

Quality of life in female patients with multiple sclerosis: the impact of sexual dysfunction

Oksana I. Nehrych¹, Vira I. Pyrohova¹, Tetyana I. Nehrych²

¹ Department of Obstetrics, Gynecology and Perinatology, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine

² Department of Neurology, Danylo Halytsky Lviv National Medical University, Lviv, Ukraine

ABSTRACT

Background and Purpose: Multiple sclerosis (MS) is a degenerative neurological disease that usually appears between the ages of 20 and 50 years. Sexuality issues are important factors that affect the quality of life of patients. This study aimed to evaluate the prevalence of sexual dysfunction in Ukrainian women with MS, by administering the Multiple Sclerosis Intimacy and Sexual Function Questionnaire (MSISQ-19), and to correlate it with quality of life, both overall and specific components, measured using a disease-specific inventory – the Multiple Sclerosis Quality of Life-54 (MSQOL-54).

Methods: 116 female patients aged from 18 to 49 years participated in the research and were included in the study. All participants completed the Ukrainian validated versions of the MSISQ-19 and the MSQOL-54, and correlations between sexual dysfunction and quality of life components were analyzed.

Results: Comparison of the MSQOL-54 items between the study groups showed that virtually all indicators were significantly lower in the group of patients with sexual dysfunction than in the group without sexual dysfunction. It was found that in women with MS, the difference between the MSQOL-54 questionnaire subscale scores in the groups with and without sexual dysfunction is offset with increasing age (after 39 years).

Conclusion: Female sexual dysfunction is a common symptom among Ukrainian women with MS; it is influenced by age and by disease severity, and it significantly affects quality of life, both overall and most of its components.

KEYWORDS

Multiple sclerosis, sexual dysfunction, quality of life, female sexuality.

Introduction

Multiple sclerosis (MS) is a chronic immune-mediated neurodegenerative disease of the central nervous system, affecting 2.5 million people worldwide ^[1,2]. The first signs of MS usually develop between 20 and 40 years, and the disease affects more than twice as many young women as men ^[3]. Quality of life is significantly impaired in patients with MS compared with the general population ^[4]. Many studies have investigated neurological disability in relation to impaired quality of life in MS patients, but found an only partial connection between quality of life and progressive disability ^[5,6]. There are other factors that play a role in quality of life in MS patients. Most researchers conclude that MS has a negative impact on patients' sexuality and relationships ^[7]. In this regard, young women affected by MS often experience

changes compared with their previous sexual experiences and expectations. Sexual dysfunction may also affect family planning and fertility ^[8]. According to different studies, the rate of sexual dysfunction in female MS patients varies between 40 and 80%, and it usually has a multidimensional nature ^[9,10]. Sexual dysfunction in MS affects patients at three levels.

Primary sexual dysfunction arises from demyelination of the spinal cord and/or brain that directly impairs sexual sensitivity and intimate responses. It includes decreased libido, reduced genital sensation, a lack of lubrication, and decreased intensity and frequency of orgasms, depending on genital nerve

Article history

Received: 24 Feb 2020 - Accepted: 10 May 2020

Contact

Nehrych Oksana; oksananehrych@gmail.com

Department of Obstetrics, Gynecology and Perinatology, Danylo Halytsky Lviv National Medical University, 79010, 69 Pekarska str., Lviv, Ukraine

damage caused by MS. Secondary sexual dysfunction is related to physical disorders associated with MS that indirectly influence sexual response. It includes fatigue, attention and concentration disorders, immobility, coordination disturbances, spasticity, bladder and bowel dysfunctions, muscle weakness, tremor, pain, and adverse effects of MS drugs.

Tertiary sexual dysfunction is linked to psychological, emotional, social, and cultural aspects of MS that can interfere with sexual feelings and sexual response. Sexual dysfunction in this group arises from depression, anxiety, irritability, reduced self-esteem, impaired body image perception, decreased feeling of sexual attractiveness, fear of being sexually rejected, difficulty in the relationship with the partner, and fear of dependency ^[11].

Despite a growing awareness of the predominance of sexual dysfunction in MS, the majority of patients are never questioned about sexual issues ^[12]. Previous studies have demonstrated that sexual counseling and educational materials about sexual issues in MS are beneficial for these patients ^[13].

The purpose of the study.

