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Comparison of the sexual dysfunction in women with multiple sclerosis and control group

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Abstract

Purpose: Multiple sclerosis is a progressive and common chronic disease that affects about 2.8 million of the world's population. It has a series of neurological and psychological symptoms, one of which is sexual dysfunction. This symptom is more common in multiple sclerosis than other neurological diseases and is 5 times more common than in the general population. This study aimed to compare the sexual dysfunction in women with and without MS.

Methods: 95 women were in the experiment group and 93 in the control group. Demographic features were collected. The Persian version of the Female Sexual Function Index (FSFI) questionnaire was used to investigate the subjects' sexual function. EDSS was used to evaluate the disability of the subjects with multiple sclerosis.

Results: The average FSFI in women with multiple sclerosis was 21.47, and that in the control group was 22.37. This difference in the obtained score was not significant. ($p=0.088$) Also, a significant difference was observed in the scores obtained in the areas of sexual desire, arousal, and lubrication.

Conclusions: In general, this study indicated the presence of sexual dysfunction in the studied women. However, there was no significant difference in the presence of sexual dysfunction between the multiple sclerosis patients and the control group. Impairment in sexual function as well as the areas of desire, arousal, and lubrication were more common in women with multiple sclerosis. It is recommended that further studies should be conducted to confirm the results of this study.

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Introduction

Multiple sclerosis (MS) is known as one of the most popular disabling diseases which influences young adults (Dobson & Giovannoni, 2019). MS is an autoimmune condition causing inflammatory demyelination of the central nervous system (Panda et al., 2018). According to Atlas of MS, the average number of people with MS is on the rise and is about 2.8 million all around the world in 2020. It is estimated that one individual in the world is diagnosed with MS every 5 minutes. Due to worldwide data, females are twice more likely to have MS, and this ratio is up to 4:1 (F:M) in some countries (Silveira et al., 2019; Walton et al., 2020). The increasing rate of MS in Tehran, capital city in Iran shows that the number of diagnosed people from 79 cases per 100,000 in 2006 grew up to 151 cases per 100,000 in 2016 (Nasiri et al., 2021). Most of the patients are aged 20 to 40 years, which is a productive stage of lifetime (Karimi et al., 2020).

There is a high rate of psychiatric disorders in MS patients (Panda et al., 2018). According to a study conducted in Iran, about 47% of patients reported moderate depression, 39% moderate anxiety, and 48% stress (Karimi et al., 2020). Sexual dysfunction is one of the most common and stressful effects of MS in patients. Disturbed sexual function has a significant impact on health-related quality of life, especially for young patients. (Domingo et al., 2018) The etiology of sexual dysfunction in MS patients is not clear yet. Probable reasons are related to physical impairment, psychological factors, and side effects of drugs. (Gumus et al., 2014; Polat Dunya et al., 2020) Data revealed that prevalence of sexual dysfunction in MS is higher than other neurological diseases and about five times more than general population (Darija et al., 2015). Various studies reported sexual dysfunction between 40-80% in women and

50-90% in men with MS (Drulovic et al., 2020).

In most cases, MS patients are unwilling to talk about their sexual problems. As a result, their problem remains undiagnosed (Silveira et al., 2019). There are several types of sexual dysfunctions in these patients. Some of the most reported sexual dysfunctions in patients with MS are erectile dysfunction, loss of sexual confidence, orgasmic dysfunction, and genital numbness in men and loss of libido, inadequate vaginal lubrication, and genital numbness in women (Zhao et al., 2018). Foley and Iverson described a model for sexual dysfunction in MS. It describes three levels of contributing factors as primary, secondary, and tertiary causes. Primary causes are those associated with cortex and spinal cord lesions and include paresthesia, sensory numbness, loss of libido, decreased lubrication, and erectile dysfunction. Secondary causes are associated with MS symptoms such as fatigue, spasticity, pain, bladder and bowel dysfunction, and cognitive problems. Tertiary causes stem from psychosocial factors and include changes in social roles, mood disorders, demoralization, interpersonal difficulties, body image concerns, fear of rejection, and others (Domingo et al., 2018).

