Prevalence of Sexual Dysfunction in Women with Multiple Sclerosis: a Systematic Review and Meta-Analysis

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ABSTRACT

Background: Sexual dysfunction (SD) is an important issue for women suffering from multiple sclerosis (MS). There is a discrepancy among the reported prevalence of SD in studies that were conducted in different geographical regions.

Objective: We aimed to conduct this systematic review and meta-analysis to estimate pooled prevalence of SD in women with MS.

Methods: We searched PubMed, Scopus, EMBASE, CINAHL, Web of Science, Ovid, Google Scholar and gray literature, including references of selected studies and conference abstracts that were published up to April 2019. The search strategy included MeSH and text words as (sexual function) OR (sexual dysfunction) AND (Multiple Sclerosis OR Sclerosis, Multiple) OR (Sclerosis, Disseminated) OR (Disseminated Sclerosis) OR (MS) (Multiple Sclerosis) OR (Multiple Sclerosis, Acute Fulminating) AND (Female Sexual Function Index OR FSFI). Two independent researchers independently assessed the articles.

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INTRODUCTION

Multiple sclerosis (MS) is an autoimmune, inflammatory disease which affects the central nervous system (CNS) (1, 2). Women are affected more than men (approximately F/M ratio is 3), while they suffer from a wide range of psychological problems such as depression, anxiety, impaired quality of life, and sexual dysfunction (SD) (3-5). Sexual dysfunction, which is ignored in some cultures, is an important issue for women suffering from MS (4). The literature shows that women with MS reported declination of sexual desire, orgasmic dysfunction, loss of libido, diminished vaginal lubrication, and spasticity during sexual activity (6-8).

In MS, sensory dysfunction, depression, medication adverse effects, and MS-related complications such as urinary and bowel symptoms may all play a role in SD (9-11). On the other hand, hormonal imbalance could affect sexual function in women with MS (4).

Sexual function in women with MS was evaluated in different countries and discrepancy was found among the reported prevalence.

So, we aimed to conduct this systematic review and meta-analysis to estimate the pooled prevalence of sexual dysfunction in women with MS.

METHODS

Literature search. We searched PubMed, Scopus, EMBASE, CINAHL, Web of Science, Ovid, Google Scholar and gray literature, including references of included studies and conference abstracts that were published up to April 2019.

Inclusion criteria: 1) cross sectional studies evaluating sexual function in women with MS; 2) studies with self-completed questionnaires by patients; 3) studies which had used Female Sexual Function Index (FSFI) questionnaire; 4) studies determined MS prevalence by means of 26.55 as the FSFI cut off point; and 5) articles published in English.

Exclusion criteria: 1) studies that used questionnaires other than FSFI; and 2) interventional or retrospective studies.

Data search and extraction. The search strategy included the MeSH and text words as (sexual function) OR (sexual dysfunction) AND (Multiple Sclerosis OR Sclerosis, Multiple) OR (Sclerosis, Disseminated) OR (Disseminated Sclerosis) OR MS (Multiple Sclerosis) OR (Multiple Sclerosis, Acute Fulminating) AND (Female Sexual Function Index OR FSFI).

Two independent researchers independently assessed the articles. Data on the total number of participants, first author, publication year, country, mean age, mean disease duration and number of cases with SD were extracted from the included studies.

Risk of bias assessment. We evaluated the risk of potential biases by Newcastle–Ottawa Quality Assessment Scale (adapted for cross sectional studies) (12).

Results: The literature search found 168 articles but only nine were considered for the final analysis. Two studies were from Greece, three from Iran, one from Turkey, one from Poland, one from Germany and one from Italy. In total, 1060 MS cases were analyzed. The prevalence of SD was extremely discrepant, from 27% to 95%, and the pooled estimate was calculated as 55% (95% CI 41%-69%), (I²=96.3%, P<00.1).

Conclusion: Prevalence of SD is discrepant among women with MS in different countries and it should be considered as an important concern.

Keywords: sexual dysfunction, multiple sclerosis, systematic review, prevalence.
Statistical analysis. All statistical analyses were performed using STATA (Version 13.0; Stata Corp LP, College Station, TX, USA); the inverse variance with random effects model was used. Inconsistency (I²) was calculated to determine heterogeneity. Two authors (14, 18) had reported the median and (IQR) for the final EDSS, which we transformed to mean and SD.

RESULTS

The literature search found 168 articles. After eliminating reviews, case reports and trials, 20 articles remained, of which only nine were considered for the final analysis (Fig. 1).

Two studies were from Greece, three from Iran, one from Turkey, one from Poland, one from Germany and one from Italy. In total, 1060 MS cases were analyzed (Table 1). The prevalence of SD was extremely discrepant, from 27% to 95%, and the pooled estimate was calculated as 55% (95% CI 41%-69%), (I²=96.3%, P < 0.001) (Fig. 2). Quality assessment showed that all included studies had a high quality (scores ≥ 6) (Table 2).