The aim of this study was to evaluate the prevalence of sexual dysfunction in Ukrainian women with MS by administering the Multiple Sclerosis Intimacy and Sexual Function Questionnaire (MSISQ-19), and to correlate it with quality of life, both overall and specific components, as measured by a disease-specific inventory — the Multiple Sclerosis Quality of Life-54 (MSQOL-54).

Materials and methods

This work was approved by the regional ethics committee of Danylo Halytsky Lviv National Medical University (Protocol no. 5 from 23.02.2017) in accordance with the regulations of the Ministry of Health of Ukraine.

Patients were recruited from the Lviv Regional Multiple Sclerosis Center, Lviv, Ukraine. In total, 116 female patients aged from 18 to 49 years signed an informed consent to participate in the research. The inclusion criteria were a diagnosis of MS according to the McDonald diagnostic criteria, relapsing-remitting course of MS, sexual activity, and an Expanded Disability Status Scale (EDSS) score of less than 8 [14]. Exclusion criteria were a history of major chronic disease, chronic alcohol consumption, and cognitive impairment.

This study used following tools: the EDSS, the MSQOL-54, and the MSISQ-19. The MSISQ-19 and the MSQOL-54 were administered in a quiet and private space to avoid distractions.

The EDSS is used to measure neurological disability and functional capacity in MS. It evaluates the functions of eight systems (pyramidal, cerebellar, brainstem, visual, bladder and bowel, sensory, and cerebral). The systems are scored according to the degree of their functional impairment. The EDSS score, which ranges from 0 to 10, is obtained by considering restrictions in daily life in addition to the scores for these functional systems [15].

The MSQOL-54 is a disease-specific inventory for quality of life evaluation in patients with MS. It combines the original Short Form Health Survey (SF-36) with an additional 18 MS-targeted questions. The 54 items are divided into 12 multi-item and 2 single-item scales. The MSQOL-54 items are linearly transformed to 0-100 scores, and final scores are obtained by averaging items within the scales. Higher values indicate better functioning and well-being [16].

The MSISQ self-report questionnaire contains 19 items. This scale evaluates the impact of various MS symptoms on the patient's sexual activity during the previous 6 months. It assesses three dimensions of sexual dysfunction: primary (five items), secondary (nine items), and tertiary (five items). Each item is rated on a five-point scale (1, never; 2, almost never; 3, occasionally; 4, almost always; 5, always). Items rated 4 or 5 are regarded as clinically significant and require professional consultation [17]. The Ukrainian version of the MSISQ-19 Instrument has recently been validated [18].

During the study we compared the MSQOL54 subscale scores of women with MS, according to their level of sexual dysfunction (presence / absence of at least one 4/5 score on the

MSISQ-19 questionnaire). For this purpose, the cohort of 116 women with MS was divided into two groups: Group 1 consisted of 38 women affected by MS and reporting a high degree of sexual dysfunction (at least one 4/5 score on the MSISQ-19 questionnaire), while Group 2 consisted of 78 women with MS and low levels of sexual dysfunction (no 4/5 scores on this questionnaire). Data were statistically processed using the Stats Direct 3, Ver. 3.1.7 software package (StatsDirect Ltd, UK, no. 04399867).

Results

Analysis and comparison of the MSQOL-54 questionnaire items between the study groups showed that in Group 1 (MS patients with marked sexual dysfunction) virtually all indicators were significantly lower than in Group 2 (MS patients without marked sexual dysfunction) (Table 1).

Thus, in the physical health part of the MSQOL-54 questionnaire, the majority of subscale scores were significantly lower in Group 1 (women with existing sexual dysfunction) than in Group 2 ($p < 0.05$) (Figure 1). The lowest scores in both groups was found on the subscale “Role of limitations due to physical problems”: the women in Group 1 had severe grade III dysfunction (average (M) 28.60% with a median (Me) value of 0.00 [0; 50]), in women in Group 2 - moderate grade II dysfunction (M = 49.05%, Me (42.35 [6.25; 100]%), $p = 0.007$). The Health Perceptions subscale for women in both groups was moderate grade II dysfunction: 42.35 [6.25; 100]% in Group 1 and 47.91 [40; 58.75]% in Group 2 ($p = 0.063$). In Group 1 women, moderate-grade II dysfunction also had Energy / Fatigue and Health Distress, whereas in Group 2, these indicators were at grade I mild dysfunction ($p < 0.05$). The other indicators of the subscale of the physical component in both groups of women were significant at the level of mild grade I dysfunction.