A research conducted in Iran reported that prevalence of sexual dysfunction in women with MS was about 69% and mostly impacted the sexual desire and orgasmic dysfunction (Nazari et al., 2020). In a systematic review and meta-analysis study, 9 out of 168 articles were analyzed and 1060 women with MS were examined. The prevalence was 55%; this shows the importance of the issue. (Azimi et al., 2019) In the case-control study by Masmoudi et al. in 2018, sexual dysfunction in women with MS (69.2%) compared to the control group (26.9%) were significant. (Masmoudi et al., 2018).

Due to the importance of the sexual dysfunction in women with MS and impacts of this issue on the quality of life, this article compared the sexual dysfunction in women with and without MS. Also, possible factors associated with sexual dysfunction, including demographic variables (age, education, marriage duration) and MS-related variables (EDSS, MS subtypes and disease duration) were examined in this study.

Method

The present study was conducted based on a cross-sectional design. Data collection was done from January 2022 to March 2022 from visitors of medical centers affiliated to Shiraz University of Medical Sciences. Sampling method for this research was volunteer or self-selection sampling. Based on the sample size formula, comparing two averages with an error of 5% and a power of 80%, and using the results of a similar article (Gumus et al., 2014), the sample size in each group was calculated at least 39 people; for better statistical analysis, 95 women in the group of MS patients and 93 women in the control group inclusion and exclusion criteria were considered. The inclusion criteria for the sample group consisted of:

1. Diagnosis of Multiple Sclerosis based on McDonald criteria (Thompson et al., 2018) assessed by a neurologist
2. Age at least 18 years old
3. Appropriate physical condition to answer the questions
4. Married more than 6 months
5. Lack of Multiple Sclerosis attacks for more than 3 months
6. Lack of other mental and physical disorders
7. Willingness to participate in research

The exclusion criteria for sample group consisted of:

1. Having a Gynecological problem
2. Being pregnant
3. Not having sexual relationship for more than 6 months for different reasons like absence of spouse
4. Using different substances other than cigarette and hookah

Finally, 188 questionnaires were used to collect the required data. After collecting information, quantitative data with number, percentage and mean and qualitative data with mean and standard deviation are expressed. Relationship between qualitative data with Chi-square test and relationship between quantitative data with Spearman correlation test. In order to compare the quantitative data between two groups of MS and control and different subtypes of MS, Mann-Whitney and Kurskull-Walis tests were used. The data analysis was performed through SPSS software (version 26).

Measures

Demographic characteristics questionnaire.

This form consisted of questions about different demographic characteristics, including age, financial status, education level, marriage duration, average sex per month, level of satisfaction with spouse, marriage and emotional connection with spouse.

Patient's information questionnaire.

This questionnaire was filled by a neurologist; it contains information on duration of the disease, recent attack, age of diagnosis, subtypes of MS, medications and EDSS (Kurtzke, 1983) which is a scale that measures the disability of people with multiple sclerosis and the scores range from 0 to 10 points.

Female sexual function index (FSFI). The FSFI consists of 19 items which assess sexual function in women during the last 4 weeks. The instrument consists of 6 areas: sexual desire, arousal, lubrication, orgasm, satisfaction, and pain.

Data analysis

In this study, after collecting information, quantitative data with number, percentage

and mean and qualitative data with mean and standard deviation were expressed. Chi-square test was used to test the relationship between qualitative data and Spearman correlation test was used to determine the relationship between quantitative data. To compare the quantitative data between the two groups of MS and control and different subtypes of MS, we used Mann-Whitney and Kurskull-Walis tests.

Table 1. Quantitative Demographic Information

Group	Age(Mean)	Marriage Duration(Mean)	Child Number(Mean)	Sexual relationship frequency/month(Mean)
Control	36.02	12.55	1.32	11.37
MS	40.10	16.56	1.72	4.65
P value	0.001	0.005	0.077	0.001

Of the 188 people studied, 95.2% have sexual dysfunction, which were 95.7% and 94.7% in

the control group and patients separately, and their relationship with a p value of 0.757 was not significant.

