

WOMEN'S SEXUAL HEALTH

The Association Between Sexual Disorders and the Quality of Life of Woman Patients With Multiple Sclerosis: Findings of a Prospective, Observational, and Cross-Sectional Survey



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ABSTRACT

Introduction: Multiple sclerosis (MS) is a progressive, chronic inflammatory demyelinating disease of the central nervous system, whose symptoms include sexual disorders. Sexual dysfunctions can influence on quality of life (QOL) of patients with MS.

Aim: To evaluate the occurrence of sexual disorders among women with MS and correlations between QOL, prevalence of sexual disorders, and level of sexual satisfaction.

Methods: Polish women (n = 101) aged 22–66 years with diagnosed MS were included in the study.

Main Outcome Measures: The Female Sexual Function Index, the Sexual Satisfaction Questionnaire, the Satisfaction with Life Scale, and the Multiple Sclerosis International Quality of Life Questionnaire were used. In addition, an Authors-Designed Questionnaire was used to collect sociodemographic data.

Results: More than half of the patients surveyed were totally or somewhat unsatisfied with their sex life, and 44.55% of the patients were diagnosed with significant sexual disorders. It was shown that patients with diagnosed sexual disorders and a low level of sexual satisfaction rated their QOL the lowest among all the surveyed patients.

Conclusion: Our findings indicate that sexual disorders and the level of sexual satisfaction correlate significantly with QOL in patients with MS. Sexual dysfunctions are a significant problem in women with MS; thus, they should be considered with comprehensive care. **Kołtuniuk A, Przestrzelska M, Karnas A, et al. The Association Between Sexual Disorders and the Quality of Life of Woman Patients With Multiple Sclerosis: Findings of a Prospective, Observational, and Cross-Sectional Survey. Sex Med 2020;8:297–306.**

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Key Words: Sexual Dysfunction; Quality of Life; Women's Health; Multiple Sclerosis; Satisfaction With Life Scale

INTRODUCTION

Multiple sclerosis (MS) is a progressive, chronic inflammatory demyelinating disease of the central nervous system on which suffer about 2.3 million people worldwide,¹ more than 700,000 in Europe.² In Poland, the MS rate is quite high about 110–120 per 100,000 inhabitants.^{3,4} MS is most often diagnosed in

people between 20 and 40 years of age.⁵ Owing to the pathomechanism of the disease, MS is characterized by the presence of many different symptoms, including disturbances in movement and sensory system, as well as sexual disorders such as erectile dysfunction and sexual drive reduction.⁶

Sexual dysfunctions (SDs) are common in MS because of the direct effects of neurophysiological disorders. The importance of secondary consequences of MS concerning not only organic changes but also psychological and cognitive dysfunctions should also be emphasized.^{7,8} Studies on the sexuality of women with MS show that sexual disorders occur in 40–80% of patients and is expressed by different degrees of severity.^{9,10} It is important to note that almost 63% of women do not report such problems to therapists, even though these disorders occur more frequently in patients with MS than in the general population.¹¹ According to

Received November 24, 2019. Accepted February 20, 2020.

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<https://doi.org/10.1016/j.esxm.2020.02.009>

Zorzon et al¹² as well as Lew-Starowicz and Rola,¹³ it was only 5.7% and 2.2% female patients with MS, respectively, who discussed their sexual issues with a doctor. Sexuality is an intimate and personal matter, which is why, although patients with MS may be experiencing sexual disorders, it is not always easy for these individuals to discuss sexuality with third parties. In terms of a holistic view of health, implementation of care in patient with MS is important and is an integral part of the care, as these disorders affect the quality of treatment and interpersonal relationships.

Sexual disorders can occur in any phase of the sexual reaction, including desire, excitement, orgasm, and relaxation, which depend on both psychosocial and biological factors.¹⁴ Symptoms of SD in MS have been classified as primary, secondary, and tertiary effects of the disease. The neurophysiological changes that occur in MS cause changes in sexual function. Demyelination changes in the spinal cord and/or brain result in numbness or paresthesia of the sensory regions and genital organs themselves. This may hinder the maintenance of clitoral/vaginal swelling during the plateau phase (between excitement and orgasm) and reduce or eliminate clitoral swelling and/or vaginal lubrication, which is preferable, *inter alia*, for the sexual desire and the induction of orgasm dysfunction.^{14,15} It should be emphasized at this point that there is a hormonal imbalance in women with MS, especially in the group of sex steroids (17 beta-estradiol, testosterone, progesterone) and prolactin, which are essential elements of the functioning of the genitourinary system. Hormonal disorders affect, among other things, vaginal lubrication, the impairment, or lack of which is one of the important causes of dyspareunia and may be the cause of vaginismus.¹⁶ We cannot ignore the impact of experienced or expected pain in reducing libido, whose level is significantly reduced in women with MS, as confirmed by previous studies.^{9,10}

