RESEARCH

Sexual dysfunction and quality of life across age groups in multiple sclerosis patients: a prospective cross-sectional analysis

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Abstract

Introduction As the most frequent chronic neurological disorder in young adults, Multiple sclerosis (MS) significantly affects neurological function, particularly the autonomic nervous system. While the physical symptoms are visible, MS also causes hidden effects like sexual dysfunction. Research indicates that sexual disorders are more prevalent in MS patients compared to other neurological conditions and are approximately five times more common than in the general population. This study utilized the Sexual Intimacy and Desires in MS Patients Questionnaire (MSISQ-19) and the Quality of Life in Patients with Multiple Sclerosis Questionnaire to investigate the impact of sexual disorders on the quality of life in MS patients.

Methods This cross-sectional study was conducted on MS patients attending the MS clinic in 2022 and 2023. Eighty patients were randomly selected, and data were collected using the MSISQ-19 and MSQOL-54 guestionnaires. The results were analyzed to establish the impact of sexual disorders on quality of life.

Results 59 women and 21 men with MS were included. The Physical Health Scale (PHC) had a mean score of 51.6 (SD=20.2), and the Mental Health Scale (MHC) had a mean score of 57.8 (SD=20.5). Age appeared to influence physical health scores, with the youngest group (20–30 years) scoring highest and the oldest group (51–65 years) scoring lowest.

Discussion and conclusion The present study found that primary, secondary, and tertiary sexual disorders are common in MS patients across all age groups and genders. These findings highlight the need for increased attention, research, and treatment interventions for sexual dysfunction in MS patients.

Keywords Multiple sclerosis, Psychological sexual dysfunction, Sexual dysfunction, Quality of life, Psychological wellbeing

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Introduction

Multiple sclerosis (MS) is the most prevalent chronic neurological disorder in young adults, significantly impacting nervous function, particularly the autonomic nervous system [1]. The typical onset age ranges from 20 to 45 years, with an estimated female-to-male ratio of 2:1 [2]. Iran, with a prevalence of 29.3 per 100,000 individuals, is recognized as having a high prevalence of MS among Middle Eastern countries [3].

In addition, with neuroglial symptoms, MS also has subtle and understated effects like sexual dysfunction. The prevalence of sexual disorders in MS ranges from 40 to 80% and 50–90% in women and men, respectively [1]. Recent studies indicate that multiple sclerosis (MS) patients in Iran experience a high rate of sexual dysfunction. The prevalence of sexual dysfunction among Iranian women with MS is estimated to be between 55% and 70%, highlighting the significance of this issue [4–6]. Additionally, cultural limitations in Iran often lead to this problem being overlooked.

Proper sexual function is crucial for mental health and self-confidence and is a pillar of a healthy relationship. Sexual disorders reduce life satisfaction and affect the quality of life of both the individual and their partner. Sexual dysfunction is a common and stressful issue in MS patients, representing a significant burden of the disease. Research indicates that sexual disorders are more prevalent in MS patients than in other neurological diseases and are approximately five times more common than in the general population [1]. Given the clear impact of sexual problems on the quality of life in MS patients, these issues should be managed through treatments and preventive strategies, with more attention given to this aspect during patient evaluations (4). According to the cultural restrictions in Iran, research on this subject is limited. The nature of sexual changes in MS is categorized as primary, secondary, and tertiary [1]. Previous studies recognized erectile and ejaculatory dysfunction as the most common sexual symptoms in men; however, dyspareunia, decreased lubrication, and impaired clitoral erection are prevalent in women [1]. This study aims to investigate the effect of sexual dysfunction on the quality of life in MS patients using MS Intimacy and Sexuality (MSISQ-19) and the Quality of Life in Multiple Sclerosis Patients Questionnaires (MSQOL-54).

