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Multiple sclerosis: psychological problems (emotional tension, stress, depressive disorders) and accompanying factors

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Abstract
Emotional tension, stress and depressive disorders (as a whole referred to as psychological disorders) accompany multiple sclerosis (MS). The aim of this paper has been to determine the frequency of their occurrence and their relation to other disorders common for MS. A group of 67 patients of a neurological clinic in Jarosław and neurological ward in Przemyśl (situated in south-east Poland) were provided with a tailor-made questionnaire. The patients who declared having psychological problems belonged to a group of older adults, who suffered from MS longer and who demonstrated more mobility impairment (higher EDSS score). It was found that the patients experienced also a higher frequency of occurrence of the following: pain (48.8% vs 4.0%), communication difficulties (34.1% vs 0.0%), fatigue syndrome (90.5% vs 13%), sexual dysfunctions (92.7% vs 20.0%). Emotional tension, stress or depressive disorders were found the most common among patients diagnosed with secondary progressive MS (100.0%), and the least common in patients with progressive-relapsing MS (46.9%). Upon combining the respondents' age, duration of the disease as well as EDSS scores (0.57-0.73), the most significant factor influencing the occurrence of psychological disorders, the authors suggest, was the intensification of mobility impairment.

Introduction
Multiple sclerosis is a chronic inflammatory neurodegenerative disease that affects more and more people (approximate global incidence has risen from 2.1m in 2008 to 2.3m in 2013) [1]. As the disease progresses, it contributes to the following dysfunctions: mobility (pareses, ataxia), sensory (paresthesia, hypoesthesia, hyperesthesia), cranial nerves (internuclear

ophthalmoplegia, visual impairment), vegetative (urination and bowel dysfunction), and mental (emotional and cognitive dysfunctions) [2]. Apart from that, symptoms that are found common for MS are as follows: fatigue (appearing in nearly all MS patients) [3, 4], depressive disorders [1, 2], communication impairment (dysarthria as the most frequent issue) [5], pain (mostly chronic, which depending on a particular group of patients or data collection technique ranges from 40% to 92% of patients) [6, 7, 8].
Multiple sclerosis as a chronic disease leading to disability is accompanied not only by factors affecting patients in terms of physicality but also in a form of psychological problems which occur as the disease progresses. Among the mentioned psychological problems are depressive disorders, substantial emotional strain or chronic stress. This paper has combined them under the general term of "psychological problems".

Objectives

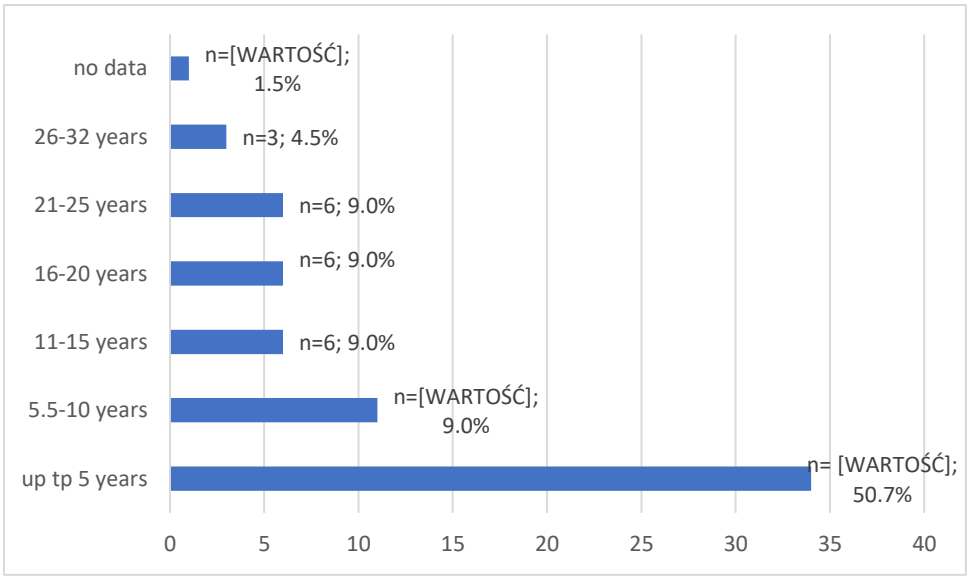
This paper aims to determine whether a dependence can be established between the occurrence of the psychological problems (emotional tension, stress and depressive disorders) during multiple sclerosis and sociodemographic variables, the length and type of the disease, as well as occurrence of mobility impairment, fatigue syndrome, pain, communication impairment and sexual dysfunctions.