Secondary SDs are caused by symptoms of MS that do not directly affect the nervous system associated with the genital tract. These symptoms usually include bladder and bowel problems, muscle weakness, fatigue, spasticity, impaired attention and concentration, trembling of the body or hand, and difficulty moving.^{9,17} It is impossible to ignore the influence of intestinal and bladder dysfunctions correlated with sexual disorders on quality of life (QOL) of patients with MS. Studies by Vitkova et al¹⁸ have shown the occurrence of such disorders regardless of gender and stressed the importance of their early identification and possible treatment to prevent sexual disorders. At the same time, the authors pointed out the legitimacy of using questionnaires to identify the problem and obtain more information on the causal relationships between the bladder and SDs. The aforementioned symptoms connected with difficulty in moving, change of body position, spasticity are the apparent cause of problems during intercourse, and they concern almost 30% of women with MS.¹⁴

Tertiary sexual disorders concern the psychological, emotional, social, and cultural aspects of MS that affect sexuality. These

aspects include, among other things, the negative perception of oneself as less attractive and less feminine. This negativity surrounding one's sexuality results in low self-confidence, which reduces mood, increases anger, and even causes depression. These individuals often fear they will be rejected by their partner and cannot sexually satisfy their partner and thus experience difficulties in communication.¹⁷ The factors indicated here, taking into account the contemporary model of sexual reaction,¹⁹ seem to be of paramount importance for women. This type of sexual satisfaction in the absence of the desired stimuli may also not be achieved.

Previous studies on the QOL of patients with MS concerned the evaluation of the impact of various variables, such as pain²⁰ or depression,^{20,21} but only few authors^{9,18,22–24} attempted to analyze the impact of sexual disorders and the level of sexual satisfaction of women with MS on QOL. Most researchers^{6,25–31} demonstrated the mere fact of sexual disorders without, however, assessing their impact on women's QOL. To the best of our knowledge, so far, only one study conducted in Poland by Lew-Starowicz and Rola²⁴ presented several correlations between sexual functioning and sexual QOL in patients with MS.

Therefore, the main purpose of this study was to assess the prevalence of sexual disorders among women with MS and correlates between QOL, prevalence of sexual disorders, and level of sexual satisfaction. We wanted to answer 4 research questions, namely: (i) Are SDs common in Polish women with MS? (ii) What is the level of sexual satisfaction among women with MS? (iii) What is the level of QOL among women with MS? (iv) Are there correlations between QOL, prevalence of SD, and level of sexual satisfaction among Polish women with MS?

MATERIALS AND METHODS

Study Group and Design

The present study used a prospective, observational, cross-sectional, and descriptive correlational study design with a survey method of data collection. This study used a judgmental sampling method as per the fact all patients participated in this study were the members of specific organization associating patients with MS in Poland, namely, the Lower Silesian Unit of the Polish Association for MS. The study was conducted between January 2017 and June 2017 and was performed with the cooperation of the Lower Silesian Unit of the Polish Association for MS in Wrocław, Poland. Participation in this non-interventional study was anonymous and voluntary. Each patient signed written consent to participate in the study and was informed of the possibility of withdrawing at any stage of the study.

The study group consisted of 101 female patients with MS with a mean age of 36.7 ± 9.56 years. Of the vast majority of patients with MS, 81.1% ($n = 82$) had diagnosed the relapsing-remitting MS, and disease durations were 75.1 ± 50.2 months.

Respondents during the meeting for members of the Lower Silesian Unit of the Polish Association for MS received traditional self-completion pencil-and-paper questionnaires, which were designed to be completed in approximately 30 minutes.

