteria for schizoid, narcissistic and antisocial personality disorders. No significant difference was observed between the two groups for dependent, passive-aggressive, paranoid, schizoid, schizotypal, histrionic, borderline, narcissistic and antisocial personality disorders.

We found no difference amongst MS patients with and without Axis II psychiatric disorder in terms of age, disease duration, gender, educational level, marital status, and employment status. Compared to MS patients without a personality disorder, MS patients with any personality disorder had significantly higher frequency of major depression, GAD, any mood disorder, any anxiety disorder and post-traumatic stress disorder, higher number of MS attacks and higher scores of EDSS (Table 3).

## DISCUSSION

In this cross sectional study, we found that a considerable number of the patients with MS has mood (40%) and anxiety (38%) disorders. These rates are higher than the control subjects and the general population.[28-31] Previous studies using different assessments have suggested that 34-67% of subjects with MS concurrently have at least one psychiatric disorder, which is consistent with our findings. Similarly, the prevalence rate of any mood disorder and any anxiety disorder in MS patients was found to be 31.7-62% and 28.6-45.9%, respectively, in the literature.[12-14]

Major depression (35%) and GAD (16%) were two most prevalent Axis I diagnoses in this study. It is well known that major depression is the most commonly observed specific psychiatric disorders with a prevalence rate of 12-33.8% in MS patients.[8,9,13,14,32-35] On the other hand, data on the frequency of specific anxiety disorders are limited. GAD was unique in being a more prevalent anxiety disorder (16.4%) in the patients compared to the control subjects (1.8%). Korostil and Feinstein reported that the prevalence of GAD, the most common anxiety disorder for MS patients, was 10.0%.[36] Uguz et al.[13] reported that the same rate was 18.9%, and GAD together specific phobias, were the most common anxiety disorders. Other authors have reported similar results in the literature.[14,37,38]

Abnormal personality are frequently seen in MS patients affecting 20 to 40% of the subjects. These features are characterized by irritability, apathy, greater anxious, higher neuroticism, lower conscientiousness and agreeableness.[16,17,19,20,23,39] However, we found no study in the literatue that reported the prevalence of clinically relevant personality disorders. In the present study, this prevalence rate was found to be 46% in the patient group and 14% in the control group. Epidemiological studies have reported the prevalence of Axis II diagnoses in the general population to be 5.3-14.5%.[40-42] Our results suggest that a considerable number of subjects with MS have personality disorders. In our sample, obsessive-compulsive and avoidant personality disorders were found to be higher in MS patients compared to the healthy controls. It is expected that subjects with both personality disorders exhibit more anxious, neurotic affective or behavioral features.

The relationship way between personality disturbances and MS is unclear. Personality problems may be secondary to cerebral demyelination and the psychosocial impact of a chronic and disabling illness.[23] Since the onset of personality disorders is usually manifested in early life, we think that the existence of personality disorders before the initiation of MS is more plausibleas opposed to the development of personality disorder secondary to MS itself.

Limited scientific data on the clinical importance of personality characteristics or disorders in MS patients are currently available. Some authors have suggested that personality traits may affect several functions such as cognition, treatment adherence and employment status in MS patients.[19,20,22] In our sample, patients with personality disordersshowed more frequent occurence of depression and anxiety disorders. Personality disorders can greatly affect the subjects' capacity for adaptation and management of stressful life events and coping strategies. These patients are more vulnerable to maladaptive behavior.[23] In addition, a recent meta-analysis has suggested a high comorbidity of up to 52% between anxiety disorders and personality disorders.[43] These factors may explain the relationship between personality disorders and depressive or anxiety disorders.

We found that personality disorders were associated with higher MS attack rates and higher scores of EDSS. To our knowledge, this is the first study examining this connection. The possible mechanisms for these associations are unknown. Stressful life events may affect the functioning of activities of the hypothalamus-hypophysis-adrenal axis and the autonomic nervous system. Additionally, they may be linked to an increase

in inflammation in MS.[23] Personality disorders may increase psychological stress of the patients by negatively affecting coping strategies to the existence of a chronic disabling medical illness; however, the relationship between inflammatory process and personality disorders is unclear.

The main strength of this study was the inclusion of a control group, since comparative studies are very limited in the literature. Additional strength includes usage of diagnostic instruments for the diagnoses, especially of personality disorders. However, the study suffers from some limitations. First, it has relatively small sample size and of a cross-sectional design. Second, it included clinical rather than a community samples; therefore, the samples may not be representative. These limitations restrict generalizability of the results of the present study.

In concusion, the present study suggests that a significant proportion of patients with MS attending neurology clinics have higher mood, anxiety and personality disorders than the healthy subjects. Personality disorders are not only more frequently seen but may also negatively affect the course of MS in the patients. Prospective studies should be conducted to examine the clinical impact of personality disorders on MS.

## ACKNOWLEDGEMENTS

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