Materials and methods

The study was conducted in a group of 67 patients diagnosed with multiple sclerosis and hospitalized in Neurological Ward in Medical Care Centre in Jarosław as well as patients of neurological clinic in the hospital in Przemyśl. Participation in the study was voluntary and anonymous. It was held in the period between January and December 2016. The study was based on a self-constructed diagnostic questionnaire used in a survey conducted by a neurologist. The questions referred to sociological (demographics) and medical data in relation to multiple sclerosis. The demographic questions were to establish the age, sex, education, place of residence and marital status of the respondents.
The result were analyzed with the use of STATISTICA 13.1 PL package. The following tests have been utilized: chi-square statistical test, Mann–Whitney U test as well as Spearman's rank correlation.

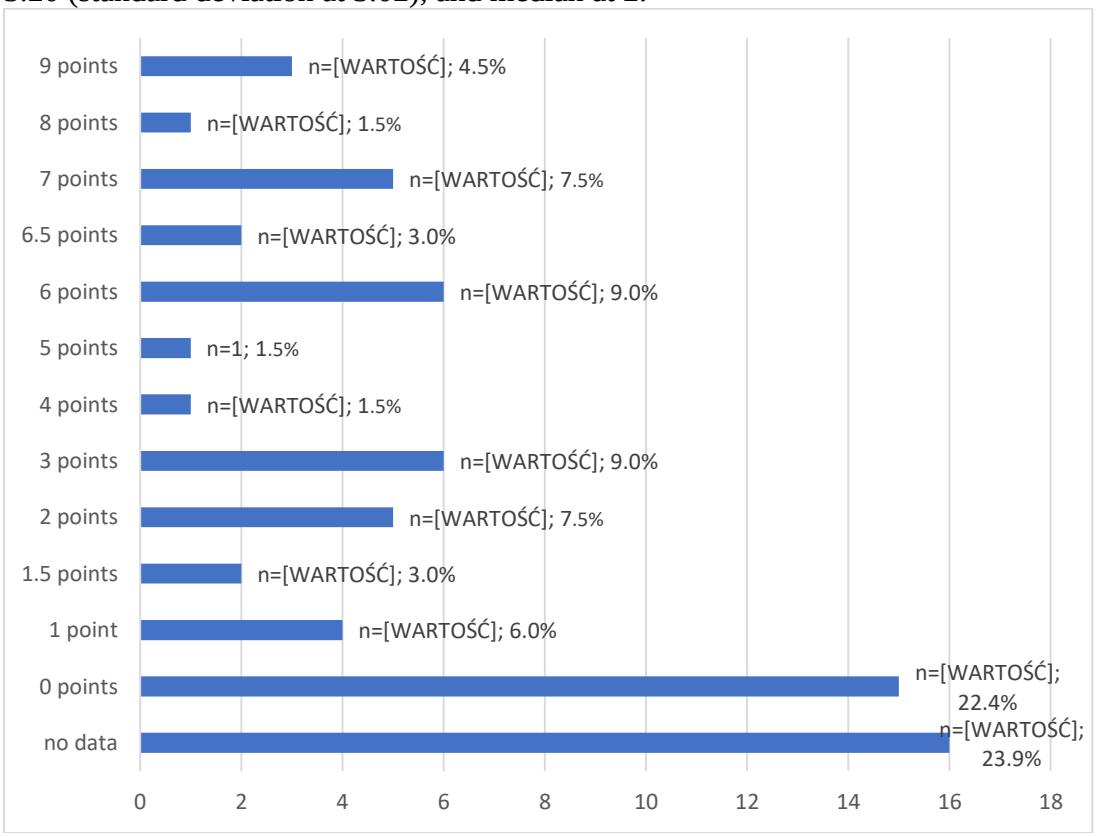
Results

The sample comprised of 50 women (74.6%) and 17 men (25.4%). The age of the respondents varied from 22 to 74. Age arithmetic mean equalled 42.88 (standard deviation: 12.15), and median was at 43 years of age. The average age of female respondents (40.12 years of age) was lower than the average age of male patients (51.00 years of age). This difference was statistically significant ($p<0.01$). Among the respondents, 34 (50.7%) were urban and 33 (49.3%) were rural residents. The majority of patients completed their secondary education (43.3%, including 3 respondents who were studying at the time the research was held). Higher education was completed by 31.3% of the respondents, vocational education by 22.4% and primary education by 1.5%. The vast majority of the population (71.6%) was married. The duration of the disease varied from 4 months to 32 years. Among 66 patients who were willing to provide that information, the average length of the disease amounted to 9.0 years (standard deviation equalled 8.35), and median was 5 years.