Qualification Procedure

The inclusion criteria were (i) a confirmed diagnosis of MS based on medical records and McDonald diagnostic criteria including neurological examination, magnetic resonance imaging scans of the brain and spinal cord, visual evoked potentials test, lumbar puncture for cerebrospinal fluid testing for oligoclonal bands, and blood tests;³² (2) stable MS disease without any episodes of relapse prior 30 days before the study; (3) older than 18 years; (4) written consent for participation in the study; and (5) ability to read and write in Polish. The exclusion criteria were (1) participants without a confirmed diagnosis of MS, (2) severe cognitive impairment (patients unable to follow the test instructions), (3) persons undergoing treatment for sexual disorders, (4) have no partnered sexual activity (solitary person), (5) current pregnancy, and (6) lack of written consent to participate in the study. Moreover, patients with major depressive disorder were excluded from the study. In addition, non-Polish-speaking patients were excluded from participation.

Ethical Considerations

The study protocol was approved by the independent Bioethics Committee of Wrocław Medical University, Poland (decision no. KB-82/2017). All participants gave written informed consent after a thorough explanation of the procedures involved. The study was carried out in accordance with the tenets of the Declaration of Helsinki and the principles of Good Clinical Practice.

Research Instruments

Data collection and measurement tools used in this study included the following survey instruments: an Authors-Designed Questionnaire (ADQ) to collect sociodemographic data as well as 4 standardized questionnaires: the Female Sexual Function Index (FSFI),³³ the Sexual Satisfaction Questionnaire (SSQ),³⁴ the Satisfaction with Life Scale (SWLS),³⁵ and Multiple Sclerosis International Quality of Life Questionnaire (MusiQOL).³⁶

Authors-Designed Questionnaire

This questionnaire included questions about sociodemographic data (ie, age, place of residence, marital status, education, material status, and professional activity.)

Female Sexual Function Index

The FSFI is a questionnaire that evaluates the sexual function of women in 6 domains. In each domain, the results vary from 0 or 1 (depending on the domain) to 6 points, and a

higher score means better performance in a given area. The sum of the results from the 6 domains is the total result, which takes values from 2 to 36 points. The presence of SD was defined as achieving a score of 26.55 or lower on the FSFI questionnaire (only if all questions had been answered). Because the domains are expressed on the same scale, it is possible to compare their results and thus identify the respondents' best and worst functioning areas.³⁷ All domains of the Polish version of FSFI demonstrate satisfactory internal consistencies with a Cronbach's alpha of 0.96.³³ It should be emphasized that we have noted some missing data, which were found in 4 participants who scored the lowest score values in FSFI domains, indicating "No sexual activity" within the past 4 weeks; therefore, they were not included in final analysis.

Sexual Satisfaction Questionnaire

The SSQ questionnaire examines the respondent's level of sexual satisfaction. It consists of 10 questions scored from 1 to 4 points. A total score is, therefore, a number in the range of 10–40 points. Higher scores indicate greater satisfaction with sex life. For the SSQ, there are no norms for assessing whether a given result means high or low sexual satisfaction. The very structure of the questions and the assignment of verbal interpretation to numerical answers (1, not at all; 2, rather not; 3, rather yes; 4, definitely yes), however, allows the following interpretation to be adopted: 10 points (only "for 1 point" answers), respondent completely unsatisfied; 20 points (only "for 2 points" answers), rather unsatisfied; 30 points (only "for 3 points" answers), rather satisfied; and 40 points (only "for 4 points" answers), completely satisfied. The SSQ demonstrates high consistency with a Cronbach's alpha of 0.83.³⁴

Satisfaction with Life Scale

The SWLS was developed in 1984 by Diener et al,³⁸ and the Polish-language version used in the research was developed by Juczyński.³⁵ The SWLS scale is used for subjective assessment of the sense of satisfaction with life and is a research tool that can be used for the examination of both patients and healthy people. It is a 5-item scale designed to measure global cognitive judgments of one's life satisfaction (not a measure of either positive or negative effect). Participants indicate how much they agree or disagree with each of the 5 items using a 7-point scale that ranges from 7 ("strongly agree") to 1 ("strongly disagree"). The use of the SWLS scale determines not only the level of life satisfaction but also the living conditions, the fulfillment of one's own expectations, and the assessment of the implementation of the plan. The range of obtained results is determined by the total score of numerical values from 5 to 35 points—the higher the score, the greater the sense of life satisfaction. After standardization of the overall results in the sten scale, sten scores between 1 and 4 are treated as low results, scores from 7 to 10 are treated as high, and scores of 5 and 6 are treated as average. The Cronbach's alpha of

the Polish version is 0.81, and the Cronbach's alpha of the original version is 0.87.