Among the indicators of the mental health subscale of the MSQOL54 questionnaire, the highest degree of dysfunction (grade III) in women in Group 1 had a “Role of limitations due to emotional problems” - 33.33 [0; 62.93]%, whereas in Group 2 this indicator was at levels of mild dysfunction I degree - 66.67 [33.33; 100]% ($p = 0.0001$) (Figure 2). The other indicators of the mental component in both groups also had grade I mild dysfunction, with the exception of Health Distress which had moderate grade II dysfunction (59.95 [40; 60]%) in Group 1 women ($p = 0.045$). Most indicators of this component had significantly lower values of subscale scores in women in Group 1 than in women in Group 2 ($p < 0.05$), except for “Quality of life” and “Emotional well-being”, which had no significant difference ($p > 0.05$) in the study groups. The change in health in both groups had a moderate degree of moderate dysfunction: 44.64 [25; 50]% in women in Group 1 and 50.00 [29.91; 50]% in women in Group 2 ($p = 0.416$). Sexual satisfaction with Group 1 women was at grade II moderate dysfunction (69.39 [25; 75]%), whereas Group 2 women had mild grade I dysfunction (75.00 [69.39; 100]%), $p = 0.001$).

Further analysis of these indicators individually in different age groups of women with MS revealed some differences. Thus, in women of the younger age group of 18-28 years

with significantly lower rates of all subscales in Group 1 than in Group 2, the difference between them was only with three indicators of subscales in the physical component (“Energy / fatigue” (p = 0.048) , “ Role limitations due to physical problems” (p = 0.036), “Sexual function” (p = 0.02)), one in the mental component (“Cognitive function” (p = 0.023)) and “Changing health” (p = 0.008) of the MSQOL54 questionnaire. Severe dysfunction of grade III in this group of women was also in the indicators of the subscales “Health change” (25.00 [25; 25]%, p = 0.008) and “The role of restrictions due to emotional problems” (42.52 [0; 66 , 67]%, p = 0.08). Moderate grade II dysfunction (40-59%) occurred in 7 indicators of

subgroups of women in Group 1, ages 18-28, while in Group 2, only three (“Perception of health”, “Role of limitations due to physical problems”, “Health Change”). Level of other indicators of MSQOL54 questionnaire in women aged 18-28 years was mild I degree of dysfunction (60-79%) - 7 indicators in women in Group 1 and 11 indicators in women in group 2. Three indicators in subgroups in women in Group 2 (with low degree sexual dysfunction) were at the level of satisfactory health (80% or more) - “Physical function”, “Sexual function”, “Cognitive function”. In women with MS aged 29-38 years, Group 1, severe grade III dysfunction occurred with two subscales: “The role of limitations due to physical problems” (M =

Table 1 Comparison of MSQOL-54 questionnaire subscale scores according to the presence (Group 1) or absence (Group 2) of sexual dysfunction in women with MS. The data in the table are presented as mean with standard deviation (M±SD) or as median values with interquartile range (Me [Q1; Q3]).

SCALE COMPONENTS	GROUP1 (N=38)	GROUP 2 (N=78)	U	T	P
Physical health composite	54.04±15.73	66.34±16.96		3.85	0.0002
Physical function	70.00 [56.25;75]	72.35 [70;90]	2.39		0.017
Health perceptions	42.50 [35;53.75]	47.91 [40;58.75]	1.88		0.063
Energy /fatigue	56.00 [36;64]	57.51 [48;75]	2.44		0.015
Role limitations due to physical problems	0.00 [0;50]	42.35 [6.25;100]	2.70		0.007
Pain	71.02 [53.75;81.67]	72.04 [57.08;93.33]	1.88		0.06
Sexual function	66.68 [50;79.6]	91.68 [79.6;100]	4.87		0.00
Social function	65.57±18.30	79.59±15.47		4.07	0.00
Mental health composite	55.30±18.02	67.85±19.63		3.42	0.001
Health distress	59.95 [40;60]	60.00 [50;85]	2.01		0.045
Overall quality of life	62.99±16.69	69.06±16.71		1.84	0.07
Emotional well-being	64.07±16.63	68.34±17.25		1.28	0.20
Role limitations due to emotional problems	33.33 [0;62.93]	66.67 [33.33;100]	3.53		0.00
Cognitive function	66.23±22.20	81.25±16.91		3.68	0.0004
Change in health	44.64 [25;50]	50.00 [29.91;50]	0.81		0.42
Satisfaction with sexual function	69.39 [25;75]	75.00 [69.39;100]	3.18		0.001

Figure 1 Physical health quality of life scores in MS patients with sexual dysfunction (SD) compared with MS patients without sexual dysfunction (no SD). The presence of sexual dysfunction is associated with lower QOL scores. (* - significant associations, p < 0.05).