Materials and methods

This cross-sectional study was conducted on patients with multiple sclerosis (MS) who attended the MS clinic at Firoozgar Hospital in 2022 and 2023 in an outpatient setting. The study population consisted of MS patients from the clinic, and a total of 80 patients were randomly selected. The sample size for this study was determined using power analysis to ensure adequate statistical power to detect significant differences. Based on previous studies, an effect size of 0.5 was considered. To achieve a power of 0.80 and an alpha level of 0.05, the required sample size was calculated to be 64 participants per group. Taking into account a potential dropout rate of 20%, the final sample size was adjusted to 80 participants per group. However, due to not having a control group based on this study's design, the final sample size was considered 80 participants. Data were collected in the outpatient setting of Firoozgar Hospital, where the researcher personally administered the Intimacy and Sexual Desires in Patients with MS (MSISQ-19) and the Quality of Life in Patients with MS (MSQOL-54) questionnaires. The paper questionnaires were filled out by researchers based on interviews with patients. The collected data were securely stored in a Microsoft Excel file and later analyzed and reviewed to ensure accuracy and confidentiality.

Inclusion criteria Diagnosed with MS for more than 6 months; married for more than one year; not pregnant; not suffering from another chronic disease; not experiencing severe crises, such as the death of relatives in the past 6 months; not taking selective serotonin reuptake inhibitors (SSRIs) or other medications that affect sexual function; and at least one month since the last disease attack.

Exclusion criteria (1) Married for less than one year; (2) Patients who chose not to complete the questionnaires; (3) Patients who experienced severe emotional crises within six months prior to completing the questionnaires; (4) Patients taking medications that affect sexual function.

Questionnaires

The MSISQ-19 is a multidimensional questionnaire that assesses the MS symptoms that have interfered with sexual activity over the past 6 months. Scores are on a Likert scale from 1 (Never) to 5 (Always) [7]. The questionnaire evaluates the impact of symptoms on sexual activity and satisfaction based on patient perceptions, with five questions related to primary sexual dysfunction, nine to secondary sexual dysfunction, and five to tertiary sexual dysfunction. Scores range from 19 to 95, with higher scores indicating more severe sexual dysfunction. The validity of this instrument has been confirmed in relation to marital satisfaction and sexual function.

The MSQOL-54 is a well-known instrument for assessing the quality of life in MS patients [8]. It combines the general quality of life aspects from the SF-36 with MSspecific dimensions and an overall quality of life rating. Eighteen MS-related items were added to the 36 SF-36 items. The MSQOL-54 items are linearly converted to 0-100 scores, with final scores obtained by averaging the items within each scale. The MSQOL-54 questionnaire comprises two general scales: Physical Health Composite (PHC) and Mental Health Composite (MHC). These scales include subscales for physical function, sexual function, health perception, energy, pain, physical limitations, health-related concerns, emotional health, quality of life, cognitive function, emotional limitations, and social functioning.

In both questionnaires, a previously translated questionnaire to Persian, in which their validity and reliability were examined, were used [9, 10].

Statistical analysis

Quantitative variables were tested using the t-test, and qualitative variables were analyzed using the chi-square test. A logistic regression model was employed to identify risk factors. The scores of the scales and subscales of the MSQOL-54 questionnaire were compared between sexes using a t-test for statistical significance. Also, the relationship between the MSQOL-54 scales and different age groups of MS patients was examined. The age groups compared were 20–30 years, 31–40 years, 41–50 years, and 51–65 years, and ANOVA and F-statistics were used for these comparisons. The severity of MS in the patients was assessed using the Expanded Disability Status Scale (EDSS) [11]. A logistic regression model was employed to identify risk factors.

Results

The present study was conducted on 80 patients with multiple sclerosis (MS) who attended the Neurology Clinic of Firoozgar Hospital during the years 2022-2023. Among the participants, 59 were female (73.75%) and 21 were male (26.25%). As shown in Table 1, the total score for the physical health comprises (PHC) was 51.6 with a standard deviation (SD) of 20.2, while the total score for the mental health comprises (MHC) was 57.8 (SD = 20.5).

