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The Sense of Responsibility for own Health and the Influence of the Disease on Daily Functioning Among Patients with Multiple Sclerosis

Poczucie odpowiedzialności za własne zdrowie i wpływ choroby na codzienne funkcjonowanie wśród pacjentów ze stwardnieniem rozsianym

Beata Gąsowska[1], Monika Chorąży[2], Katarzyna Krystyna Snarska[3], Cecylia Dolińska[4]

[1]Graduate of Healt Sciences Faculty, Medical University of Białystok, Poland
[2]Department of Neurology, Medical University of Białystok, Poland
[3]Department of Clinical Medicine, Medical University of Białystok, Poland
[4]Medical School of Białystok, Poland

Abstract

Introduction. MS is characterized by a large variety of symptoms, which negatively affects the functioning and quality of life of patients.
Aim. The purpose of the work is determination of the impact of Multiple Sclerosis on the daily functioning of patients and assessment of the sense of responsibility for one's own health among patients with Multiple Sclerosis.
Material and Methods. The study included 97 patients suffering from Multiple Sclerosis, treated at the Department of Neurology, University Hospital in Białystok. Study group consisted of 73 women and 24 men. The research has been conducted using the diagnostic survey method with following research tools: Activities of Daily Living scale; Instrumental Activities of Daily Living scale; Multidimensional Health Locus of Control and a self-constructed questionnaire.
Results. The average age of the respondents was 52 (±10.36) and was comparable for women and men — 52.33 (±10.97) years and 51.79 (±8.42) years, respectively. The duration of the disease was on average 8 years (±3.87). Among the respondents, from the beginning of the disease, on average 5.02 exacerbations of MS (±3.08) have been observed. The most significant problem for MS patients was sphincter control (45.36%), independent bath (34.02%) and use of the toilet (31.96%). According to Lawton's scale, patients with MS had most difficulties going out for shopping and getting outside walking distance. With the duration of the disease, the internal location of health control decreased significantly.
Conclusions. As a result of increasing restrictions on the independent functioning of patients with Multiple Sclerosis, the sense of control over their own health is located in external factors such as chance and the influence of others.
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Key Words: Multiple Sclerosis, health, functional status

Streszczenie

Wstęp. SM charakteryzuje duża różnorodność objawów, z których każdy negatywnie wpływa na funkcjonowanie i jakość życia chorych.
Cel. Celem pracy jest określenie wpływu stwardnienia rozsianego na codzienne funkcjonowanie chorych oraz ocena poczucia odpowiedzialności za własne zdrowie wśród osób chorych na stwardnienie rozsiane.
Materiał i metody. Badaniem objęto 97 pacjentów chorujących na stwardnienie rozsiane, leczonych w Klinice Neurologii USK w Białymstoku. W badanej grupie osób były 73 kobiety i 24 mężczyzn. Badania przeprowadzono metodą sondażu diagnostycznego, wykorzystując następujące narzędzia badawcze: Skalę Podstawowych Czynności Życia Codziennego; Skalę Złożonych Czynności Życia Codziennego; Wielowymiarową Skalę Umiejscowienia Kontroli Zdrowia oraz kwestionariusz ankiety własnej konstrukcji.
Wyniki. Średnia wieku badanych wynosiła 52 lata (±10,36) i była porównywalna dla kobiet i mężczyzn — odpowiednio: 52,33 (±10,97) lat i 51,79 (±8,42) lat. Czas trwania choroby wynosił przeciętnie 8 lat (±3,87). Wśród

badanych, od początku zachorowania, doszło przeciętnie do 5,02 zaostrzeń SM (±3,08). Największy problem dla chorych na SM stanowiło kontrolowanie zwieraczy (45,36%), samodzielna kąpiel (34,02%) oraz korzystanie z toalety (31,96%). Według skali Lawtona chorym na SM najwięcej trudności sprawiało wychodzenie po zakupy oraz dotarcie poza odległość spaceru. Z czasem trwania choroby wewnętrzne umiejscowienie kontroli zdrowia znacząco obniżało się. **Wnioski**. W wyniku nasilających się ograniczeń w samodzielnym funkcjonowaniu chorych na stwardnienie rozsiane, poczucie kontroli nad własnym zdrowiem umiejscawianie jest w zewnętrznych czynnikach, takich jak przypadek i wpływ innych. **(PNN 2019;8(3):102–111)**