Table 2. Qualitative Demographic Information

	education		P value:0.000 Pearson Chi-Square:32.68	
	Control	MS		
Under diploma	4.4%	16.8%	P value:0.000 Pearson Chi-Square:32.68	
Diploma	14.4%	28.4%		
AS	4.4%	16.8%		
BS & MS	65.6%	36.8%		
PhD and higher	11.1%	1.1%		
	Financial Status		P value:0.000 Pearson Chi-Square:24.56	
	Weak	2.2%		11.6%
	moderate	46.1%		68.4%
	Good	46.1%		20%
	Very good	5.6%		0%

According to Table 3, the total score of sexual function was not significantly different between the two groups. Among the items of the questionnaire, desire, arousal, and lubrication items had a significant difference in the two groups ($p < 0.05$), and the value of mean score for these items were

better in the control group in comparison with the patient group.

Mean age of the disease onset, duration of the disease, and EDSS were 35.2 (years), 4.68 (years), and 2.03, respectively. The most common type of MS was relapsing-remitting (RR) (75.8%).

Table 3. The total mean score of sexual dysfunction and its subscales in the case and control groups

	Control	MS	P value
Total FSFI	22.37	21.47	0.088
desire	4.20	3.85	0.016
arousal	4.37	4.01	0.024
lubrication	3.23	3.08	0.009
orgasm	3.55	3.49	0.400
satisfaction	4.77	4.74	0.621
pain	2.22	2.34	0.798

The amount of sexual dysfunction between multiple sclerosis subtypes and the control group was not significant. (p value: 0.088).

Table 4. Correlations of clinical variables (EDSS and Disease Duration) with sexual dysfunction

	r	P value
EDSS	-0.238	0.020
Disease Duration	-0.256	0.012

We conducted a correlation analysis between clinical variables and FSFI scores. According to Table 4, we also found a significant negative correlation between EDSS and FSFI scores ($r = -0.238$, $P=0.020$) and a significant negative correlation between disease duration and FSFI ($r = -0.256$, $P=0.012$).

Table 5 indicates that the amount of sexual dysfunction in the patient group based on age compared to the control group was not significant in any age group. (p value >0.05). However, this comparison between patient and control groups was significant in under diploma education level ($p = 0.002$); the sexual dysfunction was better in the control group. Also, there was a significant

difference in the amount of sexual dysfunction between patients and control groups based on the length of marriage in the 14-20- year-old group ($p = 0.004$).

Discussion

The aim of this study was to compare the sexual dysfunction in women with and without MS. As the results revealed, there was no statistically significant difference in the female sexual dysfunction. Regarding all subscales and total score of FSFI in our study, the mean scores for the case group were worse than the control.

As MS is a disabling disease and impacts many aspects of mental and physical health in patients, it is assumed that one of the consequences is sexual disturbance. In Alehashemi et al.'s study, it was calculated as follows: the mean FSFI in the multiple sclerosis group and the control group was 22.86 and 24.39, respectively. This difference was not significant in this study either (Alehashemi et al., 2019). This is not consistent with Gava et al.'s results (2019) which revealed the prevalence of dysfunctional FSFI global scores (<26.55) was higher in women with MS compared with the controls (49.6% vs. 33.6%, $P = .014$) (Gava et al., 2019). Findings of a research in

Iran also revealed the contrary results of our study. There was a significant difference between the MS group and health group in

FSFI questionnaire and all the subscales (Ghajarzadeh et al., 2014).

Table 5. Sexual dysfunction in MS patients in comparison with the control group based on demographic variables

		FSFI in control	FSFI in MS	P value
Age(yr)	18-30	23.65	22.16	0.751
	31-50	22.63	21.54	0.102
	51 and higher	17.26	20.12	0.307
Education level	Under diploma	24.62	19.60	0.002
	Diploma	22.10	21.89	0.942
	AS	22.77	21.22	0.257
	BS & MS	21.98	22.00	0.491
Marriage duration(yr)	PhD and higher	23.38	25.80	0.343
	<=1	24.23	24.50	0.655
	2-6	22.97	22.65	0.596
	7-13	21.88	23.42	0.187
	14-20	23.36	20.61	0.004
	21-46	20.61	19.43	0.118

In our study, sexual dysfunction was significantly higher in the subscales of desire, arousal, and lubrication in the patient group in comparison with the control group. In Alehashemi et al.'s study, the difference was significant in orgasm (Alehashemi et al., 2019). In the study of Ghajarzadeh et al., it was significant in all areas of FSFI. (Ghajarzadeh et al., 2014) Also, in Masmoudi et al.'s research, desire, arousal, and orgasm were significantly lower in multiple sclerosis patients (Masmoudi et al., 2018).