Multiple Sclerosis International Quality of Life Questionnaire

A questionnaire is a research tool aimed at evaluating the QOL of people with MS. The questionnaire contains 31 questions about the patient's life during the last 4 weeks, and the following are the answer options: never, rarely, sometimes, often, often, always, and not applicable. The MusiQOL questionnaire allows researchers to evaluate the QOL of MS patients in 10 domains: ADL, activities of daily living; PWB, psychological well-being; RFr, relationships with friends; SPT, symptoms; RFa, family relationships; RHCS, satisfaction with healthcare system; SSL, sentimental and sexual life; COP, coping; REJ, rejection; and Total score, overall QOL. The QOL in each domain is expressed by a number in the range of 0–100. Higher numbers indicate better QOL. For MusiQOL, there are no norms, so it cannot be said whether the results achieved by the respondents indicate high or low QOL; one can only compare the domains between each other to identify areas of the high and low QOL. The dimensions of the scale exhibit high internal consistency, as the Polish version of the scale has a Cronbach's alpha of 0.67–0.90.³⁶

Statistical Analysis

The analysis was performed in R package, version 3.4.3 (R Development Core Team, Auckland, New Zealand). Quantitative variables were analyzed by calculating the mean (M), standard deviation (SD), median (Me), quartiles (Q1–Q3), minimum (Min), and maximum (Max). The analysis of qualitative variables was carried out by calculating the number and percentage of occurrences of each value. The normality of the distribution of variables was studied using the Shapiro-Wilk test.

The values of quantitative variables in 2 groups were compared using a *t*-test (for a normal distribution) or Mann-Whitney's test (in the absence of normal distribution). The values of quantitative variables in 3 or more groups were compared using ANOVA variance analysis (for a normal distribution) or the Kruskal-Wallis test (in the absence of normal distribution). If it showed statistically significant differences, a post-hoc analysis was performed using Fisher's least significant difference test (for a normal distribution) or Dunn's test (in the absence of normal distribution).

Correlation between 2 quantitative variables was analyzed using Pearson's coefficient (normal distribution for both variables) or Spearman's coefficient (no normal distribution for at least one variable). The strength of dependence was interpreted as per the following scheme³⁹: $|r| \geq 0.9$, very strong relation; $0.7 \leq |r| < 0.9$, strong relation; $0.5 \leq |r| < 0.7$, medium strong relation; $0.3 \leq |r| < 0.5$, weak relation; and $|r| < 0.3$, very weak (negligible) relation. The analysis assumed a materiality level of $P < .05$.

RESULTS

The study involved 101 women aged 22 to 66 years (36.7 ± 9.56). Distribution of clinical type of MS was as follows: 81.1% ($n = 82$) patients with diagnosed relapsing-remitting MS, 13.9% ($n = 14$) had secondary progressive MS, 5.0% ($n = 5$) had primary progressive MS, and none of the patients ($n = 0$) in the study group had progressive-relapsing MS. The mean disease duration was 75.1 ± 50.2 months, the mean time since most recent relapse was 3.1 ± 1.23 months, and the mean number of relapses in the past was 1.2 ± 0.8 . Most of the women were aged between 31 and 35 years (25.74%), were living in the city (81.19%), had achieved higher education (54.46%), were married (57.43%), and were professionally active (65.35%). More detailed clinical and sociodemographic characteristics of study participants are shown in Table 1.

The results of our study revealed that 54.45% of the patients were totally or rather unsatisfied with their sex life, whereas 45.54% were rather satisfied. There was no statistically significant difference in the level of sexual satisfaction owing to sociodemographic variables.