Słowa kluczowe: stwardnienie rozsiane, zdrowie, stan funkcjonalny

Introduction

Multiple sclerosis is a chronic and, so far, incurable disease. It often affects young people between 20 and 40 years old and leads to permanent disability. The negative impact of multiple sclerosis on the functioning and quality of life of patients may be reduced by applying appropriate therapies and strictly following the guidelines aimed at minimizing the risk of neurological deterioration. The patient himself and his involvement in the treatment process as well as his health behaviors are crucial in preventive activities [1,2]. Health-promoting behavior consists of many important elements, often referred to as a lifestyle in which the individual's activity is focused on health. In the above activities, two components may be distinguished: psychological component — positive attitude, sense of responsibility, systematic self-control of the body; physical component — diet, physical activities, adequate amount of rest [3]. Human activity, in various areas of life, is influenced by the sense of health locus of control, which is part of the personality of the individual. The health locus of control may be defined as a belief of an individual about his impact on the results of his own actions. It conditions the way information is received and processed, as well as behavior in certain situations. It is relatively constant, because under the influence of situations that an individual experiences, to some extent, it may be a subject to changes [4]. The health locus of control has 3 dimensions: internal; external — referring to the influence of third parties; external — referring to random events. The sense of internal location of control is referred to as "inner-direction". The internal location of control means that a person trusts himself, is more independent in making decisions, is aware of influencing the course of events and his fate, he assesses the probability of success in actions undertaken. "Other-direction" — the external locus of control — promotes showing passivity, dependence on others. An individual with an external locus of control is convinced that what happens is beyond his control, he does not trust himself and his ability, he is passive in any attempts to influence his fate [5]. The health locus of control affects all human decisions, including those regarding health. People with an internal health locus of control are more likely to engage in health-related behaviors — they try to prevent diseases and accidents, give up stimulants more easily, and take care of good physical condition. In particular situations external locus of control, in which the belief that strong third parties are dominant, may be beneficial to health. It happens in the case of acute and chronic diseases in which cooperation with medical staff and compliance with their recommendations is the only way to regain health or improve quality of life. However, when maintaining health depends on initiating new pro-health behaviors, taking care of a healthy lifestyle, external locus of control is unbeneficial [6]. The health locus of control may change. The inner lous of control decreases with age, while the conviction about the impact of third parties and chance on health increases [7]. A belief in self-efficacy is of crucial importance in health behavior. It may be defined as as a belief that it is possible to achieve the assumed goal in given circumstances [3,8]. Only awareness of responsibility enables active participation in the treatment process or health prevention [9].

The purpose of the work is determination of the impact of Multiple Sclerosis on the daily functioning of patients and assessment of the sense of responsibility for one's own health among patients with Multiple Sclerosis.

Material and Methods

The study has been conducted using diagnostic survey among patients with multiple sclerosis, treated at the Department of Neurology, University Hospital in Białystok. The study has been conducted among 97 patients with multiple sclerosis treated at the Department of Neurology, University Hospital in Białystok. The study group included 73 women (75.26%) and 24 men (24.74%).

The average age of the subjects was 52 (±10.36) and was comparable for women and men — 52.33 (±10.97) and 51.79 (±8.42), respectively. The youngest respondent was 19 years old and the oldest — 72 years old. The age structure of the respondents was as follows: up to 40 years — 12.37%, 41–50 years — 30.93%, 51–60 years — 32.99%, over 60 years — 23.71%.

The respondents were inhabitants of the country — 11.34% and cities — 88.66%: >100.000 inhabitants — 63.92% and <100.000 inhabitants — 24.74%.

The education level of the respondents was as follows: primary — 3.09%, secondary — 19.59%, vocational — 51.55%, higher — 25.77%.

