

Sexual Function in Iranian Female Multiple Sclerosis Patients

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Abstract

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Keywords: Sexual function; Multiple sclerosis; Female Sexual Function Index (FSFI); Beck Depression Inventory (BDI); Expanded Disability Status Scale (EDSS)

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BACKGROUND: One of the typical complaints in females with multiple sclerosis (MS) is Sexual dysfunction (SD).

AIM: This study aimed to compare the sexual function of women with and without MS and to recognise factors that possibly related to sexual dysfunction of women with MS.

MATERIAL AND METHODS: Sexual function of 64 women with MS as a case study group were compared to a group of control comprised of 64 women. Female Sexual Function Inventory (FSFI) and Beck Depression Inventory (BDI) were used accordingly to assess sexual function and severity of depression of case and control groups. Functional status of MS Patients was assessed by the Expanded Disability Status Scale (EDSS). The data were analysed using chi-square, independent Samples t, Pearson's correlation coefficients, and multiple linear regression tests.

RESULTS: There were no differences in the Total FSFI and 4 FSFI subscale scores (i.e. sexual desire, arousal, lubrication and satisfaction) between women with MS and controls. The only significant difference between the two groups was the dimension of orgasm ($p = 0.016$). Multivariate analysis demonstrated that only BDI and FSFI total scores have significantly related ($B = -0.436, P < 0.001$). In women with MS, a significant negative correlation was found between FSFI and EDSS scores ($\rho = -0.35, P = 0.032$), as well as between FSFI scores and disease duration ($\rho = -0.25, P = 0.01$).

CONCLUSION: Depression was associated to sexual dysfunction in women. It could be advantageous to evaluate and treat depression in women with MS who suffer from sexual dysfunction.

Introduction

Multiple Sclerosis (MS) is a chronic disease caused by autoimmune and inflammatory reactions in which nerve fibres are demyelinated in the central nervous system [1]. Young people with the ages of 20 to 40 are most endangered to MS, the ages with most sexual activity. Although MS occurs in both sexes, its occurrence in females is 2 to 3 times more than in males [2]. Disability of MS among adults is common [3]. It can negatively affect the physical and mental well-being of affected people [4], [5]. The patients with MS most often suffer from sexual dysfunction (SD). The relationship between MS and sexual dysfunction is so complex [6], [7]. It seems that there is a complex

interaction between social, biological and psychological factors which strongly affected by 'emotions and social competence' of individuals [8]. Sexual function is a delicate issue in every culture, including Iran.

In most cases, MS patients are unwilling to speak about their sexual problem. As a result, their problem remains under-diagnosis. Sexual dysfunction caused by MS is more often in women, and its prevalence varies from 40% to 80%. According to some studies, the most common symptoms of sexual dysfunction in women with MS are loss of genital sensations, diminished libido, anorgasmia or hyporgasmia, and reduction of vaginal lubrication [6], [9].

The quality of life is affected by the sexual function. Thus early diagnosis and intervention of the disorder are essential in patients with MS [10].

It is estimated that the prevalence rate of MS is 45 per 100,000 people in Iran. Within 70% of MS patients in Iran are women aged between 20 and 40 [10]. Due to the religious and culture of Iranian people, women tend to conceal their sexual feelings and experiences, leading their sexual dysfunction to remain unidentified [11]. Sexual dysfunction can lead to divorce and family failure [12]. There are several studies that investigated the rate of sexual dysfunction in Iranian females with MS. Ghajarzadeh (2013) was the first who evaluate sexual function in Iranian women with MS and reported that the rate of sexual dysfunction is 66%. According to Merghati-Khoei study, about 87.1% of Iranian women with MS suffer from sexual problems [14]. Finally, Mohammadi reported that 55.3% of Iranian women with MS has sufficient criteria to be classified as sexual dysfunction [15].

Better identifying the MS patients with sexual dysfunction as well as determining the associated factors requires a better understanding of the prevalence and nature of MS to provide therapeutic strategies for these patients [16].

This study aimed to assess sexual dysfunction of women with MS and to compare it with a control group of healthy women. Also, possible factors associated with sexual dysfunction, including depression and demographic variables (age, education, employment, marriage duration) are examined in this study.

