



# Bladder Dysfunction in Iranian Patients with Multiple Sclerosis

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**Background:** Bladder dysfunction is one of the most disabling problems in multiple sclerosis patients, associated with lower quality-of-life and social isolation. There have been few studies regarding bladder dysfunction in Iranian patients with multiple sclerosis. Therefore, this study was designed to assess bladder dysfunction in Iranian patients with multiple sclerosis.

**Methods:** This cross-sectional study was conducted in the MS Clinic of Sina Hospital (affiliated to Tehran University of Medical Sciences) between January 2019 and January 2020. Patients were asked to fill the valid and reliable Persian version of the 8-item Actionable Bladder Symptom Screening Tool (ABSST) questionnaire. Demographic data and accompanying symptoms such as fatigue, depression, anxiety, bowel dysfunction, urinary problems and walking status were recorded.

**Results:** Two hundred and twenty-eight cases were enrolled. One hundred and eighty-three were female (80.3%) and 45 (19.7%) were male (F/M ratio=4). The mean ABSST score was  $6.8 \pm 5.7$ . Based on the cut-off value of eight, 83 (28.8%) had actionable bladder symptoms (36.4%). The mean age and duration of the disease were significantly higher in the group with  $ABSST \geq 8$ . The number of patients with urinary retention, dribbling, and incontinence was significantly higher in the second group, while the number of individuals who could walk without help was significantly higher in the first group ( $ABSST < 8$ ). Logistic regression analysis by considering an ABSST score of less or more than 8 as dependent and age, sex, duration of the disease, marital status, education level, and BMI as independent variables showed that age, education level, and duration of the disease are independent predictors.

**Conclusion:** According to these results, nearly one-third of Iranian patients with MS suffer from an overactive bladder, which should be considered by physicians.

**Keywords:** multiple sclerosis, bladder dysfunction, Iran

## Introduction

An autoimmune disease of the central nervous system, multiple sclerosis (MS) is characterized by demyelination and life-long disability.<sup>1,2</sup> The disease affects all aspects of a patient's life and impairs quality-of-life.<sup>3</sup> Different factors such as psychological problems, poor sleep, pain perception, bladder/bowel dysfunction, and sexual dysfunction can negatively impact the quality-of-life in these patients.<sup>1,4-7</sup>

Bladder dysfunction is one of the most disabling aspects of MS, and affects 50–80% of all cases. This symptom can influence the social activity of these patients and impair quality-of-life.<sup>7</sup> Bladder dysfunction is related to inferior physical functioning with longer disease duration.<sup>8</sup> It should be considered that

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bladder dysfunction is a socially disturbing complication of MS,<sup>9</sup> as it could disrupt routine activities and affairs.<sup>10</sup> Previous urodynamic studies in MS cases have demonstrated detrusor hyperreflexia or hyporeflexia and detrusor sphincter dyssynergia in such patients.<sup>11–13</sup>

Although the number of MS patients has increased dramatically in Iran, no research has been carried out to evaluate bladder dysfunction. Therefore, we designed this study to assess bladder dysfunction in Iranian patients with multiple sclerosis.

## Methods

This cross-sectional study was conducted in the MS clinic of Sina Hospital (affiliated to Tehran University of Medical Sciences) between January 2019 and January 2020.

Inclusion criteria included an age between 18–55 years, definite MS diagnosis, and no relapse for at least 1 month. Exclusion criteria comprised cognitive impairment, systemic diseases such as diabetes, brain trauma, previous surgery of genitourinary system, and urinary tract infection during the last week.

Following the Declaration of Helsinki, written informed consent was obtained from all cases. This study was approved by the ethics committee of Tehran medical university with the code number IR.TUMS.MEDICINE.REC.1397.041.

Patients were asked to fill the valid and reliable Persian version of the 8-item Actionable Bladder Symptom Screening Tool (ABSST) questionnaire.<sup>14</sup> The ABSST questionnaire includes eight questions with answers ranging from zero (no symptoms or impact) to three (extreme symptoms or impact). Total score is the sum score of all questions (minimum=0, maximum=24). The cut-off value of eight is considered to indicate actionable bladder. Question number nine is a yes/no question, asking if the patient needs help for his/her bladder symptoms and is not included in the final score.