Except for the sensory and emotional limitations subscale, no significant differences were found between the sexes in other items and subscales. Next, the relationship between the MSQOL-54 scales and different age groups of MS patients was examined. As shown in Table 2, the analysis indicated that age is a factor related to the general physical health scale. The youngest group (20-30 vears) had the highest scores, while the oldest group (51-65 years) had the lowest average scores, indicating significant differences in overall physical health among these subgroups (P-value < 0.001). In the physical functioning subscale, the average score for the 51-65-year age group was significantly lower than that of the other groups (*P*-value < 0.001). The energy, health concerns, social functioning, and physical limitations subscales were also significantly lower in the last two age groups compared to the other groups (*P*-value < 0.001). However, the pain, sexual functioning, and health perception subscale scores did not differ significantly among the different age groups.

Unlike the physical health scale, the mean scores of the mental health scale did not differ significantly among the different age groups (Table 2). Table 3 presents the results obtained from the MSISQ-19 questionnaire. The mean scores of this questionnaire are shown separately for men and women. The mean scores for primary, secondary, and tertiary disorders in different age groups of men were compared using the ANOVA test, revealing significant differences in all three disorder categories. The correlation coefficient for the mean scores of the MSISQ-19 questionnaire between male and female MS patients was calculated to be 0.9827 (P-value = 0.11), indicating no significant relationship between the MSISQ-19 scores and the gender of the participants. In this study, EDSS scores were categorized into five groups, ranging from 0 to 10. Sixteen patients were in the first group, 18 in the second

Table 1 Con	nparison	of MSC)OI -54	scores betwee	en male and	female	٢
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MSQOL-54	Males	Females	Total	T-Statistics
	Mean (SD)	Mean (SD)		
Overall physical health	51.4 (21.4)	50.3 (20.3)	51.6 (20.2)	0.572
Physical function	8.07 (4.36)	8.33 (6.56)	8.15 (5.13)	-0.206
Health perception	7.45 (4.02)	7.25 (3.37)	7.39 (3.84)	0.207
Energy/vitality	5.14 (2.45)	4.42 (1.85)	4.92 (2.31)	1.287
Role-limitations- Physical	3.89 (4.22)	4.08 (4.47)	3.95 (4.3)	-0.179
Pain	7.23 (2.86)	7.00 (2.33)	7.16 (2.71)	0.346
Sexual function	4.86 (2.25)	4.17 (2.41)	4.65 (2.32)	1.216
Social function	7.54 (3.06)	7.79 (2.6)	7.61 (2.93)	-0.353
Health distress	5.82 (2.62)	6.54 (2.55)	6.04 (2.62)	-1.121
Overall Mental health	55.6 (21.00)	54.3 (22.3)	57.8 (20.5)	-0.760
Quality of life	10.12 (3.67)	11.54 (3.86)	10.55 (3.78)	-1.537
Emotional health	16.48 (5.28)	17.12 (4.13)	16.68 (4.97)	-0.523
Role-limitations- Emotional	13.34 (9.16)	5.00 (9.49)	10.84 (10.02)	3.645
Cognitive function	8.71 (3.59)	8.58 (3.12)	8.68 (3.46)	0.153