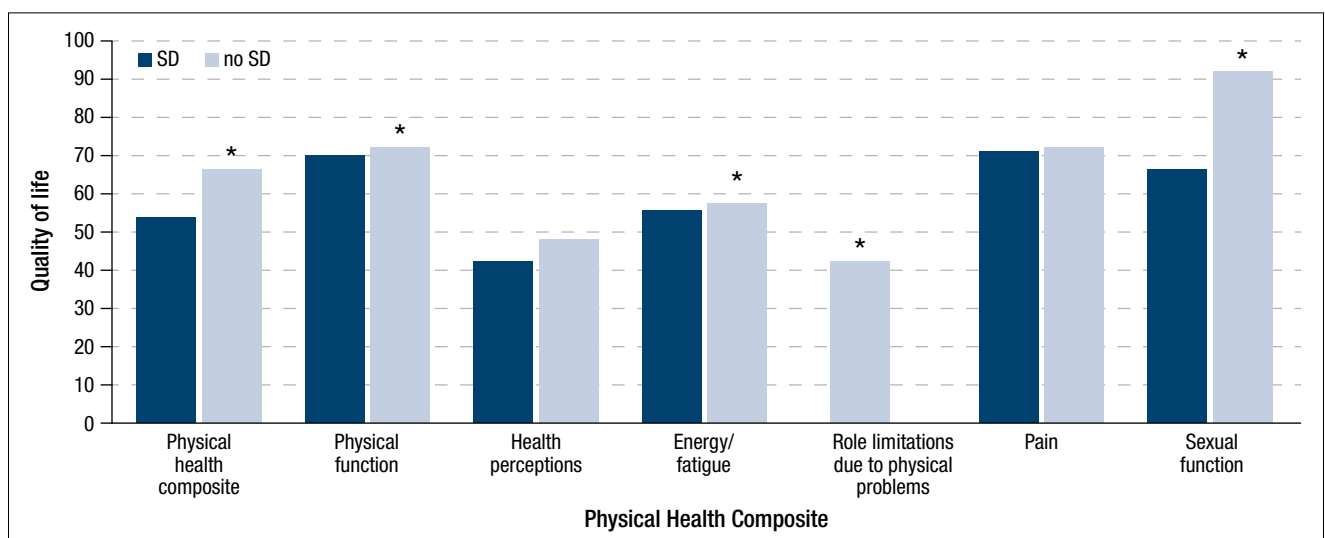
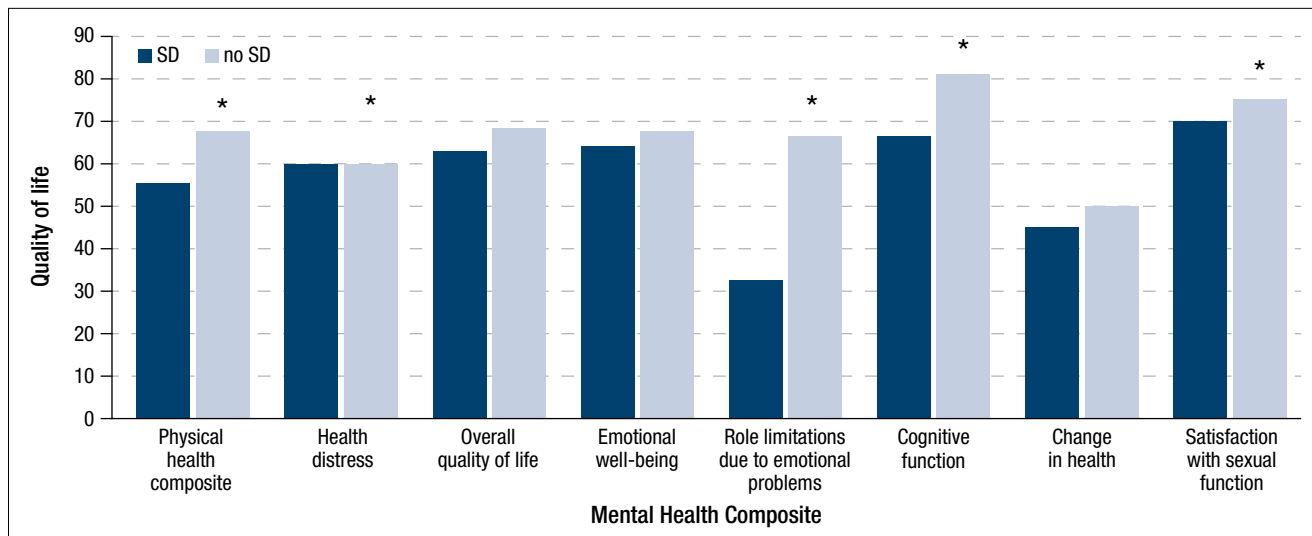


