Determinants of female sexual dysfunction in patients with multiple sclerosis

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Abstract

**Background:** The aim of present study was to determinant disease-related and psychological risk factors for sexual dysfunction in women with multiple sclerosis (MS).

**Methods:** This was a clinical-based study in Tehran, Iran, during 9-month period from September 2009 to June 2010. Two hundred and twenty six female patients with MS were recruited consecutively from MS outpatient clinic. Sexual function was evaluated by the Female Sexual Function Index (FSFI). The neurological impairment has been assessed by the Kurtzke Expanded Disability Status Scale (EDSS) and depression was assessed using the Beck Depression Inventory-II (BDI-II). Univariate and multiple logistic regression analysis were performed in order to show the association between sexual dysfunction and other independent variables.

**Results:** In all, 226 participants were studied. Of these, 125 women (55.3%) met the criteria for sexual dysfunction. The mean age of participants was 35.77 years (SD=8.07). The results from multiple logistic regression indicated that disease duration (OR for >9 years 2.24, %95 CI= 0.97-5.16, P=0.057), disease course (OR for secondary progressive MS = 2.74, %95 CI= 1.24-6.05, P=0.013) and the BDI score (OR = 1.11, %95 CI= 1.07-1.15, P<0.001) were significant contributing factors to sexual dysfunction in these patients. Overall, the three mentioned variables accounted for 34 percent of total variance in occurrence of SD in women with multiple sclerosis.

**Conclusions:** The findings from this study suggest that duration and severity of MS in addition to depression are the most significant factors that contribute to sexual dysfunction in patients with multiple sclerosis. The burden of sexual dysfunction in addition to the disease burden in this patient population suggests the need for extra attentions both during and after diagnosis.
Background

Multiple sclerosis (MS) is a chronic neurological disorder that is characterized by disseminated demyelination of nerve fibers of the brain and spinal cord [1]. MS affects both male and female gender but the disease affects women 2 to 3 times more than males [2]. Thus it is not surprising that there are many women who are suffering from the disease. MS severely destroys women’s life in several ways including sexual functioning [3-5]. Prevalence of sexual dysfunction in female patients with MS was reported to vary from 40 to 70% [6].

Several studies demonstrated that different risk factors contribute to the development of female sexual dysfunction in MS patients including presence of physical disorders, neurological impairments, age at onset of the disease, depression and anxiety [3, 7-10].

The prevalence of MS in Iranian population is estimated to be at least 51.9 per 100,000 [11]. Also, it was found that the female-to-male ratio was 3.11 [12]. Overall sexual dysfunction among Iranian females is reported to be about 31% [13], but to the best of authors’ knowledge prevalence of sexual dysfunction in Iranian women with multiple sclerosis is unknown.

Sexuality is a sensitive issue in almost every culture including Iran. Thus patients usually are reluctant to talk about their sexual problems and often, sexual dysfunction goes under recognized and under treated. If female sexuality is disturbed then it might lead to divorce and family breakdown [14] and it also affects reproductive health and family planning in this population. The aim of present study was to determinant disease-related and psychological
risk factors for sexual dysfunction in women with multiple sclerosis (MS) in order to recognize the extent of the problem and perhaps provide appropriate guidelines for managed care plans for these patients.

**Methods**

*Design and procedure*

This was a clinical-based study that was carried out in Tehran, Iran, during a 9-months period (September 2009 to June 2010). Two hundred and twenty six female patients with multiple sclerosis were recruited consecutively from the MS outpatient clinic in a large teaching and referral hospital affiliated to Tehran University of Medical Sciences. Criteria for inclusion were: diagnosis of MS according to the McDonald Revised criteria [15]; married; Expanded Disability Status Scale (EDSS) score <8 [16] and willingness to participate in the study. Exclusion criteria were: pre-existing major chronic illness, and not having sexual experience in life. All patients had a full neurologic examination.

*Questionnaires*

1. A study specific questionnaire in order to collect data on demographic, age of onset and diagnosis of MS and obstetric information.
2. Sexual function was evaluated by the Female Sexual Function Index (FSFI) [17]. The FSFI is a validated and widely used 19-item self-reported measure of women’s sexual function including dimensions on desire, arousal, lubrication, orgasm, satisfaction, and pain. Validity of the Persian version of Female Sexual Function Index is well documented and it has been suggested that those who score equal or less than 28 on the FSFI are suffering from sexual dysfunction [18].
3. Depression was assessed using the Beck Depression Inventory-II (BDI-II) [19]. It is a widely used 21-item self-reported measure that assesses the presence and intensity of depressive symptoms reflecting similar symptoms suggested by the Diagnostic and Statistical Manual of Mental Disorders [20]. The inventory has also been validated for Persian language [21].

4. The neurological impairment has been assessed by the Expanded Disability Status Scale (EDSS). The EDSS is a gold standard for assessment of disability in people with MS. A neurologist scored the EDSS for each patient [16]. The score on the EDSS ranges from 1 to 9.5 and scores from 1.0 to 4.5 specify that patients are fully ambulatory while scores from 5.0 to 9.5 indicate patients are severely impaired.