The Persian version has excellent internal consistency (Cronbach's  $\alpha=0.91$ ) with an intra-class correlation coefficient (ICC) of 0.86. The CVR (content validity ratios) and CVI (content validity indexes) of all questions are between 0.66 and 1.<sup>14</sup>

Data regarding age, sex, age at the first symptom onset, education level, marital status, family history of MS, symptoms such as fatigue, depression, anxiety, bowel dysfunction, urinary frequency during the day and/or night, urinary urgency, incontinence during the day and night,

dysuria, dribbling, urinary retention, and whether help was needed for walking were recorded.

We used SPSS software version 22 (SPSS Inc., Chicago, IL) to perform data analysis. Data are presented as Mean $\pm$ SD for continuous variables or frequencies for categorical ones. An independent sample *t*-test was used for comparison between quantitative variables. A *p*-value of less than 0.05 was considered significant.

## Results

Two hundred and twenty-eight cases were enrolled, out of which 183 were female (80.3%) and 45 (19.7%) male (F/M ratio=4). Basic characteristics of patients are summarized in Table 1.

The most common reported symptom was fatigue followed by anxiety. Among urinary symptoms, day-time frequency and urgency were the most common symptoms (Table 2).

The mean ABSST score was 6.8 $\pm$ 5.7. Based on a cut-off value of eight, 83 (28.8%) had actionable bladder symptoms (36.4%). The mean age and duration of the disease were significantly higher in the group with ABSST $\geq$ 8. There was no significant difference regarding sex in two groups ( $p=0.57$ ). The number of patients with urinary retention, dribbling, and incontinence was significantly higher in the second group, while the number of individuals who could walk without help was significantly higher in the first (ABSST<8) (Table 3). According to

**Table 1** Basic Characteristics of Enrolled Cases

Variables	Findings
Sex, n (%)	
Female	183 (80.3%)
Male	45 (19.7%)
Duration of the disease (years), mean $\pm$ SD	2.6 $\pm$ 0.9
Age (years), mean $\pm$ SD	36.7 $\pm$ 9.4
Age at the first symptom onset (years), mean $\pm$ SD	30.2 $\pm$ 13.3
Marital status, n (%)	
Single	72 (31.5%)
Married	149 (65.3%)
Divorced	7 (3%)
Body Mass Index (kg/m <sup>2</sup> ), mean $\pm$ SD	24.8 $\pm$ 5
Education level, n (%)	
$\leq$ 12 years	127 (60.1%)
>12 years	91 (39.9%)
Family history of Multiple Sclerosis, n (%)	36 (15.7%)

**Table 2** Symptoms of Enrolled Patients

Symptoms	Findings, n (%)
Fatigue	155 (68%)
Depression	60 (26.3%)
Anxiety	83 (36.4%)
Bowel dysfunction	79 (34.6%)
Urinary frequency during the day	57 (25%)
Urinary frequency during the night	31 (13.6%)
Urinary urgency	32 (14%)
Incontinuity during the day	33 (14.5%)
Incontinuity during the night	13 (5.7%)
Dysuria	22 (9.6%)
Dribbling	17 (7.5%)
Urinary retention	28 (12.3%)
Needing help during walking	115 (50.4%)

**Table 3** Comparison of Different Factors Between Two Groups According to Actionable Bladder Symptom Screening Tool (ABSST) Score

	ABSST Score <8 (N= 145)	ABSST Score ≥8 (N=83)	P-value
Age (years), mean±SD	34±8.4	41.9±9.5	<0.001
Body Mass Index (kg/m <sup>2</sup> ), mean±SD	24.6±4.4	25.5±5.3	0.2
Age at disease onset (years), mean±SD	28.9±11.1	33.6±19	0.1
Duration of the disease (years), mean ±SD	2.4±0.9	3.1±0.9	<0.001
Incontinuity during the day, n (%)	2 (1.4%)	31 (37.3%)	<0.001
Incontinuity during the night, n (%)	1 (0.7%)	12 (14%)	<0.001
Dysuria, n (%)	12 (8.3%)	10 (12%)	0.3
Dribbling, n (%)	7 (4.8%)	10 (12%)	0.04
Urinary retention, n (%)	8 (5.5%)	20 (24.1%)	<0.001
Walking without help, n (%)	133 (92.4%)	40 (51.3%)	<0.001

**Note:** Independent sample t-test and Chi-squared test were used for comparison between these table variables.

**Abbreviation:** ABSST, Actionable Bladder Symptom Screening Tool.

question number nine, 72 (31.5%) needed help for voiding.