Material and Methods

Design and participants of the study

This comparative case-control analytical study was performed from June 2015 to August 2016 on MS women who were admitted in hospitals affiliated by Islamic Azad University of Mashhad, Iran. The criteria for patients to be included in this study were: aged between 18 and 50 years, being married, definite MS according to MC Donald criteria [17], and having at least once sexual intercourse in the last 4 weeks. The patients with the following conditions were excluded from the study: sexually inactive or postmenopausal women, those having had any exacerbations of MS during the last 6 months, women with known cases of psychiatric disorders, those were under-medicated with medicines which could affect sexual activity like anti-depressants and beta-blockers, and women with other concomitant diseases. Accordingly, 64 women were selected as the case group using consecutive sampling method. The control group included 64

healthy women in the same ageing range with the case group that were selected from the relatives of patients.

Sample size

From one hand, according to the Ghajarzadeh et al., [13], the mean values of general sexual function score were 23.2 ± 7.1 and 26.8 ± 5.2 in the case and control groups, respectively, and from the other hand, considering the coefficient of confidence of 95% and the test power of 90%, the least size of 64 were considered for each group.

Questionnaires

To collect demographic data including age, marriage duration, employment and educational status, a specific checklist was designed. Also, valid FSFI questionnaire and a Persian version of Beck depression inventory (BDI) were used in this study to collect required data.

FSFI is a self-report questionnaire with 19-item that is used to evaluate the sexual function of women. In addition of a total score of sexual function [18], it provides scores of sexual function on six domains as follows: desire (2 items, questions 1 and 2), arousal (4 items, questions 3, 4, 5 and 6), lubrication (4 items, questions 7, 8, 9 and 10), orgasm (3 items, questions 11, 12 and 13), satisfaction (3 items, questions 14, 15 and 16), and pain (3 items, questions 17, 18, 19). According to Wiegel et al., [19], to distinguish between women with and without sexual dysfunction, an FSFI total score of 26.55 is optimal. Mohammadi et al., have well documented the Persian version of FSFI and found that the cut-off point for FSFI questionnaires is 28 with the sensitivity of 83% and specificity of 82%. Accordingly, the FSFI score of 28 or less is considered to show the sexual dysfunction of Iranian women [20].

The BDI consisted of 21 questions about the feelings of respondents over the last week. Each item had a score between 0 and 3 that, respondents expressed their depression accordingly. The scores of all items are added together and Individuals are classified as follows: those with a total scores between 0 and 9 were identified as not depressed, scores between 10 and 18 as mild to moderate depression, scores between 19 and 29 as moderate to severe depression, and scores between 30 and 63 as severe depression [21]. The psychometric characteristics of the Iranian version of BDI are well documented in the literature [22].

Expanded Disability Status Scale (EDSS) was evaluated after a neurological examination of the patients, with ranging from 0 to 10 [23].

Analysis

Data analysis was performed using SPSS software V.18.0 (SPSS Inc., Chicago, IL, USA). Sample characteristics were examined using descriptive statistics such as frequency and mean (SD). The data had a normal distribution, so Independent Samples t-Test was used to compare quantitative variables in two groups of case and control. Qualitative variables in the two groups were compared using the chi-square test, and the relationship between two quantitative variables was investigated using the Pearson test. Afterwards, all variables were combined into a multiple linear regression model. The coefficient of confidence of 95% was considered in the analysis.

Ethics

The study had been conducted by the Helsinki declaration and approved by the local ethics committee. The confidentiality of participants' information and their answers to questions were assured and written informed consent of all participants was taken.

Results

The numbers of patients with MS and healthy participants in the study was 64 in each group. Ninety four per cent (60 patients) of MS patients suffer from relapsing-remitting MS, and other 6 per cent (4 patients) had secondary progressive MS. The results of the comparison between cases and control group are presented in Table 1. As it could be seen from this table, the median of EDSS is 2 with a range from 0 to 6 and the mean duration of the disease is equal to 52.5 months (ranging from 6 to 84.5).