Analysis

The SPSS version 16 was used to analyze the data. Participants were classified as with and without sexual dysfunction based on the FSFI as mentioned earlier. Descriptive analysis was carried out to explore the data. For comparison we used both univariate and forward conditional multiple logistic regression analyses to examine the association between dependent (sexual dysfunction) and independent variables. The level of significance was set at 5%.

Ethics

Ethics committee of Shahed University approved the study. We obtained written informed consent from participants after comprehensive explanation of procedure involved.

Results

Sociodemographic and clinical characteristics of the study sample

In all, 226 participants were studied. Overall 125 (55.3%) of women met the criteria for sexual dysfunction. The mean age of participants was 35.77 years (SD=8.07). The mean
disease duration was 1.84 (SD= 0.79) years. The disease course was as follows: 169 (74.8%) patients had relapsing remitting MS (RRMS), 53 (23.5%) had primary progressive MS (PPMS) and 4 (1.8%) had secondary progressive MS (SPMS). Frequency of sexual dysfunction was 49% in RRMS, 75% in SPMS and 50% in PPMS. The detailed results are shown in Table 1.

Risk factors for sexual dysfunction

The association of sexual dysfunction and independent variables was first examined by univariate logistic regression analysis. The results showed that there were significant associations between sexual dysfunction and age (OR for 36-70 years = 2.18, %95 CI= 1.27-3.72), education (OR = 2.42, %95 CI= 1.34-4.37), employment status (OR for housewife = 2.68, %95 CI= 1.28-5.59), duration of marriage (OR for 21-40 years = 2.83, %95 CI= 1.35-5.92), disease duration (OR for > 9 years = 3.28, %95 CI= 1.58-6.80), disease course (OR for SPMS = 3.18, %95 CI= 1.59-6.83), the EDSS (OR for 5-9 = 2.41, %95 CI= 1.28-4.53), the BDI (OR = 1.11, %95 CI= 1.07-1.15). The results are shown in Table 1.

All significant findings in univariate analysis were entered into a forward conditional multiple logistic regression model. As shown in Table 2 the results indicated that disease duration (OR for >9 years 2.24, %95 CI= 0.97-5.16, P=0.057), disease course (OR for SPMS = 2.74, %95 CI= 1.24-6.05, P=0.013) and the BDI (OR = 1.11, %95 CI= 1.07-1.15, P<0.001) were significant contributing factors to sexual dysfunction in multiple sclerosis patients. Overall, the three mentioned variables accounted for 34 percent of total variance in occurrence of SD in women with multiple sclerosis.
Discussion

The findings from this study indicated that the prevalence of sexual dysfunction among Iranian female with MS was high (55.3%). In addition, the findings showed that there was no significant association between sexual dysfunction and age. Similar finding was reported by Khan et al. where studying 73 MS patients they found no association between age and sexual dysfunction as measured by the Sexual Frequency scale [22].

The result of this study showed that duration of disease was associated with sexual dysfunction. A study showed that the extent and the number of sexual dysfunction symptoms increased significantly in MS patients during a 2-years follow-up [23]. Similarly other study revealed that the duration of disease in MS patients who suffered from sexual dysfunction more than patients without SD [24]. This might be explained by several reasons including the fact that MS could have a negative impact on relationship between patients and their sexual partners [25], and that the high levels of stress among patients' partners might affect their emotional and sexual functioning [26].

The results of this study confirm the previous reports that SD was associated with progressive forms of MS [25,27]. In addition, as in this study it was detected that high disability score associated with SD therefore it seems that SD in women with MS patients can be explained by progressive course of the disease.

Regarding to the results of this study depression is associated with SD in this population. Depression in MS is a multidimensional problem that it modulated by disease related impairments, activity restrictions and unpredictable prognosis [28, 29]. Also, it is significantly higher in patients with MS than healthy individuals [30] and it is considered as a common co-
morbidity among this population [31, 32]. It is argued that depression may influence the higher prevalence of sexual dysfunction in this group than the general population [33,34]. Consistent with our study, other studies have reported that there was significant correlation between presence of sexual dysfunction and depression score [34,9,27]. It has been suggested that depression may be a prominent variable contributing to the sexual difficulties in MS patients.

Limitations
This study had some limitations. This was a cross-sectional study. Also we obtained our sample from an outpatient clinic; thereby the results must be interpreted with caution.

Conclusion
The findings indicated that SD was frequent in women with MS. The findings also indicated that clinical and psychological factors were the most important contributing variables to sexual dysfunction in patients with multiple sclerosis. The burden of sexual dysfunction in addition to the disease burden in this patient population suggests the need for extra attentions both during and after diagnosis.

Conflict of interests
The authors declare that they have no competing interests.