Based on data from the FSFI questionnaire, 44.55% of patients were diagnosed with sexual disorders. Analyzing the results of particular domains concerning sexual activity, the women rated their functioning in the areas of pain and lubrication as the best, which means that during intercourse, they do not feel this problem, whereas they rated their functioning in level of achievement and orgasm as lower. The analysis of the study material showed that age correlates both with FSFI ($r = -0.235$, $P = .018$) and with the results in the lust ($r = -0.278$, $P = .005$), excitement ($r = -0.213$, $P = .033$), and orgasm ($r = -0.299$, $P = .002$) domains, which means that the older the age, the worse functioning in these domains. It was also shown that the employed and unemployed individuals had significantly higher results in the orgasm domain than pensioners ($P = .036$). Unmarried women, on the other hand, functioned significantly better in the lust domain than married women ($P = .027$) (Table 2).

Among the patients surveyed, 37.62% were characterized by a high level of life satisfaction, 36.63% were characterized by a medium level of life satisfaction, and 25.74% were characterized by a low level of life satisfaction. It was shown that none of the sociodemographic variables correlated with the level of life satisfaction.

It was also shown that the patients had the highest QOL in the RFa (74.83), REJ (69.79), and SST (68.56) domains and the lowest QOL in the PWB (48.5), COP (50.51), and RHSC (53.36) domains.

The analysis of the obtained data showed that the level of sexual satisfaction (SSQ) is associated with the occurrence of sexual disorders ($P < .001$). Patients without disorders have a higher level of sexual satisfaction (32.89) than patients with sexual disorders (24.38). It was also shown that the higher the

Table 1. Baseline clinical and sociodemographic characteristics of the study group

Variable	Values
Age [years] (M ± SD)	36.7 ± 9.56
Sex, n (%)	
Female	101 (100)
Male	0 (0)
Clinical type of MS n (%)	
RRMS	82 (81.1%)
SPMS	14 (13.9%)
PPMS	5 (5.0%)
PRMS	0 (0%)
Disease duration in months (M ± SD)	75.1 ± 50.2
Number of relapses in the past (M ± SD)	1.2 ± 0.8
Time since a most recent relapse in months (M ± SD)	3.1 ± 1.23
Education level, n (%)	
Basic or vocational education	8 (7.83)
Secondary education	38 (37.62)
Higher education	55 (54.46)
Place of residence, n (%)	
Village	19 (18.81)
City	82 (81.19)
Marital status, n (%)	
Single	35 (34.65)
Married	58 (57.43)
Widowed	1 (0.99)
Divorced	7 (6.93)
Professional activity n (%)	
Employed	66 (65.35)
Unemployed	13 (12.87)
Disability pension/Retirement pension	22 (21.78)
SSQ score (M ± SD)	29.1 ± 6.4
FSFI score (M ± SD)	26.53 ± 6.97
SWLS score (M ± SD)	15.95 ± 6.27
MusiQOL score (M ± SD)	60.89 ± 14.16

DMT = disease modifying therapy; FSFI = Female Sexual Function Index; M = mean; MS = multiple sclerosis; MusiQOL = Multiple Sclerosis International Quality of Life Questionnaire; PPMS = primary progressive MS; PRMS = primary progressive MS; RRMS = relapsing remitting MS; SD = standard deviation; SPMS = secondary progressive MS; SSQ = Sexual Satisfaction Questionnaire; SWLS = Satisfaction with Life Scale.

level of sexual satisfaction, the better functioning in the sexual sphere (in each of the domains) (Table 3). The level of sexual satisfaction also is associated with the level of satisfaction with life ($P < .05$). Patients with medium (30.05) and higher (30.45) levels of life satisfaction were characterized by significantly higher level of sexual satisfaction than patients with lower levels of life satisfaction (25.77) ($P = .009$). The level of life satisfaction was also significantly correlated with functioning in the sexual sphere (except for the lust domain) (Table 4).

The analysis of the obtained data showed that patients diagnosed with sexual disorders were characterized by a lower QOL in each of the MusiQOL domains (Table 5). It was also shown

Table 2. Female Sexual Function Index (FSFI) domains

FSFI domain	N	M	SD	Me
Desire	97	3.96	1.21	3.6
Arousal	97	4.44	1.37	4.8
Lubrication	97	4.64	1.57	5.1
Orgasm	97	4.32	1.53	4.8
Satisfaction	97	4.53	1.41	4.8
Pain	97	4.64	1.51	4.8

M = mean; Me = median; N = number of participants; SD = standard deviation.

that the level of sexual satisfaction correlated with all areas of QOL in MusiQOL ($P < .05$)—the higher the level of sexual satisfaction, the higher the QOL (Table 6).