In our study, a high prevalence of sexual dysfunction (94.7%) was found. In the same line, in Alehashemi et al.'s study a high prevalence was reported (82.5%) (Alehashemi et al., 2019). In the study of Salari et al., which was a systematic review and meta-analysis, the rate of sexual disorder was 62.5%, which can be due to the type of study and investigation on a much larger number of patients (2115 people) compared to our study.(Salari et al., 2022).

The rate of sexual dysfunction in the patient group compared to the control group based on age was not significant, but in both

multiple sclerosis and control groups, sexual dysfunction increased with age. In a study by Borello-France et al., sexual dysfunction increased with age in multiple sclerosis and healthy people.(Borello-France et al., 2004) In other studies that were compared with the control group, the relationship with age was not significant (Alehashemi et al., 2019; Mohammadi et al., 2013).

The rate of sexual dysfunction in the patient group compared to the control group was higher in lower education and higher marriage duration. This could be because the control group had strong relationships during this period of marriage and they are not involved in the disease, so the quality of their sexual relations was better; in the patient group, with the increase in the length of marriage, the destructive effects of the disease on the personal life and relationship with the spouse increased and reduced the quality of sexual function. In a study by Merqati Khoei et al., sexual dysfunction was associated with lower education and longer marriage duration (Merghati-Khoei et al., 2013).

The rate of sexual dysfunction in SPMS and PPMS, which are more severe types of the disease, was higher, but, in general, sexual dysfunction in the subtypes of MS was not significantly different compared to the control group, which could be due to the high rate of sexual dysfunction in the control group. In the study carried out by Mohammadi et al., similar results were obtained and the rate of sexual dysfunction in SPMS, which is the severe form of the disease, was 75% which is higher than the other two subtypes (Mohammadi et al., 2013). It has also been proven in other studies that the more severe form of the disease is associated with more sexual dysfunction (McCabe, 2004; Zorzon et al., 1999).

Sexual dysfunction in multiple sclerosis has increased with the increase of EDSS, which measures disability caused by multiple sclerosis. This has been proven in similar studies. (Dehghan-Nayeri et al., 2018; Ghajarzadeh et al., 2014).

Sexual dysfunction in multiple sclerosis has increased with increasing duration of the disease. This can be due to the progress of the disease, the side effects of the drugs over time, and their effect on the quality of sexual function. This issue was pointed out in a similar study. (Mohammadi et al., 2013). Also, in a meta-analysis that disease duration of more than 10 years increases the risk of sexual dysfunction in multiple sclerosis by 2.5 times; however, it was not significant (Zhao et al., 2018).

Limitations

This study had some limitations. The statistical population of multiple sclerosis was limited to the Multiple Sclerosis Clinic of Imam Reza Clinic. One of the main limitations of this study was that the selected sample was just related to Fars province. To obtain more accurate results, the samples should be selected from different

geographical areas. Another limitation of the study was the heterogeneity of the control group and the patient group in the mean age, length of marriage, level of education, financial status, and frequency of sexual intercourse during the last month. According to previous studies, these items are effective in sexual performance.

It is better to consider a certain age range to enter the research because after menopause, sexual activity decreases and can be one of the confounding factors of the research.

According to the mentioned problems, the percentage of sexual disorder is higher than expected. A study with a larger sample size is recommended to obtain more accurate statistics.

Conclusions

In general, this study indicates the prevalence of sexual disorders in a significant population of people under investigation, including the control group and people with multiple sclerosis. Differences in sexual dysfunction in the areas of desire, arousal, and lubrication were observed between patients with multiple sclerosis and the control group. The rate of occurrence of sexual dysfunction in both groups was equal and the differences were insignificant. In order to confirm the results of similar studies, we recommend that further studies should be conducted.

Conflict of interest

The authors declare that they have no competing interests.

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