Logistic regression analysis by considering ABSST scores less or more than 8 as dependent and age, sex, duration of the disease, marital status, education level, and BMI as independent variables demonstrated age, education level, and duration of the disease as independent predictors (Table 4).

**Table 4** Logistic Regression Analysis by Considering ABSST Score More or Less Than 8 as Dependent and Age, Sex, Duration of the Disease, Marital Status, Education Level, and BMI as Independent Variables

	OR	95% CI	P-value
Sex: Female, Male	0.9	0.3–2.5	0.9
Age (years), mean±SD	1.08	1.02–1.14	0.006
Education level: ≤12 years, >12 years	0.6	0.4–0.6	0.005
Marital status: Single, Married, Divorced	0.7	0.3–1.6	0.4
Duration of the disease (years), mean ±SD	2.1	1.4–3.3	<0.001
Body Mass Index (kg/m <sup>2</sup> ), mean±SD	0.9	0.9–1.06	0.7

**Abbreviations:** ABSST, Actionable Bladder Symptom Screening Tool; OR, odds ratio; CI, confidence interval.

## Discussion

Results of the current study showed that 28% of MS patients suffering from neurogenic bladder are of older age or have longer duration of disease. We also found a higher prevalence of neurogenic bladder symptoms in patients who needed help for walking.

Nakipoglu et al<sup>15</sup> assessed 52 MS patients in Turkey and reported a higher duration of disease and age in cases with urinary symptoms, and urgency as the most frequent urinary symptom. In accordance with this evidence, our results were also indicative of frequency, incontinence, and urgency as the most common urinary symptoms.

In a previous study conducted in Turkey, Akkoç et al<sup>16</sup> found the most prevalent symptoms in MS patients with overactive bladder to be urinary urgency, followed by frequency and incontinence. In their study, the mean ABSST score was 4.37±3.78, while it was 6.8±5.7 in our study. They also found a positive correlation between walking problems and overactive bladder.

In a cohort study conducted by Zecca et al,<sup>18</sup> nearly one-third of patients reported urinary incontinuity, while Hennessey et al<sup>17</sup> reported urinary dysfunction in 44% of enrolled patients. Mahajan et al<sup>19</sup> evaluated 9,702 MS patients and reported moderate-to-severe urinary symptoms in 65%.

Approximately 80% of MS patients report urinary symptoms after almost six months of disease onset.<sup>20</sup> Previous studies demonstrated that bladder symptoms could be the initial symptom in 2–30% of MS patients and the only presentation in 3%.<sup>12,21,22</sup>

Urinary urgency is experienced by 38–99%, and frequency by 26–82% of MS patients. Voiding phase symptoms are less common, with a prevalence ranging from 6–49%.<sup>23,24</sup> Dysuria

was found in 9% of our patients, which is lower than previously reported rates (13–36%).<sup>12,15,25</sup>

The prevalence of OAB ranges from 37–99% based on screening tools and assessment,<sup>26</sup> which is defined as urgency, urge incontinence, urinary frequency, and nocturia.<sup>27</sup> OAB symptom severity is correlated with disease duration and exacerbation. Our results demonstrated that disease duration was significantly higher in cases with ABSST $\geq$ 8 and was a significant positive predictor of overactive bladder, which is in agreement with studies conducted by Mahajan et al<sup>19</sup> and Akkoç et al.<sup>16</sup>

The number of MS patients has increased dramatically in Iran in the recent years, necessitating the need for comprehensive evaluation of patients to detect and control comorbidities.<sup>28,29</sup> As a complication of MS, OAB may cause anxiety, stress, and social withdrawal in patients, thus lowering quality-of-life.

This study had some limitations. First, it was conducted in a tertiary hospital where some patients may have taken drugs that alter urinary symptoms before referring to our clinic. Second, we did not assess the quality-of-life of these patients. Further multi-centric studies with quality-of-life assessment are recommended.

## Conclusion

According to our results, approximately one-third of Iranian patients with MS suffer from overactive bladder, which should be considered by physicians. Management of urinary problems can limit secondary complications such as anxiety, depression, and social isolation.

## Disclosure

The authors report no conflicts of interest in this work.

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