Graph 1. Disease duration of the studied sample

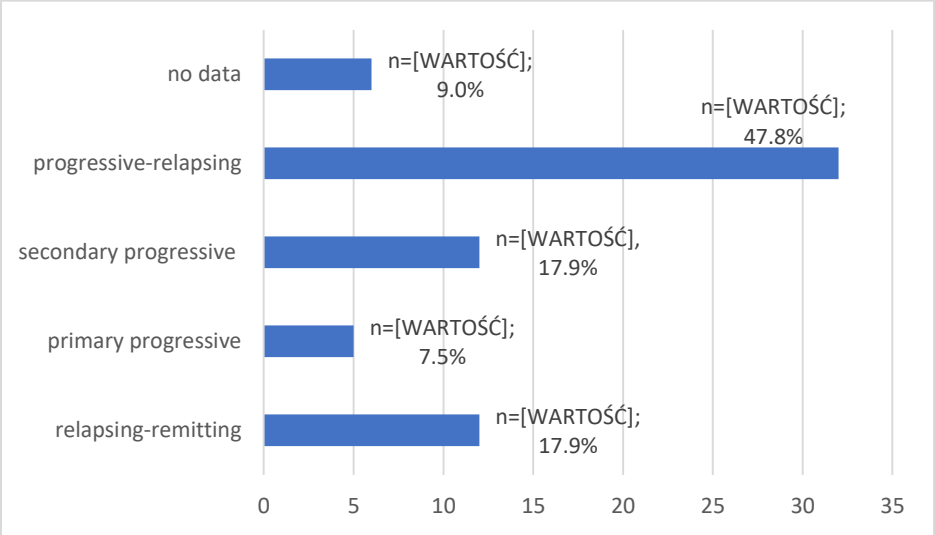
The respondents were asked to indicate the result on the basis of Kurtzke Expanded Disability Status Scale (EDSS) which serves to determine the disability level in patients with MS. It is a 20-step scale with grades every half a point (except for 0.5). The scale step of 0 is equal to no symptoms, whereas step 10 denotes death caused by the disease. [9]. The data was collected from 51 respondents. The numbers varied from 0 to 9, and the arithmetic mean amounted to 3.20 (standard deviation at 3.02), and median at 2.



Graph 2. EDSS scale results

The sample of 61 respondents indicated the type of MS they were diagnosed. The most common (n=32; 47.8% of all the respondents) was progressive-relapsing. The secondary

progressive and relapsing-remitting was indicated by 12 (17.9%) respondents. The least frequent type of multiple sclerosis among the sample was primary progressive (7.5%).



Graph 3. Types of multiple sclerosis among the respondents

Issues resulting from experiencing pain were indicated by 21 patients. However, the majority admitted to experiencing chronic pain (n=19; 90.5%), and only two patients were experiencing severe pain.

Table 1. Prevalence of pain in MS patients

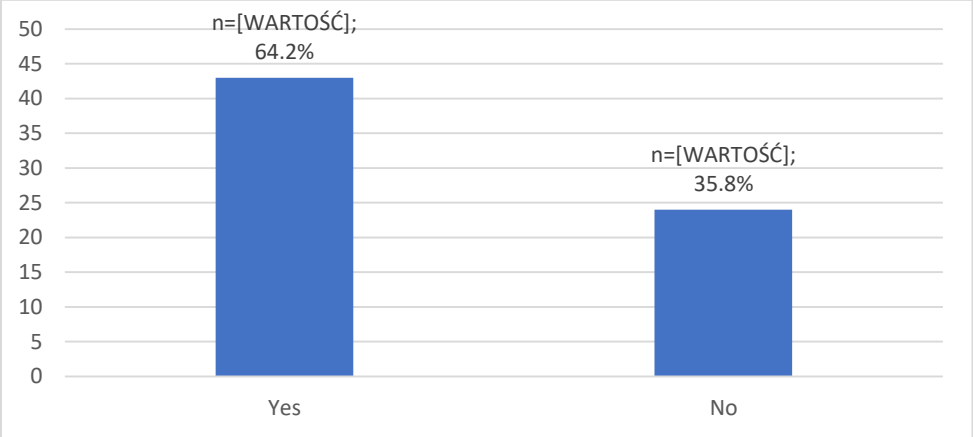
No.	Type of pain	N	% (for N=21)	% (for N=67)
1	Severe	2	9.5	3.0
2	Chronic	19	90.5	28.4
Total		21	-	-

Further aspect examined was communication difficulties. The study showed that 14 patients demonstrated this issue. The most commonly indicated was dysarthria which appeared in 11 respondents. Cognitive dysfunctions were recognized by 2, and dysphasia by 1 respondent.