Table 1: Comparison of personal properties in cases and controls groups

Quantitative variables	Cases Mean (SD)	Controls Mean (SD)	Statistic p-value
Age (years)	35.25 (8.07)	32.83 (8.07)	t=1.697 P=0.092
Marriage duration (years)	13.17 (8.77)	10.58 (8.60)	T = 1.683 P=0.095
Qualitative variables	Cases No. (%)	Controls No. (%)	Statistic P-value
Employment	Non-employed 60 (93.8%) Employed 4(6.2%)	17(26.6%) 47(73.4%)	Pearson Chi-Square = 60.268 P = 0.000
Education	Primary - secondary Higher 21(39.8%)	19(29.7%) 45(70.3%)	Pearson Chi-Square = 18.018 P = 0.000

It could be seen from the table 1 that mean age ($p = 0.092$) and marriage duration ($p = 0.095$) of two groups are not significantly different. However, there is a significant difference in employment ($p < 0.001$) and educational level ($p < 0.001$) of the two groups. Table 2 shows the comparison of BDI score

and total score of sexual dysfunction and its subscales between the case and control groups.

Table 2: Mean BDI, the total score of sexual dysfunction and its subscales in case and control groups

	MS Patients Mean (SD)	Controls Mean (SD)	statistics	P-value
BDI	18.92 (10.81)	9.93 (7.46)	T = 5.467	$P < 0.001^*$
Total score of sexual dysfunction	22.86 (5.36)	24.39 (4.75)	T = -1.714	$P = 0.089$
Desire	3.26 (1.11)	3.50 (1.02)	T = -1.297	$P = 0.197$
Arousal	3.43 (1.22)	3.81 (1.12)	T = -1.814	$P = 0.072$
Lubrication	5.76 (1.40)	6.20 (1.41)	T = -1.730	$P = 0.086$
Orgasm	3.81 (1.26)	4.29 (0.96)	T = -1.730	$P = 0.016^{**}$
Satisfaction	3.71 (1.39)	3.85 (0.94)	T = -0.683	$P = 0.496$
Dyspareunia	2.67 (1.01)	2.75 (0.98)	T = -0.426	$P = 0.671$

* Significant at $P < 0.001$; ** Significant at $P < 0.01$.

According to Table 2, the total score of sexual function is not significantly different between the two groups. Among the items of the questionnaire, orgasm is the only item that has a significant difference in the two groups ($p = 0.016$), and the value of mean score for orgasm is better in control group in comparison with the patient group. The obtained score of depression in the case group is significantly higher than the score in the control group ($p = 0.000$).

Univariate analysis was firstly conducted to investigate the relationship between variables of age, marriage duration, depression, education and employment using total score of sexual function. The results are presented in Table 3. From the results shown in Table 3, it could be seen that age and depression are only items with a significant relationship in terms of the total score of sexual function.

Table 3: Univariate analysis results and risk factors for sexual dysfunction

Independent Variables	Statistic	P-value
Multiple sclerosis a	T = -1.714	0.089
Depression inventory of Beck b	R = -.411	$P < 0.001^{**}$
Age b	R = -.0181	0.041*
Education a	T = -1.563	0.121
Employment a	T = -1.027	0.306
Marriage duration b	R = -0.167	0.06

Dependent Variable: Total score of FSFI; a conducted using independent sample t-test; b conducted using Pearson's correlation test; * Significant at $P < 0.05$; ** Significant at $P < 0.001$.

Afterwards, all variables used in univariate analysis were combined into a multiple linear regression model. The results are indicated in Table 4. It is seen from this table that, there is only a significant relationship between the BDI and FSFI total scores.

Table 4: The results of multivariable linear regression analysis and risk factors for sexual dysfunction

Variables	B	SE	Beta	t	P-value
Multiple sclerosis	0.156	1.207	0.015	.129	0.897
Beck depression inventory	-0.216	0.048	-0.436	-4.474	$< 0.001^*$
Age	-0.035	0.103	-0.056	-0.341	0.737
Education	-0.851	1.193	-0.084	-0.713	0.477
Employment	-0.699	1.321	-0.067	-0.529	0.598
Marriage duration	-0.055	0.103	-0.094	-0.528	0.598

Dependent Variable: Total score of FSFI; * Significant at $P < 0.001$.

Univariate analyses of Pearson's and independent sample t-tests were used to examine the

relationship between sexual dysfunction subscales and independent variables. The obtained results are given in Table 5.