The following research tools have been used:

1. **Activities of Daily Living (ADL — Katz Scale)** — Assessing independence in performing such activities as bathing, dressing and undressing, using the toilet, getting out of bed and moving into an armchair, self-eating and controlling urine and stool.
2. **Instrumental Activities of Daily Living (IADL — Lawton scale)** — Assessing independence in performing such activities as: using the telephone, shopping, preparing meals, doing housework, preparing and taking medications, and managing finances.
3. **Multidimensional Health Locus of Control** (MHLC — by K. Wallston, B.S. Wallston and R. DeVellis in adaptation by Z. Jurczyński) — Assessing a sense of responsibility for own health. The scale contains 18 statements regarding generalized expectations in three dimensions of health control location: internal (W scale), impact of others (I scale), chance (P scale) [10].
4. **Questionnaire of own design** created for conducting this research.

Statistical analysis has been performed using the STATISTICA 7.0 software by StatSoft Polska. The following quantitative data analysis methods have been used to analyze the conducted tests:

— differences between the compared groups have been assessed on the basis of the significance test for qualitative (categorizable) variables — chi-square statistics,

— Pearson's correlation coefficient r (X, Y) has also been used (based on chi-square values, the measure of the relationship between categorized variables indicates the strength of the relationship),

— statistical significance has been established as p<0.05 [11].

Results

The Course of Multiple Sclerosis

In the study group, the average duration of the disease was 8 years (±3.87) and was comparable for women and men. Every fourth respondent suffered no more than 5 years (lower quartile=5), and half of the group — no more than 8 years (median=8). In the analyzed group, 25% of respondents were sick for at least 11 years (upper quartile=11).

The structure of the duration of the disease was as follows: up to 5 years — 27.84%, 6–10 years — 46.39%, over 10 years — 25.77%. Patients had various forms of MS: relapsing-remitting — 39.18%, secondary progressive — 51.55%, primary progressive — 9.28%. Among the subjects, from the beginning of the disease, approximately 5.02 exacerbations of MS (±3.08) have been observed and this result was slightly higher in women than in men. Every fourth patient had at least 3 relapses (lower quartile=3), and 25% of patients had at least 7 MS exacerbations (upper quartile=7).

Among the respondents, in 7.22% of patients exacerbations have not been observed, and 2.06% of the group revealed more than 10 relapses of the disease. Subjects after 3–5 exacerbations of MS constituted 42.27% of the group (Figure 1).

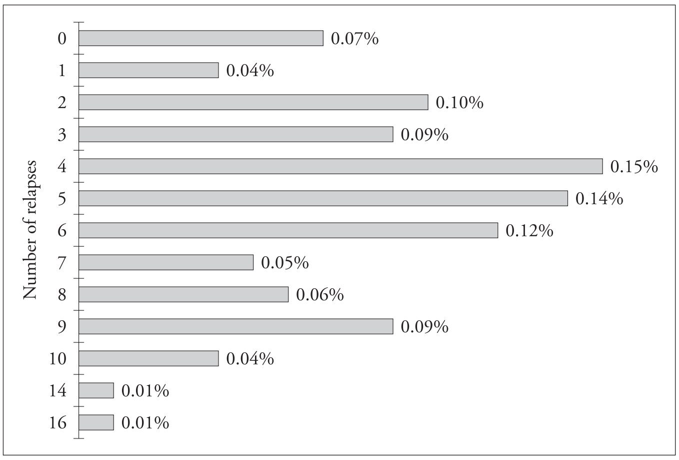

Figure 1. Structure of the respondents by the number of MS relapses (N=97)

Complete remission of the last relapse occurred in 85.56% of cases, including 23.70% of total remission and 61.86% of partial remission. In the examined group of patients with MS, 7.22% indicated that the last relapse had not completely remitted.

It has been found that remission of MS, both total and partial, correlated with the gender and age of the subjects as well as the duration of the disease and the number of relapses (Table 1).

Table 1. Remission of MS in relation to gender and age as well as duration, form and number of relapses

Variable	Chi-squared test result	
	Pearson's correlation coefficient	p
Gender	0.2080	0.049
Age	0.3064	0.002
Duration of MS	0.2461	0.015
Number of MS throws	0.6102	0.000

In the group of women, the total remission of last relapse of the disease has been less frequently observed than in men. Also, along with the age of patients, complete remission of MS has been significantly less frequent, and with complete duration of the disease, complete remission of MS has been significantly less frequent.