Table 2. Communication difficulties in MS patients

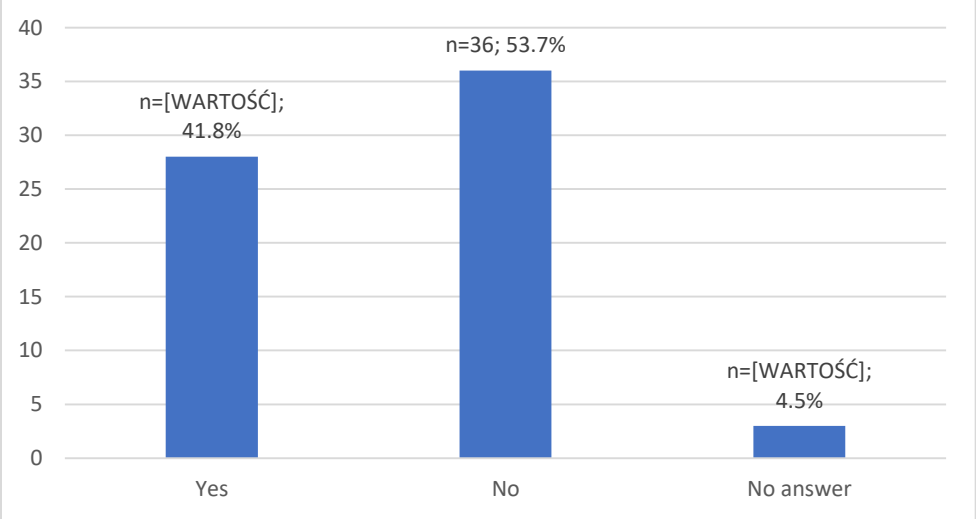
No.	Type of difficulty	N	% (for N=14)	% (for N=67)
1	Dysarthria	11	78.6	16.4
2	Dysphasia	1	7.1	1.5
3	Cognitive dysfunctions	2	14.3	3.0
Total			-	-

In the sample, the issue of fatigue appeared in 64.2% respondents.



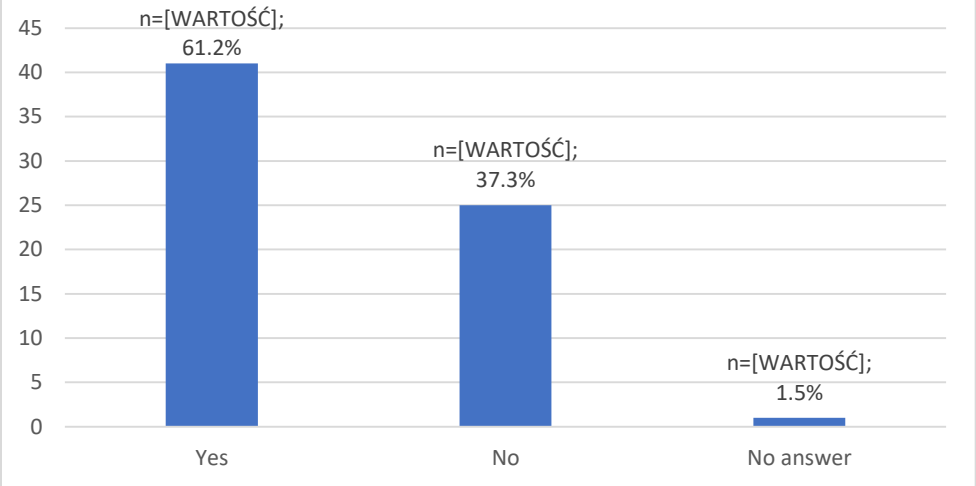
Graph 4. The occurrence of fatigue syndrome

Sexual dysfunction occurred in 41.8% of respondents.