Table 5: The results of univariate analyses for the relationship between sexual dysfunction subscales and other variables

	BDI (r, P value)	Age (r, P value)	Marriage duration (r, P value)	Employment (t, P value)	Education (t, P value)
Desire	(-0.377, 0.000***) ^a	(-0.184, 0.037*) ^a	(-0.215, 0.015*) ^a	(-1.255, 0.212) ^b	(-1.573, 0.118) ^b
Arousal	(-0.440, 0.000***) ^a	(-0.173, 0.051) ^a	(0.210, 0.017*) ^a	(-1.579, 0.117) ^b	(-2.085, 0.039**) ^b
Lubrication	(-0.306, 0.000***) ^a	(-0.183, 0.038*) ^a	(-0.120, 0.176) ^a	(-1.067, 0.288) ^b	(-0.975, 0.332) ^b
Orgasm	(-0.453, 0.000***) ^a	(-0.183, 0.039*) ^a	(-0.180, 0.042*) ^a	(-1.429, 0.156) ^b	(-2.962, 0.004***) ^b
Satisfaction	(-0.356, 0.000***) ^a	(-0.137, 0.124) ^a	(-0.195, 0.027*) ^a	(-0.393, 0.695) ^b	(-2.526, 0.013***) ^b
Dyspareunia	(0.067, 0.647) ^a	(0.044, 0.621) ^a	(0.90, 0.310) ^a	(-0.496, 0.621) ^b	0.751, 0.454) ^b

^a: performed using Pearson's correlation test; ^b: performed using independent sample t test; * Significant at P < 0.05; ** Significant at P < 0.01; *** Significant at P < 0.001.

The results of multivariate analysis represented a significant relationship between depression and all other sexual function subscales ($p < 0.001$) except for dyspareunia.

Different scores in patients with and without sexual dysfunction are shown in Table 6. As could be seen in this table, there is a significant difference between patients who have a total FSFI score higher than 28 and those with a score lower than 28 in terms of mean BDI and all subscales of FSFI except for dyspareunia.

Table 6: Total FSFI scores of patients with and without sexual dysfunction

	Patients with FSFI < 28 N = 53 Mean (SD)	Patients with FSFI > 28 N = 11 Mean (SD)	Statistic	P values
BDI	20.9 (10.33)	9.45 (7.9)	T = 5.467	P = 0.001
Total sexual score	21.22 (4.25)	30.75 (2.16)	T = -1.714	P < 0.001
Desire	2.96 (0.89)	4.69 (0.96)	T = -1.297	P < 0.001
Arousal	3.08 (0.96)	5.1 (0.9)	T = -1.814	P < 0.001
Lubrication	5.45 (1.28)	7.27 (0.93)	T = -1.730	P < 0.001
Orgasm	3.50 (1.08)	5.3 (0.95)	T = -1.730	P < 0.001
Satisfaction	3.39 (1.24)	5.23 (1.06)	T = -0.683	P < 0.001
Dyspareunia	2.77 (1.05)	2.21 (0.63)	T = -0.426	P = 0.1

There are significant negative correlations between disease duration and FSFI scores ($\rho = -0.25$, $P = 0.01$) and between EDSS and FSFI scores ($\rho = -0.35$, $P = 0.032$) in MS patients. Also, a significant positive correlation could be seen between EDSS and BDI ($\rho = 0.31$, $P < 0.001$) in the patients.

Around 12.5 per cent of patients in the case group (eight people) and 4.7 per cent in the control group (three people) answered "Yes" to this question that "Have physicians and medical staff ever asked about your sexual problems?", that in this regard didn't exist a significant difference between the two groups. ($p = 0.26$)

Discussion

Sexual dysfunction is one of the common side effects of multiple sclerosis (MS) that usually goes unreported by patients and do not address by clinicians [16]. The prevalence of sexual dysfunction

in MS patients had been estimated to be between 40% and 80 % [24].

The aim of this study was to investigate the prevalence of sexual dysfunction in MS patients and to recognize factors that possibly related to sexual dysfunction of women with MS. considering a cut-off point of 28 on the FSFI in this study, high prevalence of sexual dysfunction (82.5%) was found that is consistent with the previous research. In his study, Ghajarzadeh (2013) considering a cut-off point of 26.55 for FSFI, reported that the prevalence of sexual dysfunction in Iranian MS women are 66% [13]. Mohammadi [15] considered a cut-off point of 28 for FSFI and found a high frequency of sexual dysfunction among Iranian women with MS (55.3%). In their study on the sexual problem of Iranian women with MS, Merghati-Khoei et al., [14] based on Multiple Sclerosis Intimacy and Sexuality Questionnaire-19 (MSISQ-19) reported that 87.1% of women with MS had a primary sexual problem.