Assessment of Independence in Basic Everyday Activities

The average result for the Katz scale in the study group was 4.48 (±1.79) where min=0 and max=6. Every fourth respondent had no more than 3 points on the Katz scale (lower quartile=3), where 25% of the group reached the maximum value of 6 points (upper quartile=6).

The most significant problems for MS patients were sphincter control (45.36%), independent bathing (34.02%), and toilet use (31.96%). Every fifth respondent reported difficulties in dressing (18.56%) and moving (20.62%). The less significant problem among the respondents was the inability to eat independently (Table 2).

Table 2. Results of the Katz scale in examined group of patients with MS (N=97)

Action	Is a problem	Not a problem
Bathing	34.02%	65.98%
Dressing up	18.56%	81.44%
Use of the toilet	31.96%	68.04%
Moving	20.62%	79.38%
Self food	1.03%	98.97%
Sphincter control	45.36%	54.64%

According to the Katz scale, 65.98% of the group were independent, 17.53% moderately disabled and 16.49% significantly disabled. Among independent individuals, limitation of independence concerned only control of urine and stool excretion — 35.94%. For 100% moderately disabled patients, independent bath was the most significant problem and for 88.24%, toilet use was the most difficult. Patients who, according to the Katz scale, achieved a degree of significant disability, all analyzed activities caused problems: bath 100%, use of the toilet 100%, dressing 93.75%, moving 93.75%, except for independent eating, where limitations has been indicated by 6.25% of the group.

Assessment of the independence of the MS patient according to the Katz scale correlated with age and level of education. It has not been found that level of independence was significantly influenced by gender or place of residence (Table 3).

Table 3. Patient level of independence according to the Katz scale in relation to gender, age, place of residence, level of education

Variable	Chi-squared test result	
	Pearson's correlation coefficient	p
Gender	0.1294	0.207
Age	0.5401	0.000
Place of residence	0.0934	0.363
Education	0.3207	0.001

The assessment of the independence of MS patient according to the Katz scale correlated with the duration of the disease, the form of the disease, previous exacerbations, and remission of MS (Table 4).

Table 4. Patient independence level according to the Katz scale in relation to duration, character, relapses and remission of the disease

Variable	Chi-squared test result	
	Pearson's correlation coefficient	p
Duration	0.5366	0.000
Form	0.4663	0.000
Relapses	0.2781	0.006
Remission	0.2131	0.036

Assessment of Independence in Complex Everyday Activities

The average result for the Lawton scale in the studied group of MS patients was 21.70 (±5.71). Every fourth respondent had no more than 18 points on the Lawton scale (lower quartile=18), when 25% of the group reached the maximum value of 27 points (upper quartile=27). Half of the respondents obtained at least 24 points on the Lawton scale (median=24).

According to Lawton's scale, patients with MS had the most difficulties going out for shopping and getting outside walking distance — on average, only every third person surveyed performed these activities independently — 30.93% and 36.08%, respectively. Half of the respondents required help with household activities, small repairs, taking medications, preparing meals — the activities were performed independently by: 49.49%, 50.52%, 57.73%, 59.79%, respectively. Respondents revealed the greatest independence in using the telephone and managing finances — 85.56% and 75.26%, respectively (Figure 2).