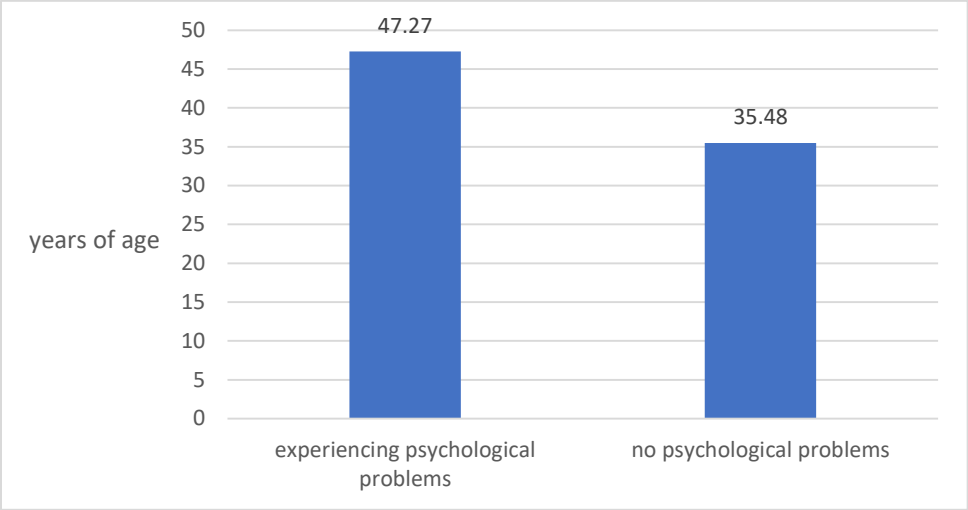
Graph 5. Sexual dysfunction issues

Among the respondents, 61.2% admitted to experiencing psychological problems (emotional tension, stress, depressive disorders).



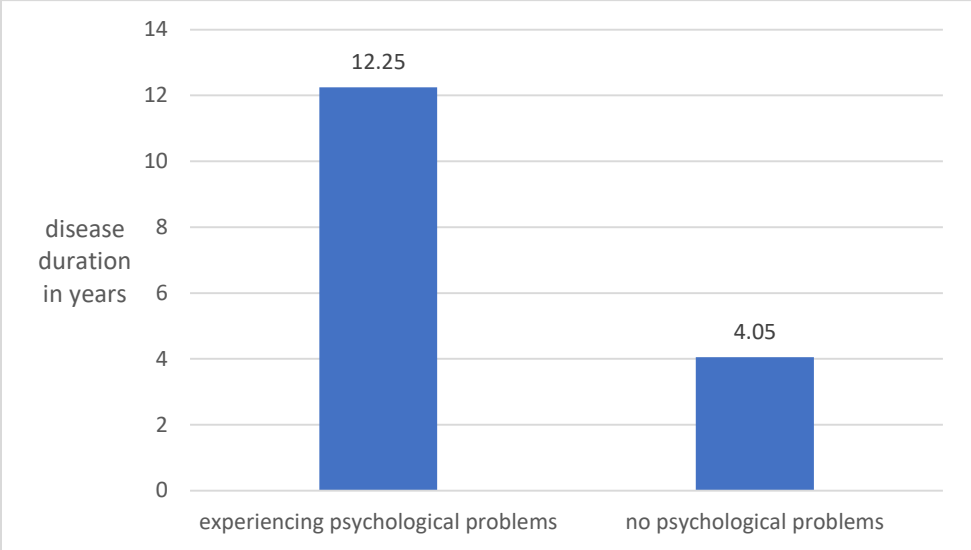
Graph 6. Occurrence of psychological problems

Sex, education and marital status were not related to psychological problems (emotional tension, stress, depressive disorders) declared by the respondents. The average age of the respondents experiencing psychological problems (47.27 years of age) was higher that the remaining number of patients (35.48) – the difference was statistically significant ($p<0.001$).