<table>
<thead>
<tr>
<th>First author</th>
<th>Published year</th>
<th>Country</th>
<th>Mean age (year)</th>
<th>Mean duration of disease (year)</th>
<th>Number of cases with SD</th>
<th>Total number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Konstantinidis</td>
<td>2019</td>
<td>Greece</td>
<td>45.8±8.77</td>
<td>12.78±2.18</td>
<td>160</td>
<td>248</td>
</tr>
<tr>
<td>Hösl</td>
<td>2018</td>
<td>Germany</td>
<td>33.2±1.63</td>
<td>4.22±5.7</td>
<td>37</td>
<td>83</td>
</tr>
<tr>
<td>Sofozuz</td>
<td>2018</td>
<td>Turkey</td>
<td>41.9±8.06</td>
<td>8.9</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>Bartnik</td>
<td>2017</td>
<td>Poland</td>
<td>32.0±7.22</td>
<td>7.87±5.38</td>
<td>21</td>
<td>77</td>
</tr>
<tr>
<td>Askari</td>
<td>2016</td>
<td>Iran</td>
<td>33.4±6.5</td>
<td>N/A</td>
<td>58</td>
<td>86</td>
</tr>
<tr>
<td>Fragaia</td>
<td>2015</td>
<td>Italy</td>
<td>46±8.8</td>
<td>13±105</td>
<td>51</td>
<td>135</td>
</tr>
<tr>
<td>Ghajarzadeh</td>
<td>2014</td>
<td>Iran</td>
<td>32.8±7.6</td>
<td>5.0±4.8</td>
<td>66</td>
<td>100</td>
</tr>
<tr>
<td>Mohammadi</td>
<td>2013</td>
<td>Iran</td>
<td>35.7±8.07</td>
<td>1.8±0.79</td>
<td>125</td>
<td>226</td>
</tr>
<tr>
<td>Tzortzis</td>
<td>2008</td>
<td>Greece</td>
<td>33±6.4</td>
<td>2.7</td>
<td>22</td>
<td>63</td>
</tr>
</tbody>
</table>

**TABLE 1.** Characteristics of included studies

**FIGURE 2.** Forest plot showing result of pooled SD prevalence in MS women


**DISCUSSION**

The results of this systematic review and meta-analysis showed that, in MS women, SD had a widely varying prevalence, ranging between 27% and 95%, and a pooled estimate of 55% (95% CI 41%-69%). In a recent meta-analysis, which was conducted to assess the risk of SD in MS women, authors found a 1.87-fold increased risk of SD in women who were affected by MS in comparison with controls (21). All included studies had a cross sectional design and used FSFI, which is a self-report questionnaire to assess SD. We found heterogeneity regarding our pooled estimate, which could be due to differences in sample size, mean age, and mean disease duration.

Different items have been considered for SD in MS women. Orasanu et al reported that the long duration of the disease was significantly correlated with severe symptoms of SD (22).

Sexual dysfunction is an issue of concern in MS cases, which is ignored due to cultural issues and religious issues. Physical, psychological, and marital factors could affect SD. Women with MS suffer from a wide range of psychological problems, including depression, anxiety, and stress (3, 4). Depression score has been found to be negatively correlated to the total FSFI score and all of its subscales (4). Except MS, depression could affect sexual function in healthy subjects by reducing libido, arousal and lubrication complications (23, 24).

On the other hand, near 75% of MS cases develop voiding dysfunction during the disease course, which influences their sexual function (25). A recent study showed that the prevalence of SD was 91% in MS women with detrusor over-activity and 66% in cases without detrusor over-activity (18).

Longer disease duration was considered to be related with SD in MS, which could be due to the progressive nature of the disease, and medication adverse effects (19, 26). Zhao et al found in their meta-analysis that a disease duration longer than 10 years had a 2.5 fold increased risk of SD, although it was not significant (21).

Expanded Disability Status Scale (EDSS), used to assess physical disability of MS patients, had a significant relationship with SD in previous studies (4, 27). This could indicate that advanced disease will result in SD in women suffering from MS. Konstantinidis reported that EDSS had a significant negative correlation with FSFI and its subscales, except for desire and satisfaction (13).

Aging is another risk factor of SD. As women get older, they experience dyspareunia and diminished libido, according to hormonal alterations. Prevalence of SD increases with age either in healthy subjects and prolonged diseases such as MS could reinforce it (28). Zhao et al found a relationship between MS and SD in women over 40 (21).

In this meta-analysis, the mean age of included studies ranged from 32 to 46 years. So, one source of the wide range of SD prevalence could be the different age groups in the selected studies. In similar age groups, Silva et al reported a SD prevalence of 71.1% in MS cases vs 19.5% in controls (29). On the other hand, Lombardi et al investigated SD in 31 out of 54 MS women with a mean age of 34 years (30).

**TABLE 2.** Quality assessment of included studies
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MS-related SD is a multi-factorial issue that should be considered by clinicians. As far as religious factors are considered, patients from some countries do not share their sexual problems with their clinicians.

To our knowledge, this is the first meta-analysis which is conducted to pool the prevalence of MS-related SD in affected women, which has potential limitations. Firstly, we found heterogeneity regarding the results of included studies. Secondly, the included studies were from Asia and Europe, which could not show a world-wide pooled estimate of MS-related SD. Therefore, additional studies including results from all five continents with large sample sizes are recommended.

**CONCLUSIONS**

Prevalence of SD is discrepant among women with MS in different countries and it should be considered as an important concern.

Conflicts of interest: none declared.

Financial support: none declared.

**References**


9. Borello-France D, Leng W, O’Leary M, et al. Sexual dysfunction among women with MS in different countries and it should be considered as an important concern.

Conflicts of interest: none declared.

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