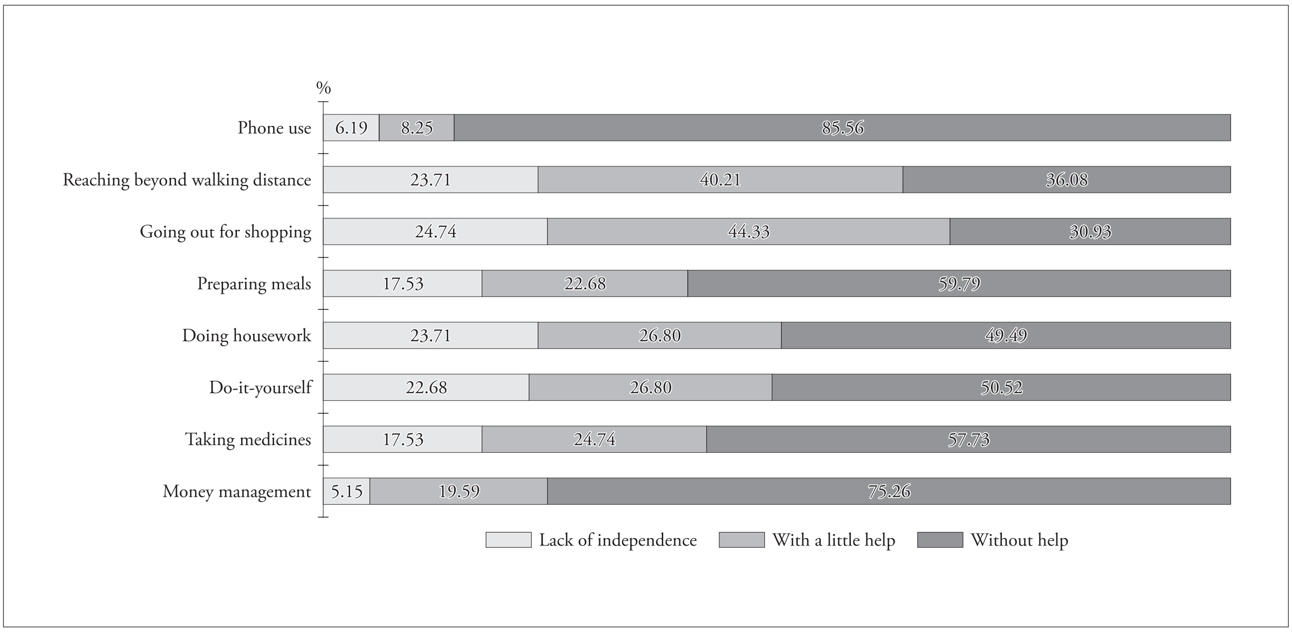

Figure 2. Lawton's scale results in the studied group of MS patients (N=97)

Along with the age of the respondents, the average Lawton scale result decreased significantly, which indicates the deterioration of the general condition with age. Along with the increase in the level of education, the Lawton scale result increased significantly, which indicates a better general condition of the respondents with higher education. Lawton's scale result was insignificantly dependent on the gender and place of residence of the subject (Table 5).

The general condition of MS patient according to Lawton's scale significantly decreased with the duration of the disease and was significantly worse among patients with primary progressive MS and after relapses which did not remit (Table 6).

The general condition of MS patient according to Lawton's scale significantly decreased with the number of exacerbations (Table 7).

Table 5. Lawton's scale results in relation to gender, age, place of residence, education level

Group	N	Median (±SD)	Min	Lower quartile	Median	Upper quartile	Max
Gender [r(X,Y)=0.891, p=0.386]							
Woman	73	21.41 (±5.85)	9	17	23	27	27
Man	24	22.58 (±5.27)	9	21	25	27	27
Age [r(X,Y)=0.4855, p=0.000]							
Up to 40 years	12	24.08 (±3.15)	17	22	25	27	27
41–50 years	30	24.13 (±4.23)	9	21	26	27	27
51–60 years	32	22.56 (±5.23)	9	20.5	25	27	27
60 years and more	23	16.09 (±5.47)	9	12	14	21	26
Place of residence [r(X,Y)=0.0743, p=0.470]							
City over 100 000 inhabitants	62	22.00 (±5.57)	9	19	25	27	27
City up to 100 000 inhabitants	24	21.33 (±6.24)	9	16.5	23.5	27	27
Country	11	20.82 (±5.71)	11	16	22	25	27
Education level [r(X,Y)=0.2532, p=0.012]							
Primary	3	10.67 (±1.53)	9	9	11	12	12
Secondary	19	21.74 (±6.23)	9	14	25	27	27
Vocational	50	21.54 (±5.71)	9	17	23.5	27	27
Higher	25	23.32 (±4.53)	9	21	25	27	27

