

# Comparison of psychological symptoms of patients with multiple sclerosis and healthy people

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## Abstract

Psychological and psychiatric disorders have a high frequency in multiple sclerosis (MS). However, their relationship with MS is complex and the extent to which they might be reactive to countless psychosocial factors, or symptoms resultant of the pathological process itself remains unclear. The aim of this study was to compare psychological symptoms in a group of MS patients and compared to healthy controls. The study subjects were MS patients admitted to the Farshchian hospital in Hamadan, Iran. The diagnosis was based on McDonald (2011) criteria. There were 120 patient), aged  $34.5 \pm 10.8$  (mean  $\pm$  SD) years. It was a cross sectional study. The psychological symptoms were assessed using Symptom Checklist-90 (SCL-90). It was found that the MS patients exhibited significantly more psychological symptoms than the healthy controls. The SCL-90 scores of MS patients were significantly higher for somatization, obsession-compulsion, interpersonal sensitivity, hostility, depression and anxiety. The high rate of psychological symptoms in adult MS supports the need for routine psychological screening.

## INTRODUCTION

Multiple sclerosis (MS) is one of the world's most common neurological disorders. In many countries, it is the leading cause of non-traumatic disability in young adults. While some patients with MS experience little disability during their lifetime, as many as 60% may be unable to walk without assistance 20 years after onset. This has major implications for the quality of life of people with MS, their families and friends, and for the cost to society. The estimated number of people with MS has increased from 2.1 million in 2008 to 2.3 million in 2013.<sup>1</sup>

MS's in Iran varies geographically, from 5.3 to 74.28/100,000. The reason of such diversity is still elusive. Different methodology, and referral bias may be factors. There are also different ethnic groups – Kurds, Turks, Arabs and Balochs, – with different cultures and climates within Iran.<sup>2</sup>

MS has a variable and unpredictable course, with symptoms that include weakness, visual loss, bowel and bladder incontinence, fatigue, cognitive impairment and mood symptoms. Early onset and long duration of disease are factors that are associated with high burden to patients, family and society at large, and result in reduction in quality of life and work productivity.<sup>3</sup>

Persons with MS appear to have a higher

prevalence of a number of psychiatric symptoms and disorders. Depression and anxiety, in particular, have been associated with decreased adherence to treatment<sup>4</sup>, functional status<sup>5</sup>, and quality of life.<sup>6</sup>

Depression has been the most studied psychiatric disorder among persons with MS. MS patients with depression report subjective cognitive difficulties, including memory complaints<sup>7</sup>, and perform more poorly on objective neuropsychological measures.<sup>8</sup> The quality of life is significantly lower among depressed MS patients.<sup>6</sup> Depression also adversely affects functional status such as increased time lost from work.<sup>9</sup> There is disruption of their social support and family systems and decreases adherence to treatment.<sup>10</sup> Also a recent meta-analysis demonstrates a consistent association between stressful life events and subsequent MS exacerbation.<sup>4</sup> However, there is no definitive evidence that major depressive disorder or other psychiatric disorders affect the neurobiological course of MS.

The aim of this study was to compare psychological symptoms in MS patients with healthy controls.

## METHODS

This cross-sectional study was conducted between

November 2013 and March 2014. The subjects were 120 outpatients (31 males and 89 females) at the Clinic of Neurology, Farschian hospital in Hamadan in Iran. The control group consisted of 100 healthy volunteers (31 males and 89 females). The patients included included in the study fulfilled the MS diagnostic criteria according to Mc Donald (2005).<sup>11</sup> They should be age 18-60 years, Kurtzke's Expanded Disability Status Scale (EDSS) score equal or less than 8.

The patients with exacerbation of the illness within the last month, or with other neurological, systemic (hematological, vascular, gynecological, endocrine, urological) or previously verified psychiatric and cognitive illnesses, as well as those who used medicaments with possible impact on mood, fatigue and cognition (anti-depressives, anxiolytics, interferon beta) within last two months were excluded in the study.

Demographic data of the patients and clinical data such as duration and progressiveness of disease were evaluated by a neurologist.

#### *Evaluation of psychological status*

The instrument chosen for this study was Persian version of "The Symptom Checklist 90". The SCL-90 consists of 90-item self-report symptoms inventory that designed primarily to reflect the psychological symptom patterns of psychiatric and medical patients. It is a measure of current, point-in-time psychological symptom status, not a measure of personality. Each item of the questionnaire is rated by the patient on a five-point scale of distress from 0 (none) to 4 (extreme). The Symptom Checklist 90, a screening instrument comprising 9 symptom dimensions included somatization, obsessive-compulsive, interpersonal sensitivity, depression anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism.<sup>12</sup> The revised SCL-90 was translated from English into Persian and standardized. Satisfactory internal consistencies with Cronbach's alphas of more than 0.7 for all of the dimensions and test-retest reliability coefficient of 0.79 were also reported.<sup>13</sup>

#### *Statistical analysis*

All data were analyzed using SPSS 18.0, with statistical significance set at  $P < .05$ . Descriptive statistical analyses were performed to describe the demographic and clinical variables. Independent sample *t* tests were used to compare the scores of the MS participants and healthy controls for the 9 SCL-90 dimensions.