Author's contributions
KM was the main investigator and involved in the study design, data collection and writing process. PR analyzed the data and wrote the paper. SMM contributed to the writing process. MAS contributed to the study design and recruitment of patients. AM critically evaluated the paper, and provided the final manuscript. All authors read and approved the final manuscript.
Acknowledgments

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References


Table 1: The characteristics of study sample

<table>
<thead>
<tr>
<th></th>
<th>With SD n (%)</th>
<th>Without SD n (%)</th>
<th>OR (95% CI)</th>
<th>P</th>
</tr>
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<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>15-35</td>
<td>54(43.2)</td>
<td>63(62.4)</td>
<td>1.0 (ref.)</td>
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<td>36-70</td>
<td>71(56.8)</td>
<td>38(37.6)</td>
<td>2.18(1.27-3.72)</td>
<td>0.004</td>
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<td><strong>Education</strong></td>
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<tr>
<td>Higher</td>
<td>28(22.4)</td>
<td>41(40.5)</td>
<td>1.0 (ref.)</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>11(8.8)</td>
<td>8(7.9)</td>
<td>2.06(0.71-5.68)</td>
<td>0.180</td>
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<td>Secondary</td>
<td>86(68.8)</td>
<td>52(51.5)</td>
<td>2.42(1.34-4.37)</td>
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<td><strong>Employment status</strong></td>
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<tr>
<td>Employed</td>
<td>13(10.4)</td>
<td>24(23.8)</td>
<td>1.0 (ref.)</td>
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<td>House wife</td>
<td>112(89.6)</td>
<td>77(76.2)</td>
<td>2.68(1.28-5.59)</td>
<td>0.008</td>
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<tr>
<td><strong>Duration of marriage (years)</strong></td>
<td></td>
<td></td>
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<tr>
<td>&gt;10</td>
<td>45(36.0)</td>
<td>51(50.5)</td>
<td>1.0 (ref.)</td>
<td>0.002</td>
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<td>10-20</td>
<td>45(36.0)</td>
<td>36(35.6)</td>
<td>1.41(0.78-2.56)</td>
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<td>21-40</td>
<td>35(28.0)</td>
<td>14(13.9)</td>
<td>2.83(1.35-5.92)</td>
<td>0.006</td>
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<tr>
<td><strong>Disease duration (years)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-3</td>
<td>44(31.4)</td>
<td>47(46.5)</td>
<td>1.0 (ref.)</td>
<td>0.003</td>
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<tr>
<td>4-8</td>
<td>38(30.4)</td>
<td>40(39.6)</td>
<td>1.01 (0.55-1.85)</td>
<td>0.962</td>
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<td>&gt;9</td>
<td>43(34.4)</td>
<td>14(13.9)</td>
<td>3.28(1.58-6.80)</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Disease course</strong></td>
<td></td>
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<tr>
<td>RRMS</td>
<td>83(66.4)</td>
<td>86(85.1)</td>
<td>1.0 (ref.)</td>
<td>0.005</td>
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<td>SPMS</td>
<td>40(32.0)</td>
<td>13(12.9)</td>
<td>3.18 (1.59-6.83)</td>
<td>0.001</td>
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<tr>
<td>PPMS</td>
<td>2(1.61)</td>
<td>2(2.0)</td>
<td>1.03 (0.14-7.52)</td>
<td>0.972</td>
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<tr>
<td><strong>EDSS</strong></td>
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<td></td>
</tr>
<tr>
<td>0-4.5</td>
<td>82(65.6)</td>
<td>83(82)</td>
<td>1.0 (ref.)</td>
<td>0.005</td>
</tr>
<tr>
<td>5-9</td>
<td>43(34.4)</td>
<td>18(17.8)</td>
<td>2.41(1.28-4.53)</td>
<td>0.006</td>
</tr>
<tr>
<td>BDI</td>
<td>22.20(10.94)</td>
<td>12.48(8.79)</td>
<td>1.11(1.07-1.15)</td>
<td>0.000</td>
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Table 2: The results obtained from multiple logistic regression analysis indicating risk factors for Female Sexual Dysfunction (n=226)

<table>
<thead>
<tr>
<th>Disease duration (years)</th>
<th>Adjusted OR (95% CI)</th>
<th>P</th>
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<tr>
<td>0-3</td>
<td>1.0 (ref.)</td>
<td>0.021</td>
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<tr>
<td>4-8</td>
<td>0.66 (0.32-1.35)</td>
<td>0.262</td>
</tr>
<tr>
<td>&gt;9</td>
<td>2.24 (0.97-5.16)</td>
<td>0.057</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disease course</th>
<th>Adjusted OR (95% CI)</th>
<th>P</th>
</tr>
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<tbody>
<tr>
<td>RRMS</td>
<td>1.0 (ref.)</td>
<td>0.044</td>
</tr>
<tr>
<td>SPMS</td>
<td>2.74 (1.24-6.05)</td>
<td>0.013</td>
</tr>
<tr>
<td>PPMS</td>
<td>1.34 (0.16-10.77)</td>
<td>0.781</td>
</tr>
<tr>
<td>BDI</td>
<td>1.11 (1.07-1.15)</td>
<td>&lt; 0.001</td>
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