Table 6. Lawton's scale results and time, disease form, remissions of MS

Group	N	Average (±SD)	Min	Lower Quartile	Median	Upper Quartile	Max
Duration of the disease [r(X,Y)=0.5247, p=0.000]							
Up to 5 years	27	25.26 (±2.90)	15	25	27	27	27
6–10 years	45	22.13 (±5.35)	9	21	24	27	27
10 years and more	25	17.08 (±5.66)	9	12	17	21	27
Form of the disease [r(X,Y)=0.4812, p=0.000]							
Relapsing-remitting	38	24.61 (±3.35)	13	22	26	27	27
Secondary progressive	50	20.62 (±5.91)	9	16	21.5	26	27
Primary progressive	9	15.44 (±5.77)	9	12	12	19	27
Remisions [r(X,Y)=0.2560, p=0.011]							
No relapses	7	16.86 (±5.76)	11	12	17	20	27
Total remission of relapses	23	25.56 (±2.06)	21	25	27	27	27
Partial remission of relapses	60	22.10 (±4.89)	9	19.5	23.5	26.5	27
No remission of relapses	7	10.43 (±1.81)	9	9	9	12	13

Table 7. Lawton's scale results and the number of MS relapses

Group	N	Average (±SD)	Min	Lower Quartile	Median	Upper Quartile	Max
Relapses [r(X,Y)=0.2908, p=0.004]							
0	7	16.85 (±5.76)	11	12	17	20	27
1	4	22.25 (±8.85)	9	17.5	26.5	27	27
2	10	24.60 (±2.41)	21	22	24.6	22	27
3	9	24.67 (±4.00)	15	25	27	25	27
4	15	23.40 (±4.88)	9	22	23.4	27	27
5	14	24.07 (±4.53)	12	21	26.5	27	27
6	12	22.00 (±4.59)	13	19.5	22.5	26	27
7	5	21.00 (±7.07)	9	21	23	25	27
8	6	20.33 (±5.92)	12	14	20.3	25	25
9	9	19.11 (±5.37)	13	15	17	22	27
10	4	14.50 (±5.45)	9	11	13.5	18	22
14	1	9.00	9	9	9	9	9
16	1	12.00	12	12	12	12	12

Health Locus of Control

The health locus of control has been influenced by external factors: chance 26.65 (±2.31) and the influence of others 26.14 (±2.45), while less often depended on the internal control of the patient: 20.02 (±3.45).

The dominant factor affecting health control, according to the MHLC scale, was the chance (44.44%), the impact of others 33.33%, and the chance equally as the impact of others — 21.30%. Only in the individual case the dominant factor was the internal health locus of control 0.93%.

Along with age of the respondents, the internal health locus of control decreased significantly. The result of the MHLC scale has been insignificantly affected by the gender, place of residence and level of education of the respondent (Table 8).

Along with the duration of the disease, the internal health locus of control decreased significantly and was the least frequent in patients with primary progressive MS. The MHLC score did not significantly depend on the remission of MS relapses (Table 9).

The internal health locus of control was insignificantly affected by the number of exacerbations.

Table 8. MHLC scale results in relation to gender, age, place of residence, education

Group	N	Health locus of control					
		Inner		Influence of others		Chance	
		Average	(±SD)	Average	(±SD)	Average	(±SD)
Gender							
Woman	73	20.12	3.56	26.30	2.45	26.68	2.38
Man	24	19.71	3.12	25.67	2.43	26.54	2.11
Chi-squared test result		r=0.0522	p=0.612	r=0.1122	p=0.274	r=0.0269	p=0.794
Age							
Up to 40 years	12	21.17	2.29	27.08	2.27	26.00	2.76
41–50 years	30	20.63	2.66	25.87	2.51	27.00	2.23
51–60 years	32	20.69	3.60	25.78	2.67	26.28	2.17
60 years and more	23	17.69	3.76	26.52	2.09	27.04	2.34
Chi-squared test result		r=0.3081	p=0.002	r=0.041	p=0.815	r=0.0654	p=0.524
Place of residence							
City over 100 000 inhabitants	62	19.72	3.40	26.60	2.40	26.45	2.39
City up to 100 000 inhabitants	24	21.08	3.28	24.75	1.94	27.08	2.06
Country	11	19.36	3.88	26.64	2.80	26.82	2.40
Chi-squared test result		r=0.0481	p=0.640	r=0.1386	p=0.176	r=0.0918	p=0.371
Education							
Primary	3	13.00	3.00	26.33	2.31	28.67	1.15
Secondary	19	19.21	2.70	25.74	2.18	26.47	2.86
Vocational	50	20.42	3.58	25.96	2.37	26.50	2.05
Higher	25	20.68	2.78	26.80	2.81	26.84	2.43
Chi-squared test result		r=0.1826	p=0.054	r=0.1278	p=0.212	r=0.0236	p=0.818