#### *Ethical considerations*

This study received the approval of the Hamadan University of Medical Sciences Ethics Committee. The subjects were recruited after giving informed consent.

## RESULTS

The majority of the MS patients (71.7%) were females, 59.2% were married, 51.7% housewife. Their age ranged from 16 to 62 with a mean of 34.5 years (SD=10.8), median was 31 years. The mean duration of MS illness was 21.8 months (SD=6.7). Socio-demographic characteristics are presented in Table 1. As shown in Table 2, the patient group and healthy controls were similar in age and gender.

As shown in Table 3, there were significant differences between MS patients and healthy controls in the SCL-90 scores for somatization, obsession-compulsion, interpersonal sensitivity, hostility, depression and anxiety. ANOVA demonstrated that there was no correlation between age and psychological status ( $P > .05$ , data

**Table 1: Socio-demographic characteristics of MS patients**

| Variable                            | N  | %    |
|-------------------------------------|----|------|
| <b>Age (years)</b>                  |    |      |
| 30>                                 | 44 | 36.6 |
| 30 – 40                             | 56 | 46.7 |
| >41                                 | 20 | 16.6 |
| <b>Gender</b>                       |    |      |
| Female                              | 86 | 71.7 |
| Male                                | 34 | 28.3 |
| <b>Marital Status</b>               |    |      |
| Married                             | 71 | 59.2 |
| Single                              | 29 | 24.2 |
| Divorce                             | 8  | 6.6  |
| Widowed                             | 12 | 10   |
| <b>Occupation</b>                   |    |      |
| Housewife                           | 62 | 51.7 |
| Student                             | 18 | 15   |
| Unemployed                          | 9  | 7.5  |
| Worker                              | 31 | 25.8 |
| <b>Duration of illness (months)</b> |    |      |
| 10≥                                 | 28 | 23.3 |
| 11-19                               | 78 | 65   |
| ≥20                                 | 16 | 13.3 |

**Table 2: Demographical features and match evaluation of both groups**

| Variables | MS group |      | Healthy group |      | Sig level |
|-----------|----------|------|---------------|------|-----------|
|           | M        | Sd   | M             | Sd   |           |
| Gender    | 1.45     | .50  | 1.17          | .49  | 1.000     |
| Age       | 2.66     | 1.19 | 2.67          | 1.31 | 8.19      |

M = Mean, Sd = Standard deviation

not shown). When MS patients were analyzed by gender, men had a poorer psychological status than women, especially in interpersonal sensitivity ( $P=.02$ ), depression ( $P=.00$ ), phobic anxiety ( $P=.01$ ), and paranoid ideation ( $P=.01$ ) (Table 4).

## DISCUSSION

The present study showed that MS patients had higher SCL- 90 total and all subscale scores compared to the healthy controls. This is consistent with what has been reported in the literature.<sup>14-17</sup> As a whole, the psychological symptoms may be ascribed to the many facets related to this chronic, progressive and unpredictable neurological disease which typically begins in young adulthood. MS affects many spheres of functioning, reduces physical functions, leads to disability, and is likely to provoke disruptions in education, employment, sexual and family functioning, friendships and daily living activities.<sup>18</sup> As the disease progresses and disability increases, it can have a substantial impact on the individual's sense of self, which

implies that patients have constantly to re-define their own self-image to overcome the limitations imposed by MS.<sup>19</sup> Disease progression may also lead to perceived lack of social support, isolation and social withdrawal, which further contributes to the "profound impact of MS on the patients' social roles and their relatives' well-being" observed by Hakim *et al.*<sup>20</sup>

This study showed that depression and anxiety were more prevalent among patient with MS than healthy control. Depression is by far the most common psychological disturbance in MS, though other mood disorders can occur. Several studies have reported high rates of depressive symptoms in MS patients compared to controls with other chronic neurological conditions, with an overall lifetime frequency of major depression reaching 50%<sup>8,21,22</sup> and an annual prevalence around 20%.<sup>23</sup> It has been pointed out that these numbers may be rather over-estimated due to sampling selection, in as much as most prevalence studies considered mainly patients attending MS Clinics than those coping well in the community.<sup>14</sup> To clarify this issue, Patten *et al.* conducted a study based on a

**Table 3: Comparison of SCL- 90 Scores in patients with MS and healthy controls**

|                           | Patients<br>Mean ± SD | Controls<br>Mean± SD | T    | P     |
|---------------------------|-----------------------|----------------------|------|-------|
| Somatization              | 1.76 ±0.42            | 1.27±0.43            | 8.89 | <.001 |
| Obsessive-compulsive      | 1.31±0.62             | 1.12±0.57            | 3.76 | <.01  |
| Interpersonal sensitivity | 1.66±0.48             | 1.15±0.65            | 4.29 | <.001 |
| Depression                | 1.92±0.69             | 1.55±0.48            | 4.87 | <.001 |
| Anxiety                   | 1.86±0.64             | 1.39±0.53            | 2.94 | <.01  |
| Hostility                 | 1.63±0.66             | 1.46±0.55            | 5.67 | 0.06  |
| Phobic anxiety            | 1.24±0.41             | 1.23±0.41            | 0.82 | 0.08  |
| Paranoid ideation         | 1.35±0.53             | 1.29±0.55            | 0.73 | 0.4   |
| Psychoticism              | 1.46±0.51             | 1.28±0.39            | 6.19 | 0.06  |
| Total                     | 1.58±0.84             | 1.28±0.51            | 5.31 | <.001 |