MSQOL-54	20–30 years	31–40 years	41–50 years	51–65 years	F-statistics	
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		
Overall physical health	60.7 (22.2)	56.7 (18.9)	49.9 (18.5)	41.45 (17.8)	7.63	
Physical function	12.26 (3.04)	9.37 (5.00)	7.48 (4.42)	3.3 (4.22)	9.783	
Health perception	7.74 (3.51)	7.3 (3.44)	5.96 (3.01)	8.00 (2.32)	1.437	
Energy/vitality	5.95 (1.57)	6.07 (2.02)	4.7 (1.92)	4.6 (2.8)	2.774	
Role-limitations- Physical	5.11 (4.97)	0.85 (4.42)	1.09 (3.27)	0.3 (2.9)	4.914	
Pain	7.47 (2.21)	6.56 (2.64)	7.17 (3.31)	5.7 (3.23)	0.995	
Sexual function	5.37 (1.95)	4.52 (2.94)	5.13 (2.63)	3.1 (2.26)	1.904	
Social function	8.47 (2.41)	6.81 (3.4)	7.22 (2.57)	5.2 (2.18)	2.989	
Health distress	8.00 (2.68)	5.74 (2.9)	5.7 (2.11)	3.6 (2.61)	5.765	
Overall mental health	61.67 (17.98)	59.87 (20.32)	56.78 (19.00)	54.80 (22.70)	1.232	
Quality of life	10.00 (2.73)	9.63 (2.76)	9.52 (2.92)	8.3 (2.72)	0.792	
Emotional health	15.16 (5.79)	16.11 (4.99)	18.61 (3.76)	18.4 (4.65)	2.21	
Role-limitations- Emotional	13.63 (6.36)	11.33 (10.44)	9.13 (11.20)	6.10 (9.51)	1.488	
Cognitive function	9.79 (3.16)	9.33 (5.10)	8.39 (3.64)	8.5 (1.57)	0.523	

 Table 2
 MSQOL-54 scores in different age groups

 Table 3
 The MSISQ-19 in different age groups

MSISQ-19 (Males)	20–30 years Mean (SD)	31–40 years Mean (SD)	41–50 years Mean (SD)	51–65 years Mean (SD)	F-sta- tistics
Primary disorder	6.96 (3.12)	7.18 (4.08)	8.32 (5.04)	9.25 (5.67)	5.399
Secondary disorder	5.11 (2.02)	6.24 (3.11)	6.76 (3.82)	7.01 (4.67)	5.627
Tertiary disorder	8.88 (3.73)	10.81 (4.72)	10.98 (5.49)	13.36 (6.50)	12.360
MSISQ-19 (Females)	20–30 years Mean (SD)	30–40 years Mean (SD)	41–50 years Mean (SD)	51–65 years Mean (SD)	F-sta- tistics
Primary disorder	7.19 (2.94)	7.73 (4.15)	8.50 (4.55)	10.19 (5.72)	8.57
Secondary disorder	4.99 (2.09)	6.00 (2.66)	6.81 (4.15)	8.29 (4.86)	14.72
Tertiary disorder	9.25 (4.07)	9.31 (5.00)	10.56 (5.67)	11.85 (6.69)	4.55

group, 25 in the third group, and 7 in the fourth group. A score of 10, or the fifth group, typically indicates complete disability or death.

The EDSS scores were compared with the results of the MSISQ-19 questionnaire using the ANOVA test. For primary disorders among different EDSS scoring groups, the F statistic was 1.400 (*P*-value = 0.25); for secondary disorders, the F statistic was 0.664 (*P*-value = 0.57); and for tertiary disorders, the F statistic was 1.247 (*P*-value = 0.30). Therefore, there was no significant difference in sexual dysfunction scores among the different groups of patients in terms of disease severity.

Discussion

The PHC and MHC scores of MSQOL-54 in the present study are consistent with those obtained in other studies conducted in Iran. However, they are higher than the scores reported in a similar study conducted in England [12]. Similar to other studies on MS patients, the femaleto-male ratio was high in this study [13]. The scores of both the scales and subscales of the MSQOL-54 did not differ significantly between men and women, a finding corroborated by similar studies [14]. Notably, there was no significant difference between genders in the sexual function subscale, highlighting the need for further research and intervention measures to improve sexual quality for both genders.

The general physical health scale showed significant differences across different age groups, a trend consistent with previous studies [14]. Older patients, particularly those with advanced MS, experienced more physical limitations and problems. However, the subscales for health perception and physical function did not differ significantly between different age groups, underscoring the importance of addressing sexual disorders from the onset of the disease. The results of the MSISQ-19 questionnaire indicated that sexual disorders are prevalent in both male and female MS patients, with scores similar to those reported in other Iranian studies [15]. Sexual dysfunctions of all three types-primary, secondary, and tertiary-were present from the early stages of the disease and at younger ages. These disorders varied significantly across different age groups and evolved with interventions. Finally, no significant differences were found between the different EDSS groups, suggesting that sexual dysfunctions in MS patients are complex and extend beyond mere physical or mental disorders.