Figure 2 Mental health quality of life scores in MS patients with sexual dysfunction (SD) compared with patients without sexual dysfunction (no SD). The presence of sexual dysfunction is associated with lower QOL scores. (* - significant associations, $p < 0.05$).



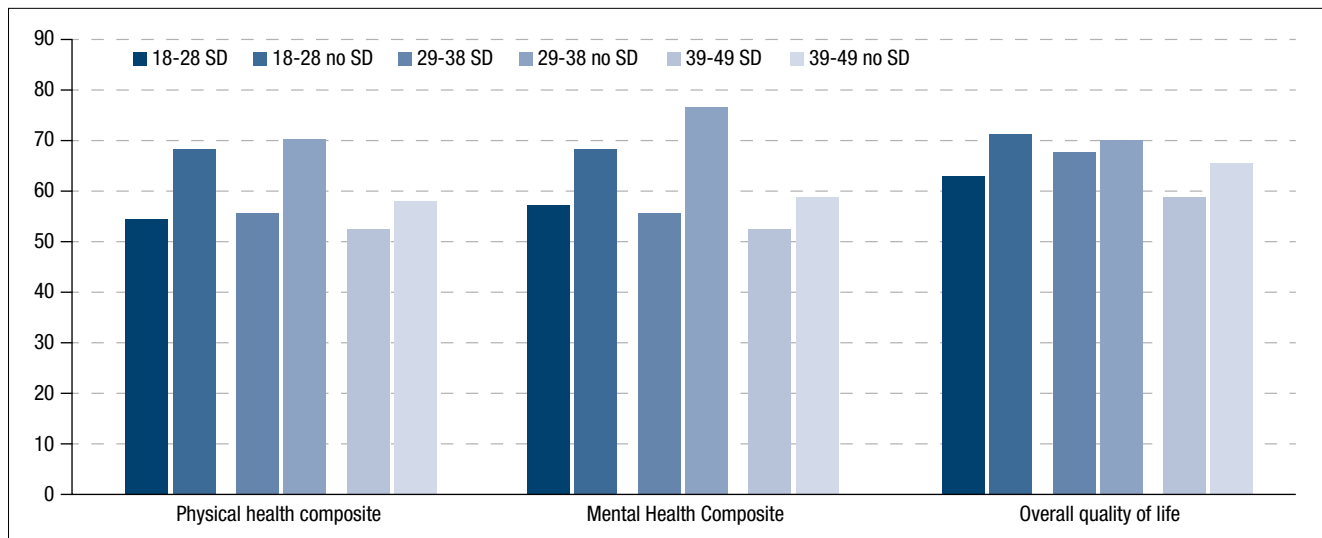
35.71%, $Me = 0.00$ [0; 75]%, $p = 0.128$) and “The role of constraints due to emotional problems” ($M = 38.1\%$, $Me = 16.67$ [0; 66.67]%, $p = 0.0125$).