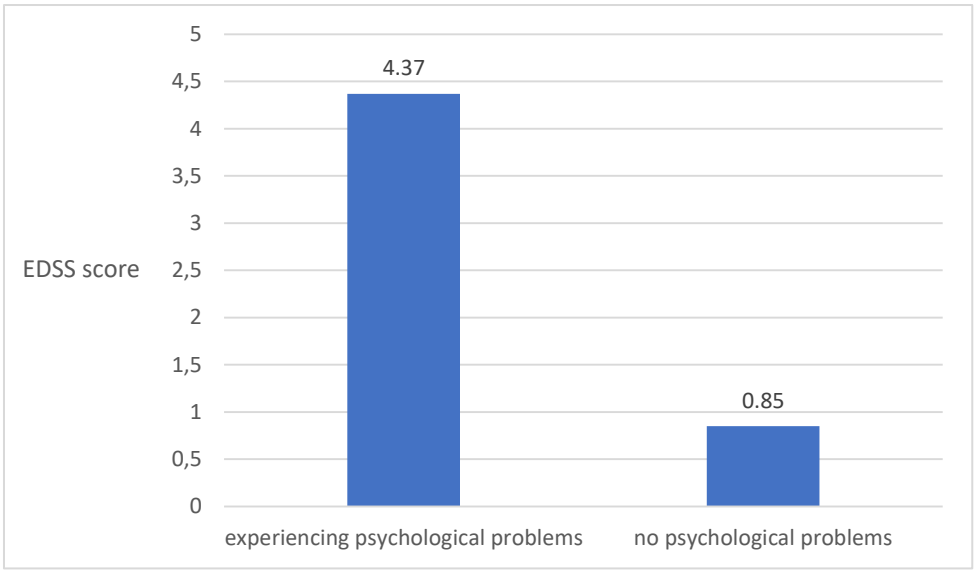
Graph 7. Psychological problems and age

The patients who declared psychological problems had multiple sclerosis longer than the remaining patients in the sample (12.25 vs 4.05; $p<0.001$).



Graph 8. Psychological problems and the disease duration

The average EDSS score in patients having psychological problems was found to be higher than the rest of respondents (4.37 vs 0.85; $p<0.001$).



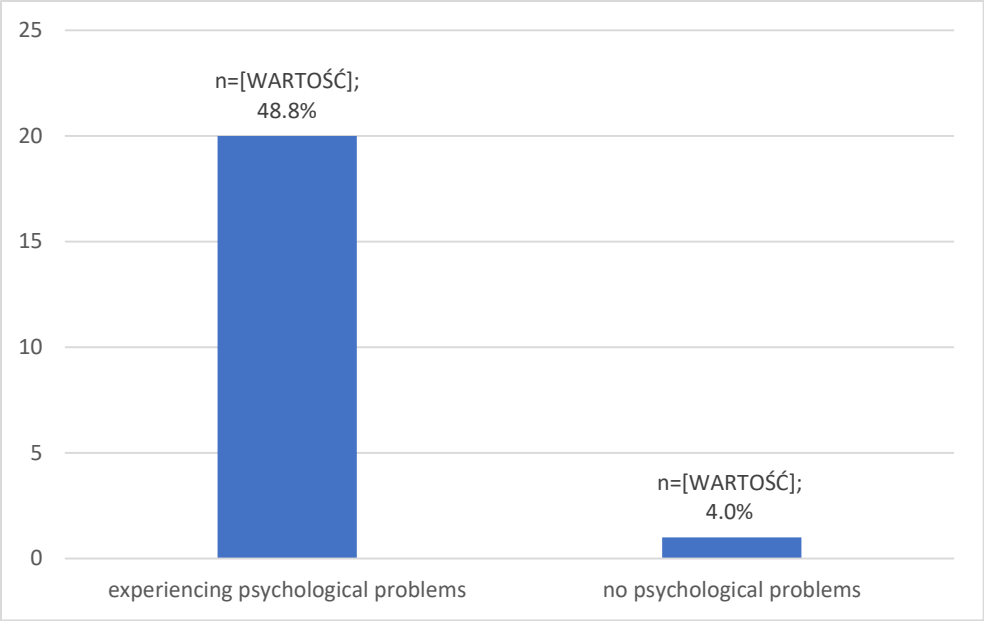
Graph 9. Psychological problems and EDSS score

Psychological problems were the most common among the respondents diagnosed with relapsing-remitting (66.7% of respondents), primary progressive (80.0% of respondents) and secondary progressive (100.0% of respondents) multiple sclerosis. Slightly less than a half of the patients diagnosed with progressive-relapsing type of MS has indicated the occurrence of psychological problems.