The study population consisted of MS patients who attended the clinic during the years 2022 and 2023. Eighty patients were randomly selected. The data were collected in an outpatient setting using the MSISQ-19 and MSQOL-54 questionnaires. In comparison with other regional studies that investigated the prevalence of sexual disorders more in women, our study is one of the few studies that included both genders. Our study used MSISQ-19 and MSQOL-54; however, other studies also used the Female Sexual Function Index (FSFI), Fatigue Severity Scale (FSS), Depression, Anxiety and Stress Scale (DASS-21), Diagnostic Urinary Incontinence Questionnaire (QUID), and Enrich Marital Satisfaction Scale (EMS).

In a systematic review and meta-analysis on 8980 MS patients, which was conducted in 2023, the prevalence of sexual dysfunction among MS patients was estimated as 61%. This study showed the most common sexual disorder among the MS population is reduced libido. However, the most commonly used questionnaire in the included study was FSFI [16].

Nabavi et al. (2021) conducted a study involving 320 men with multiple sclerosis (MS) to investigate the prevalence of sexual dysfunction using five distinct questionnaires. The study revealed that approximately 36% of the participants experienced sexual dysfunction [17]. This research is particularly significant as it highlights sexual problems in men, which are often perceived as less common compared to those in women.

Nazari et al. (2020) conducted a cross-sectional study that involved 200 women with MS aged 20 to 55. Using the Female Sexual Function Inventory (FSFI) and the MS Quality of Life Questionnaire (MSQOL-54), the study found that 69.8% of participants experienced sexual disorders. These disorders were significantly related to age, duration of marriage, and both physical and mental aspects of quality of life [15].

Ghasemi et al. (2019) used MSISQ-19, FSS, DASS-21, QUID, and Enrich Marital Satisfaction Scale (EMS) to investigate the quality of life and sexual problems in MS patients. The results indicated that 73.2% of women with MS had sexual problems, with delayed orgasm being the most common issue. The study highlighted the multifactorial nature of sexual disorders, influenced by factors such as self-confidence, physical disability, depression, anxiety, and fatigue [18].

Dehghan-Nairy et al. (2017) included 182 married women with MS aged 18 to 49. Using the MSISQ-19, FSS, EDSS, and Beck Depression Inventory (BDI), the study found an 81.9% prevalence of sexual dysfunctions. Similar to the present study, they categorized these dysfunctions into primary, secondary, and tertiary levels, revealing the complex and multifactorial nature of sexual dysfunctions in women with MS [19].

Limitations

 Given the cultural sensitivities in Iranian society regarding questions related to sexual disorders, it is essential to develop questionnaires or methods that align with the country's indigenous culture for conducting such studies.

- The cultural limitations encountered in this study resulted in the absence of a control group for comparative analysis. We consider this issue to be a significant limitation of our research.
- Compared to other studies, the sample size in the present study is relatively small, which we acknowledge as a significant limitation.

Conclusion

The results of this study indicate that sexual dysfunctions—primary, secondary, and tertiary—are prevalent among MS patients of both sexes and across different age groups. Future studies should compare the global quality of life between MS patients with and without sexual dysfunction to clarify its clear impact on their quality of life.

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Author contributions

Conceptualization and Supervision: R.D; Data Curation: Z.N; Methodology: F.H; Writing-original draft: A.F; Writing-review and editing: B.S.

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Data Availability

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

Iran University of Medical Sciences Ethics Committee approved this study's protocol (IR.IUMS.FMD.REC.1402.235). An informed consent was obtained from all participants to participate in the study. Also, all experiments were performed in accordance with relevant guidelines and regulations.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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