DISCUSSION

In 1995, the World Health Organization created a concept of QOL, which was defined as “individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the persons' physical health, psychological state, level of independence, social relationships and their relationship to salient features of their environment.”⁴⁰

Sexuality is important for well-being and QOL in general. This is particularly important for people with chronic diseases, and the subjectively perceived quality of sexual life has different links to many areas of functioning.⁴¹ So far, understanding the importance of sexual health and self-perception for individuals of all ages and health conditions remains limited. Flynn et al⁴² noted that 62.2% of men and 42.8% of women have a high sexual health significance for QOL. The importance of sexual health varied in accordance with gender, age, sexual activity status, and general health status. For 55% of men and 45% of women who reported sexual activity in the last 30 days, satisfaction with sex life differed owing to gender, age, race, and ethnic origin (men only) and health. Men and women in excellent health were much more satisfied than those in good or bad health. Santosa et al,⁴³ in their cross-sectional study among older adults, showed that SD is strongly associated with poor QOL.

In addition, lack of sexual activity, dissatisfaction with sexual life, and the occurrence of sexual problems were associated with low self-reported QOL regarding age, marital status, education, and chronic disease history. In turn, the occurrence of sexual problems was the only factor associated with the low self-esteem QOL in women. The findings of Forbes et al⁴⁴ suggest that although QOL tends to diminish with age, this diminishing tendency is mostly due to potentially modifiable factors such as the amount of thought and effort put into the sexual aspects of life and the frequency of sexual activity.

MS, owing to its chronic character and consequences resulting from a multitude of symptoms, significantly affects the

Table 3. Correlation between SSQ and FSFI domains

Variable	SSQ	
	r	P
FSFI	FSFI—Full Scale Score Range	0.776 <.001
	Desire	0.558 <.001
	Arousal	0.55 <.001
	Lubrication	0.561 <.001
	Orgasm	0.685 <.001
	Satisfaction	0.709 <.001
	Pain	0.548 <.001

FSFI = Female Sexual Function Index; P = value of statistical significance; r = correlation coefficient; SSQ = Sexual Satisfaction Questionnaire.

functional abilities and QOL.⁴⁵ MS also has a significant impact on the sexual life of women.⁴⁶ Most researchers^{6,25–30} showed the mere fact of sexual disorders without, however, assessing their impact on QOL of female patients.

Scientific studies have shown the existence of interrelationships between all 3 levels of sexual disorders in patients with MS. Although, the overriding importance of factors from the second group were confirmed, the factors from third group (psychosocial factors) cannot be omitted during planning the therapy.¹⁴ In connection with organic disorders (in sexual organs) occurring in MS, which in many cases cannot be eliminated, the importance of stimulation of the extragenital areas to provide erotic sensations and to relieve potential sexual tension is stressed. This is an important aspect of sexual education that should be implemented in this group of woman patients with MS. Sexual satisfaction is a subjective experience that is not always expressed only biologically but often both biologically and (or only) mentally. The model of female sexuality seems to confirm this¹⁹; therefore, in the treatment of SDs of women with MS, the importance of strengthening the relationship cannot be forgotten. This will undoubtedly improve feelings of acceptance, intimacy, and safety among patients with MS and their partners as well as yield better results of the whole therapy.^{14,47}

The occurrence of sexual disorders and the decline in sexual satisfaction of women with MS is a significant psychological and clinical problem. Unfortunately, many doctors taking care of MS patients routinely do not ask questions about the occurrence of sexual disorders and wait for the patient to initiate a conversation.⁴⁸ Recent studies show that women with MS have at least one SD more frequently than men,²⁵ and the percentage of women with at least one sexual problem exceeds 70%.^{26,49–51} In our study, 44.55% of women were diagnosed with sexual disorders, and similar results were obtained by other authors.^{27,29} However, in the study by Bartnik et al,²⁸ only 27.27% of patients revealed sexual disorders, which differs from our study probably because of the fact that the average age of respondents in our study was higher. Previous studies^{6,26,27,30,31} showed that older age is a prognostic factor that increases the risk of sexual disorders in women with MS.