At the level of moderate II degree dysfunction (40-59%) there were 8 indicators of subscales in women 28-39 years of Group 1 (of them the physical component - $55.84 \pm 19.25\%$, $p = 0.02$ and the psychic component - 54.87 [43.07; 71.15]%, $p = 0.042$) and 3 indicators in women of this age Group 2 (“Perception of health”, “Role of limitations due to physical problems”, “Changing health”). The values of mild I degree of dysfunction of health disorders (60-79%) were characteristic for the other 7 indicators of the MSQOL54 questionnaire in women aged 29-38 years of Groups 1 and for the majority (10) indicators of women of Group 2. The values of four The sub-scales of women in group 2 were at the level of satisfactory health (80% and more) - “Pain”, “Social function”, “Sexual function”, “Cognitive function”. Thus, 29-38 years of age can be considered the most favorable for MS manifestations due to the minimum number of sub-levels of high health disorder in Group 1 and the highest number of indicators of satisfactory health in Group 2 women with MS. In women older than 39-49 years with MS, all MSQOL54 subscale scores were lower in Group 1 than in Group 2, but the difference was only with Sexual Function ($p = 0.03$) and Social Function ($P = 0.05$). The indicators of the subscales “Role limitations due to physical problems” and “Role limitations due to emotional problems” in women of Group 1 have the lowest values ($M = 22.81\%$, $Me = 0.00$ [0; 42.35]%) and $M = 24.30\%$, $Me = 33.33$ [0; 47.11]%, respectively), which corresponds to severe III dysfunction of health disorders. For the first time in the women of Group 2 aged 39-49 years (compared to other age groups) the indicator “Role of restrictions due to physical problems” also has the III degree of severe dysfunction ($M = 27.11\%$, $Me = 25.00$ [0; 42.35]%). In both groups of women with MS aged 39-49 years, most indicators of the subscales are in the values of moderate (40-59%) (10 indicators in Group 1 and 7 in Group 2) or mild (60-79%) (5 indicators in group 1 and 7 in Group 2) dysfunction. One indicator of the Sexual Function subscale in women in Group 2 with

MS had satisfactory health status ($82.63 \pm 15.21\%$, $p = 0.03$). Our findings show that with increasing age (after 39 years) in women with MS, the difference between the MSQOL54 questionnaire subscales in the groups with existing or no sexual dysfunction is offset. Indicators of the Role of Restriction Due to Physical Problems and Role of Restriction Due to Emotional Problems subscales in all age groups (18-49 years) of women with Group 1 MS (with existing sexual dysfunction disorders) have a level of severe dysfunction of grade III health disorders. While indicators of the sexual function subscale remained in the level of satisfactory health (80% and more) in all age groups (18-49 years) of women with MS of Group 2 (with no disorders of sexual dysfunction), and “Cognitive function” - in women in this group aged 18-39 years (Figure 3).

Discussion

In this study, we evaluated quality of life in relation to sexual function in women with MS. Sexual dysfunction symptoms have a substantial effect on women’s overall quality of life and its specific components. Among women with MS, we found an increased prevalence of impaired quality of life in patients with sexual dysfunction compared with subjects without sexual problems. Both mental and physical health quality of life scores in MS patients with sexual dysfunction were significantly associated with lower overall quality of life scores. The results of our research are consistent with previous investigations and clearly show the importance of sexual function preservation for high quality of life in female patients with MS [9,19]. Our findings may have important implications for the care of MS patients. Despite its high prevalence, sexual dysfunction, especially in females, is still not assessed, and remains undiagnosed and undertreated [6,20,21]. Ideally, management of sexual health should be started immediately after MS is diagnosed [22,23]. Sexual function evaluation should be included in routine follow-up visits in order to diagnose disturbances at early stages. An effective treatment approach should involve a multidisciplinary team, including gynecologists, neurologists,

Figure 3 Quality of life in MS patients of different age groups with sexual dysfunction (SD) compared with patients without sexual dysfunction (no SD).

urologists, psychiatrists, psychologists, and physical therapists [20,24]. In conclusion, sexual dysfunction is a common manifestation of MS. All female patients should be carefully screened for symptoms of sexual dysfunction, regardless of the severity of the neurological disability and of the patients' age. Diagnostics and effective treatment of sexual dysfunction may significantly improve the quality of life of MS patients.