Table 3. Psychological problems and MS type

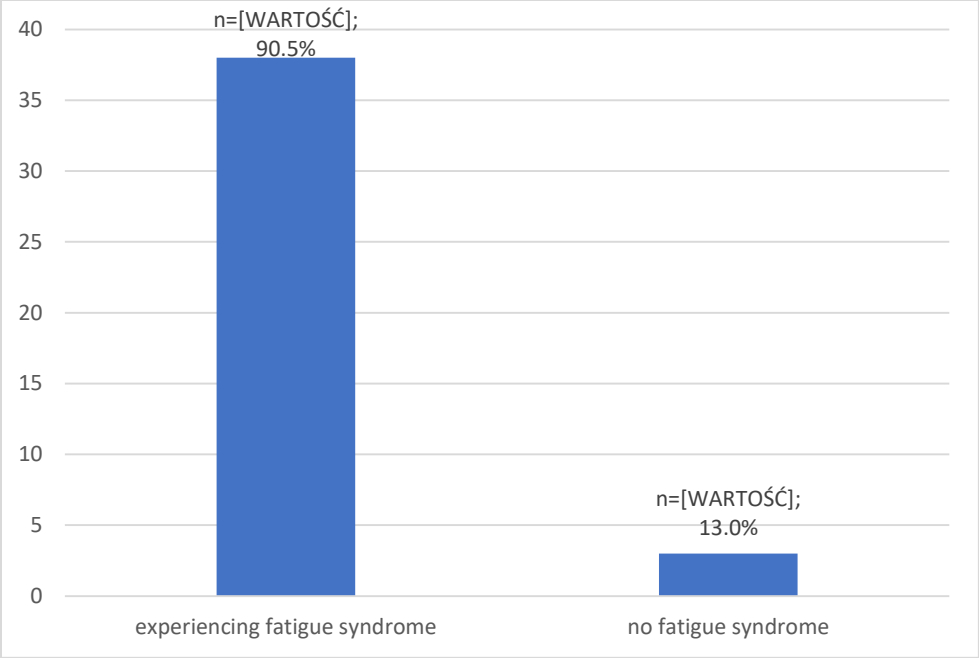
No.	Type of MS	No occurrence of psychological problems		Occurrence of psychological problems	
		n	%	n	%
1	relapsing-remitting (n=12)	4	33.3	8	66.7
2	primary progressive (n=5)	1	20.0	4	80.0
3	secondary progressive (n=12)	0	0.0	12	100.0
4	progressive-relapsing (n=32)	17	53.1	15	46.9
Total		22	-	39	-

The sample demonstrated that psychological problems were most often accompanied by pain (n=20; 48.8% of respondents experiencing psychological problems) than in the remaining group of respondents (n=1; 4.0% of respondents not experiencing psychological problems) – a statistically significant difference ($p<0.001$).



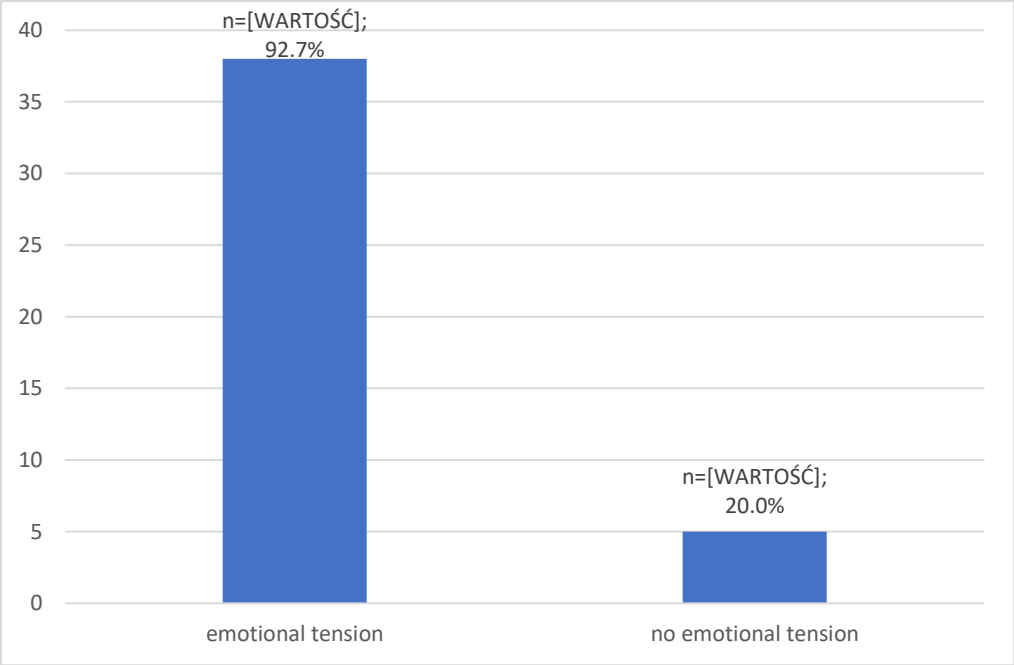
Graph 10. Psychological problems and pain

Communication difficulties occurred only among the respondents who indicated having psychological problems (34.1% from 41 respondents who fell under this category; p<0.001). It has been noticed that psychological problems were more common in patients who struggled with fatigue syndrome (90.5% vs 13.0%; p<0.001).