Table 4. Correlation between SWLS and FSFI domains

Variable	SWLS	
	r	P
FSFI	Full Score Range	0.307 .002
	Desire	0.163 .104
	Arousal	0.28 .005
	Lubrication	0.263 .008
	Orgasm	0.245 .013
	Satisfaction	0.311 .002
	Pain	0.234 .018

FSFI = Female Sexual Function Index; P = value of statistical significance; r = correlation coefficient; SWLS = Satisfaction with Life Scale.

Sexual problems experienced by women with MS include a wide range of dysfunctions. Zaborski et al⁵² paid attention to the occurrence of the typology of sexual disorders, which, depending on the patient's condition, may occur at different intensities. The researchers distinguished the occurrence of primary symptoms, such as decreased libido, insufficient vaginal lubrication, and difficulties in obtaining or maintaining an erection, from secondary problems, such as pain, chronic fatigue, incontinence, and spasticity, and tertiary problems related to patients' emotional state, including lack of self-confidence, fear of sexual rejection, and fear of not providing partner satisfaction. Primary symptoms occur between 43%²⁵ and even 87.1%²⁶ of women with MS.

Our study confirmed that the most acute sexual problem for women with MS is the achievement of desire, excitement, and orgasm.^{14,25–27,29,49–51} On the other hand, the surveyed women estimated that pain during intercourse is not a severe problem, which is also confirmed by Zamani et al.⁴⁹

A study by Marck et al⁶ showed that the occurrence of sexual disorders was associated with lower satisfaction with sexual function, and it was also confirmed in our study. In a study by Nomejko et al,⁵³ the average score obtained in the SSQ was 29.1 points, which indicated a level of sexual satisfaction as rather satisfactory. An analysis by Marck et al⁶ revealed that patients rated their sexual satisfaction very well; almost half of the respondents were satisfied or very satisfied. The difference between our results may come out because men also participated in study by Marck et al.⁶

A study by Marck et al⁶ found that women's age, employment, disability status, level of fatigue, smoking habits, and BMI, among other factors, affected the level of sexual satisfaction. On the other hand, none of the analyzed sociodemographic variables did not have relationship with the level of sexual satisfaction. Our analysis showed, however, that the level of sexual satisfaction is associated with the level of life satisfaction. Patients who were moderately and very satisfied with life had a significantly higher level of sexual satisfaction than patients with a low level of satisfaction with life. This is also confirmed by the results of the study Żak-Łysuk and Nawrat⁵⁴ which showed that with the increase in sexual satisfaction there was an increase in satisfaction

Table 5. Prevalence of sexual dysfunction and MusiQOL domains

Variable	FSFI	N	M	SD	Me	Min	Max	Q1	Q3	P
ADL	<26.5	44	51.39	24.76	53.12	6.25	100	30.47	72.66	.009
	>26.5	53	64.29	21.49	68.75	9.38	95	53.12	81.25	
PWB	<26.5	45	40.97	22.04	37.5	0	81.25	25	56.25	.003
	>26.5	55	54.66	21.25	56.25	6.25	93.75	37.5	71.88	
RFR	<26.5	45	56.2	22.73	58.33	0	91.67	41.67	75	.001
	>26.5	53	71.7	20.69	75	8.33	100	66.67	83.33	
SPT	<26.5	45	57.27	19.1	50	25	100	43.75	68.75	.031
	>26.5	55	64.32	16.48	68.75	25	100	56.25	75	
RFa	<26.5	43	64.05	26.07	66.67	0	100	41.67	83.33	<.001
	>26.5	55	83.26	16.94	87.5	33.33	100	75	100	
RHSC	<26.5	45	48.06	24.87	50	0	100	25	66.67	.012
	>26.5	53	61.56	27.21	66.67	0	100	50	75	
SSL	<26.5	44	56.82	26.48	50	0	100	37.5	75	<.001
	>26.5	55	77.95	24.17	87.5	25	100	68.75	100	
COP	<26.5	45	37.22	25.35	25	0	100	25	50	<0.001
	>26.5	54	61.57	26.8	62.5	0	100	40.62	87.5	
REJ	<26.5	43	56.98	27.86	50	0	100	37.5	75	<.001
	>26.5	53	80.19	24.57	87.5	0	100	62.5	100	
TS	<26.5	40	52.06	12.7	51.91	21.06	82.29	45.78	57	<.001
	>26.5	49	68.09	10.9	68.17	34.84	94.44	62.5	76.62	