References

- Harris MK, Maghzi AH, Etemadifar M, Kelley RE, Gonzalez-Torres E, Minagar A. Acute demyelinating disorders of the central nervous system. *Curr Treat Options Neurol*. 2008;11:55-63.
- Kesseling J. MULTIPLE SCLEROSIS: The history of a disease By T. Jock Murray 2005. New York: Demos 3. *Brain*. 2005;128:1466-8.
- Voskuhl R. Gender issues and multiple sclerosis. *Curr Neurol Neurosci Rep*. 2002;2:277-86.
- Janardhan V, Bakshi R. Quality of life and its relationship to brain lesions and atrophy on magnetic resonance images in 60 patients with multiple sclerosis. *Arch Neurol*. 2000;57:1485-91.
- Modrego P, Pina M, Simón A, Azuara M. The interrelations between disability and quality of life in patients with multiple sclerosis in the area of Bajo Aragón, Spain: a geographically based survey. *Neurorehabil Neural Repair*. 2001;15:69-73.
- Calabrò R. When healthcare providers do not ask, patients rarely tell: the importance of sexual counselling in multiple sclerosis. *J Natl Med Assoc*. 2019;111:682-7.
- Kessler T, Fowler C, Panicker J. Sexual dysfunction in multiple sclerosis. *Expert Rev Neurother*. 2009;9:341-50.
- Bronner G, Elran E, Golomb J, Korczyn A. Female sexuality in multiple sclerosis: the multidimensional nature of the problem and the intervention. *Acta Neurol Scand*. 2010;122:289-301.
- Tepavcevic D, Pekmezovic T, Stojavljevic N, et al. Change in quality of life and predictors of change among patients with multiple sclerosis: a prospective cohort study. *Qual Life Res*. 2014;23:1027-37.
- Marck C, Jelinek P, Weiland T, et al. Sexual function in multiple sclerosis and associations with demographic, disease and lifestyle characteristics: an international cross-sectional study. *BMC Neurol*. 2016;16:210.
- Foley F, LaRocca N, Sanders A, Zemon V. Rehabilitation of intimacy and sexual dysfunction in couples with multiple sclerosis. *Mult Scler*. 2001;7:417-21.
- McCabe MP. Exacerbation of symptoms among people with multiple sclerosis: impact on sexuality and relationships over time. *Arch Sex Behav*. 2004;33:593-601.
- Christopherson J, Moore K, Foley F, Warren K. A comparison of written materials vs. materials and counselling for women with sexual dysfunction and multiple sclerosis. *J Clin Nurs*. 2006;15:742-50.
- Polman C, Reingold S, Banwell B, et al. Diagnostic criteria for multiple sclerosis: 2010 Revisions to the McDonald criteria. *Ann Neurol*. 2011;69:292-302.
- Kurtzke J. Rating neurologic impairment in multiple sclerosis: an expanded disability status scale (EDSS). *Neurology*. 1983;33:1444-52.
- Vickrey B, Hays R, Harooni R, Myers L, Ellison G. A health-related quality of life measure for multiple sclerosis. *Qual Life Res*. 1995;4:187-206.
- Foley F, Zemon V, Campagnolo D, et al. The Multiple Sclerosis Intimacy and Sexuality Questionnaire--re-validation and development of a 15-item version with a large US sample. *Mult Scler*. 2013;19:1197-203.
- Nehrych O, Pyrohova V, Portnoj J, Stimmel M, Foley F, Nehrych T. The Multiple Sclerosis Intimacy and Sexuality Questionnaire-19: validation and adaptation for Ukrainian population. *International Neurological Journal*. 2019;0(5.107):19-25.
- Orasanu B, Frasure H, Wyman A, Mahajan S. Sexual dysfunction in patients with multiple sclerosis. *Mult Scler Relat Disord*. 2013;2:117-23.
- Delaney K, Donovan J. Multiple sclerosis and sexual dysfunction: A need for further education and interdisciplinary care. *NeuroRehabilitation*. 2017;41:317-29.
- Calabrò R, Bramanti P. Sexual dysfunction in multiple sclerosis: still a neglected problem? *Disabil Rehabil*. 2014;36:1483.
- Gava G, Visconti M, Salvi F, Bartolomei I, Seracchioli R, Meriggiola MC. Prevalence and psychopathological determinants of sexual dysfunction and related distress in women with and without multiple sclerosis. *J Sex Med*. 2019;16:833-42.
- Drulovic J, Kusic-Tepavcevic D, Pekmezovic T. Epidemiology, diagnosis and management of sexual dysfunction in multiple sclerosis. *Acta Neurol Belg*. 2020 Mar 11. doi: 10.1007/s13760-020-01323-4.
- Nazari F, Shaygannejad V, Mohammadi Sichani M, Mansourian M, Hajhashemi V. Sexual dysfunction in women with multiple sclerosis: prevalence and impact on quality of life. *BMC Urol*. 2020;20:15.

Conflict of Interest: Nothing to declare

Acknowledgments: This work was supported by Danylo Halytsky Lviv National Medical University