To compare the sexual function of MS patients with healthy people, a control group consisting of 64 healthy women was selected in our study. As far as we know, the only research amongst Iranian studies on MS women that used a control group is Ghajarzadeh study [13].

Anyhow, regarding all subscales and total score of FSFI in our study, the mean scores for the case group were worse than the control. According to our study results, there are no statistical differences between the two groups except for orgasm. This is not consistent with Ghajarzadeh study, in which significant differences between the scores of two groups were found. This disagreement may be caused by different sample sizes used in the two studies. In the Ghajarzadeh study, the case group consisted of 100 patients and the control group including 50 women [13], while in our study, the numbers of people in both groups were 64. The members of the control group in our study were selected amongst patients' relatives, and this may be another reason for the difference between the two studies. Various socio-cultural spheres have different sexual behaviour [25]. As a result, individuals of a family because of they're common sociocultural have close sexual function. As mentioned previously, the orgasm was the only item that differed between the case and control groups. This is consistent with Merghati-Khoei et al., [14] who found that the most frequent symptom of primary sexual problems in MS women is delayed orgasm (75.7%). Ashtari et al., [10] in their study about sexual dysfunctions among Iranian women showed that orgasmic problems are the most common sexual dysfunction with 41.2% prevalence in Iranian women.

Marriage duration had no relationship with sexual function in this study. Contrarily, Merghati-Khoei et al. found an inverse relationship between sexual problems and marriage duration. They

attributed this inverse relationship to change in perceptions and problem discounting that exist as sexual frequency has declined over time [14].

There was also no significant relationship between age and sexual function in the present study. Although, univariate analysis identified age as a significant factor (Table 1), but its effect reduced when multiple linear regression analysis was performed. Similar results are reported by Ghajarzadeh [13] and Mohammadi [15]. Also, Khan et al., [24] using Sexual Frequency Scale found no relationship between age and sexual dysfunction. In the other hand, Merghati-Khoei has reported a significant positive relationship between age and sexual problems [14]. This could be attributed to the different questionnaire (MSISQ-19) as well as using the univariate analysis in Merghati-Khoei study.

One of the predominant psychological problems that can influence sexual dysfunction in MS patients is depression. Depression is more common in MS patients [25], [26], [27], so it seems logical to expect that these patients suffer from sexual dysfunction more than others. In the present study, the mean BDI score in MS patients was significantly higher than in the control group. In both the overall score and the subscale scores, mean BDI was the only predictor of FSFI score, except for dyspareunia. Similarly, there are many studies that reported a strong relationship between depression and sexual dysfunction [15], [30]. [31], [32] In their study, Ghajarzadeh et al., reported a negative and significant correlation between the total score of sexual dysfunction and BDI score in MS patients [13]. According to ELIXIR study, 76 per cent of depressed participants suffer from arousal problems, and the other 24 per cent had problems with erectile or lubrication [33]. Physiological and psychological factors can cause depression symptoms in MS patients that require close monitoring and selecting appropriate treatment options such as behavioural and pharmacological approaches) [34]. Furthermore, using antidepressants by depressed patients may worsen the sexual dysfunction in them, as studies have confirmed the relation between antidepressants and sexual dysfunction [35], [36].

The relationship between sexual dysfunction and employment and education wasn't significant in this study. This is not in line with some studies [14], [38], but is consistent with the results of Redelman study [35].

The results of our study showed a significant difference between patients with and without sexual dysfunction (patients with FSFI score of less and more than 28) in terms of mean total FSFI scores and its subscales. These results are in line with the findings of Ghajarzadeh et al., [13], and Lombardi et al., [39].

This study has some limitations. First, the collection of data and samples were only done in one outpatient centre. When generalising the results of

this study to whole Iranian MS women, one should notice this limitation. Second, the information on the spouses of the understudy patients was not collected. Future studies must address this issue.

In conclusion, the results of this study showed a significant relationship between depression and sexual dysfunction in MS population. As a result, it is helpful to evaluate and treat depression in patients with MS who suffer from sexual dysfunction as a starting point for intervention. The ideal is that physicians make it a part of their daily assessment. However, many physicians and health care providers do not spend enough time or have not convenience to talk about sexual issues of their patients, and many of them do not have enough education about treatment of sexual dysfunction [34].

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