ADL = activities of daily living; COP = coping; FSFI = Female Sexual Function Index; M = mean; Max = maximum value; Me = median; Min = minimum value; MusiQOL = Multiple Sclerosis International Quality of Life Questionnaire; N = number of participants; P = value of statistical significance; PWB = psychological well-being; Q1 = 1st quartile; Q3 = 3rd quartile; REJ = rejection; RFa = family relationships; RFR = relationships with friends; RHSC = satisfaction with health care system; SD = standard deviation; SPT = symptoms; SSL = sentimental and sexual life; TS = total score (overall quality of life).

with life. Moreover, Nomejko et al⁵³ showed that people with high sexual satisfaction scores were characterized by high QOL levels.

In our study, QOL in the field of SSL (MusiQOL) was scored at 68.56 points. However, in the study by Jamroz-Wiśniewska et al,³⁶ this score was much lower, which was most probably related to the higher average age of the respondents.

The analysis of our findings showed that patients with sexual disorders had lower QOL, which is also confirmed by previous studies by Qaderi and Merghati Khoei,⁹ and Salhofer-Polanyi et al,²³ Schairer et al,²² and Vitkova et al¹⁸ demonstrated that SD was associated with a low level of QoL, especially in the mental domain. In contrast, Lew-Starowicz and Rola²⁴ focused on the relation between QOL and sexual disorders and demonstrated significant, negative correlations in most of the sexual disorders' subscales. Previous studies have shown that proper therapy and treatment of SDs contribute not only to the improvement of sexual function but also significantly improve QOL in women with MS.⁴⁹

Study Limitations

There are some potential limitations that should be discussed. First, the tools used in the study are self-report tools and raise highly specific issues, so the scale of sexual disorders in this group

of patients may be underestimated. On the other hand, only those people who are more liberal and open about sexuality and do not feel embarrassed by providing information about very intimate topics related to human sexuality could decide to participate in the study. Another important limitation of this study is the omission of the assessments of physical disability level and the occurrence of mood disturbance, which are important factors that can also influence both QOL and sexual functioning of female patients with MS. In addition, future studies should consider examining the level of distress of MS women, which may also have negatively affect their sexual functions and sexual satisfaction.

CONCLUSION

In conclusion, SDs are a common problem in MS women. The level of sexual satisfaction among female patients with MS was assessed as totally or rather unsatisfactory. The presence of sexual disorders and the level of sexual satisfaction correlate significantly with QOL of MS women. Knowledge of the degree of sexual disorders among female patients with MS may have important implications for the appropriate and comprehensive view on the patients' needs. Healthcare providers should pay more attention to the aspect of sexuality in patients with MS.

Table 6. Correlation between SSQ and MusiQOL domains

Variable	SSQ	
	r	P
MusiQOL		
ADL	0.291	.004
PWB	0.313	.002
RFr	0.357	<.001
SPT	0.283	.004
RFa	0.451	<.001
RHSC	0.256	.011
SSL	0.518	<.001
COP	0.468	<.001
REJ	0.372	<.001
TS	0.626	<.001

ADL = activities of daily living; COP = coping; MusiQOL = Multiple Sclerosis International Quality of Life Questionnaire; P = value of statistical significance; PWB = psychological well-being; r = correlation coefficient; REJ = rejection; RFa = family relationships; RFr = relationships with friends; RHCS = satisfaction with health care system; SPT = symptoms; SSL = sentimental and sexual life; SSQ = Sexual Satisfaction Questionnaire; TS = total score (overall quality of life).

Practical Implications

Despite the limitations mentioned previously, the results of this study have important practical implications because the recognition of individual factors influencing SD in patients with MS will facilitate the development of treatment options in accordance with evidence-based clinical practice. The assessment and treatment of SDs in women with MS is an essential component of comprehensive care. The priority should be to achieve systemic solutions aimed at the implementation of routine assessment of sexual disorders in patients with MS by healthcare providers. Nevertheless, it is hindered by the lack of time dedicated to the patient, the lack of time for training specialists, and the lack of freedom in treating SDs associated with neurological diseases.

ACKNOWLEDGMENTS

There were no other contributors to the article than the authors as well as there was no writing assistance required. The certificated English language services were provided. The authors confirm that all data underlying the findings described in this manuscript are fully available to all interested researchers on request.

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

Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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