**Table 4: Effect of gender on system checklist-90 scores in patients with MS**

|                           | Male<br>Mean $\pm$ SD | Female<br>Mean $\pm$ SD | T    | P     |
|---------------------------|-----------------------|-------------------------|------|-------|
| Somatization              | 1.53 $\pm$ 0.45       | 1.49 $\pm$ 0.41         | 1.02 | .07   |
| Obsessive-compulsive      | 1.76 $\pm$ 0.68       | 1.67 $\pm$ 0.59         | 0.73 | .06   |
| Interpersonal sensitivity | 1.61 $\pm$ 0.67       | 1.49 $\pm$ 0.58         | 2.44 | <.02  |
| Depression                | 1.79 $\pm$ 0.74       | 1.65 $\pm$ 0.62         | 2.84 | <.01  |
| Anxiety                   | 1.49 $\pm$ 0.59       | 1.36 $\pm$ 0.44         | 1.31 | .04   |
| Hostility                 | 1.66 $\pm$ 0.64       | 1.58 $\pm$ 0.60         | 1.23 | 0.2   |
| Phobic anxiety            | 1.24 $\pm$ 0.44       | 1.19 $\pm$ 0.37         | 2.57 | <. 01 |
| Paranoid ideation         | 1.50 $\pm$ 0.62       | 1.38 $\pm$ 0.45         | 3.34 | <. 01 |
| Psychoticism              | 1.52 $\pm$ 0.54       | 1.38 $\pm$ 0.41         | 1.18 | 0.2   |

population survey and reached similar values for the prevalence of major depression in MS.<sup>23</sup>

Even so, depression in people with MS is often not diagnosed and not treated.<sup>24</sup> Moreover, the relationship between depression/mood disorders and MS is complex, and the extent to which they might be consequences of the pathological process itself or psychological reactions to it remains unclear.<sup>18</sup>

Anxiety has been less well investigated than depression in MS, although it is also a cause of disability. The prevalence of anxiety in MS reported varies from 19% to 90%<sup>21,25</sup>, indicating that in some cohorts anxiety was more frequently seen than depression.<sup>26,27</sup> Higher rates of anxiety than controls have also been reported in newly diagnosed MS patients (34%) and their partners (40%).<sup>28</sup> In a longitudinal 2-year study conducted in 101 recently diagnosed patients, MS patients and their partners continued to have high levels of anxiety and distress in the first years after diagnosis, and baseline screening for anxiety at diagnosis can be used to predict the levels of anxiety and distress in that period of follow-up.<sup>26</sup> In another study in 140 consecutive MS patients, the lifetime prevalence of any anxiety disorder was 35.7%, with panic disorder (10%), obsessive compulsive disorder (8.6%), and generalized anxiety disorder (18.6%) as the most common diagnoses obtained.<sup>25</sup>

Our study showed significant difference between MS patients and healthy controls in the score of interpersonal sensitivity. Bringfelt *et al.* reported interpersonal relationship in MS patients because communication and interpersonal

relationships was affected by disease-related (mobility, vision, cognition, and fatigue) and age-related problems.<sup>29</sup>

We also found that MS patients had higher symptoms of obsessive-compulsive, somatization, and hostility compared to the healthy controls. The literature contains only limited number of studies on the relationship between MS and obsessive-compulsive disorder (OCD) or obsessive-compulsive symptoms. These studies mainly consist of case reports<sup>30,31</sup>, with only one comparative study with healthy controls showing higher obsessive-compulsive comorbidity in MS patients.<sup>32</sup>

The present study showed that 71.9% of our patients were females. MS affects more women than men. A systematic review of 28 epidemiologic studies found that, from 1955 to 2000, the estimated female to male ratio of MS incidence increased from 1.4 to 2.3.<sup>33</sup> A later systematic review and meta-analysis also found evidence suggesting that the incidence of MS is increasing in females.<sup>33</sup> We also founded men to have poorer psychological status than women in interpersonal sensitivity, depression, phobic anxiety and paranoid ideation. However, Ajilchi *et al.* study did not find any difference in psychological status between men and women.<sup>34</sup>

In conclusion, there is increased frequency of psychological and psychiatric disorders in MS. However, their relationship between the psychological and psychiatric symptoms with MS is complex, and the extent to which they might be reactive to the various psychosocial factors,

or resultant of the pathological process itself, remains unclear. Health professionals should be aware that early diagnosis and treatment of these co-morbidities is essential to improve the patients' well-being. Screening of psychological changes at baseline, and thereafter, is important in the medical management of all MS patients, bearing in mind that baseline anxiety, distress and depressive symptoms predict the presence of these disturbances at follow-up.

## DISCLOSURE

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Conflict of interest: None

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