Graph 11. Fatigue syndrome and emotional discomfort

The study showed that sexual dysfunctions were more common in patients with psychological problems than other respondents (92.7% vs 20.0%; p<0.001)



Graph 12. Psychological problems and sexual dysfunctions

Discussion

Multiple sclerosis is a neurodegenerative disease that affects the central nervous system and is characterized by occurrence of many additional health conditions. From dysfunctionalities connected with mobility, sensory loss to symptoms related to cranial nerves, to psychiatric dysfunctions. As it was mentioned, the disease stems from pathology in the central nervous system and is responsible for the occurrence of chronic pain, fatigue and followed by emotional disorders [1, 2, 6].

Over half of the respondents (61.4%) mentioned that they felt discomfort which resulted from depression, difficulties of coping with stress or from experiencing emotional tension.

Among the population, the patients who determined the prevalence of psychological problems (emotional tension, stress, depressive disorders) were older, had suffered from multiple sclerosis longer and were affected by a more advanced mobility impairment (higher Kurtzke EDSS score) than other patients in the sample. Moreover, the correlation of the three variables are statistically significant (as Table 4 demonstrates). The intensification of mobility impairment, as the authors suggest, had a significant impact and resulted from the duration of the disease accompanied by ageing, and similarly to people not suffering from MS, the decreasing mobility [10,11].

Table 4. Correlation of age, duration of the disease and decreasing mobility

No.	Correlation variables	r_s	p	N*
1	Age – Duration of the disease	0.5711	<0.001	66
2	Age – EDSS score	0.6617	<0.001	51
3	Duration of the disease – EDSS score	0.7344	<0.001	51

* excluding cases which provided no data

Psychological problems that varied among different types of multiple sclerosis (see Table 3) appear to result rather from the differences in the disease duration, intensification of symptoms (in this case the decreasing mobility) and patients' age. This justification is demonstrated in Table 5.

Table 5. Type of MS and disease duration, and EDSS score

No.	Type of MS	N patients	Age	Duration of disease	EDSS
1	relapsing-remitting	12	37.25	7.36	5.00
2	primary progressive	5	58.80	12.30	5.38
3	secondary progressive	12	50.25	16.75	6.00
4	progressive-relapsing	32	40.69	6.92	1.52

After conducting this study, it has been determined that pain occurs in nearly one third of the respondents (31.3%), whereas in 90.5% the pain was described as chronic. In comparison to studies held by other scholars, the occurrence of pain was indicated by a rather limited group of patients. For instance, Foley et al. have found that pain appeared in 63% of respondents [13], whereas Moisset et al. determined the occurrence of pain in 80% of respondents [14]. As far as communication dysfunctions are concerned, they have been indicated by 21% of patients with dysarthria as the most common. By comparison, other studies have shown similar results with speech and communication impairment was assessed at 23% of respondents [5, 14].

It has been confirmed in this study what others suggested [3, 4], namely that majority of the sample (64.5%) has been experiencing fatigue. What is more, fatigue in fact accompanies depression [15, 16]. Over half of the respondents (61.4%) admitted to discomfort due to depression, difficulties with stress management, and to emotional tension. Psychological problems were significantly connected with sexual disfunctions in patients.

In general, dysfunctions related to intensification of symptoms of MS (i.e. mobility impairment, pain, fatigue, communication difficulties, sexual disfunctions) have a considerable impact on developing psychological problems [17].

Numerous studies on multiple sclerosis provided a significant insight into the specifics of the disease. In addition, information gained from own research has shown that it is necessary to not only sensitize medical personnel but patients themselves as well as their close relatives and friends to actively observe joint occurrence of symptoms of the disease. It proves to be an important effort as reducing one symptom could influence preventive measures in reference to other accompanying health conditions.

Conclusions

1. Emotional tension, stress, and depressive disorders were the most common in patients diagnosed with secondary progressive type of multiple sclerosis (100.0%), and the least common in patients with progressive-relapsing type (46.9%).
2. Due to conducted correlation of age of the patients, duration of the disease and EDSS score (0.57-0.73), it was found that the major cause of psychological disorders was the intensification of mobility impairment.
3. The occurrence of differences in respect to psychological disorders found among types of MS also resulted from the intensification of mobility impairment.

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