Table 9. MHLC scale results in relation to duration, disease form, and MS remission

Group	N	Health locus of control					
		Inner		Influence of others		Chance	
		Average	(±SD)	Average	(±SD)	Average	(±SD)
Duration of the disease							
Up to 5 years	27	20.48	2.28	25.56	2.49	26.29	2.18
6–10 years	45	21.04	3.30	26.07	2.35	26.73	2.35
10 years and more	25	17.68	2.75	26.92	2.50	26.88	2.42
Chi-squared test result		r=0.3081	p=0.002	r=0.1936	p=0.051	r=0.0269	p=0.794
Form of the disease							
Relapsing-remitting	38	21.05	2.67	25.53	2.45	26.50	2.67
Secondary progressive	50	19.88	3.66	26.60	2.29	26.72	2.47
Primary progressive	9	16.44	2.88	26.22	3.03	26.89	2.42
Chi-squared test result		r=0.3413	p=0.001	r=0.1625	p=0.112	r=0.0559	p=0.586
Remission of the disease							
No relapses	7	17.00	2.94	26.57	2.94	27.14	2.48
Total remission	23	20.70	2.40	25.70	2.62	26.65	2.46
Partial remission	60	20.82	3.07	26.18	2.35	26.53	2.17
No remission	7	14.00	2.64	26.86	2.54	27.14	3.18
Chi-squared test result		r=0.0652	p=0.526	r=0.0556	p=0.589	r=0.0223	p=0.829

Discussion

Multiple sclerosis most often affects young people, and the variety of symptoms and their variability as well as progressive disability significantly affect the quality of life of a person with MS. It is estimated that the disease affects approximately 2.5 million people worldwide [4,12].

This study examines the degree of responsibility for own health among patients with Multiple Sclerosis. The research material has been collected using own, anonymous questionnaire, constructed for the purposes of this study, containing sociodemographic data about the patient and basic information about the current course of the disease. To assess the level of independence of the respondents, the Katz and Lawton scale have been used, while the MHLC scale has been used to examine the health locus of control. 97 subjects with multiple sclerosis participated in the study. The average age was 52. MS has been diagnosed on average for 8 years. Patients had various forms of MS: relapsing-remitting 39.18%, secondary progressive 51.55%, primary progressive 9.28%.

Symptomatology of Multiple Sclerosis is various and results from the location of the injury. Patients have motor, sensory, cranial nerve, vegetative and mental disorders. MS is the most common cause of absence at work, which significantly reduces the professional activity of patients [5]. Multiple Sclerosis in most pateints gradually leads to physical disability, which causes restrictions in various spheres of life from performing social roles to basic life functions, and consequent dependence on third party support. Functional disorders resulting from the paroxysmal nature of the disease and the increasing disability significantly deteriorates the quality of MS patients [2,9].

In own research, according to the Katz scale among patients with Multiple Sclerosis, 16.79% was significantly disabled, moderately disabled — 17.53%, and independent — 65.98%. The subjects lost their efficiency in sphincter control — 45.36%, independent bathing — 34.02%, using the toilet — 31.96%, dressing — 18.56%, moving — 20.62%. The slightes problem among the respondents was the ability of independent eating — the limitation regarded only 1.03%. On the other hand, in the area of complex daily activities measured by Lawton's scale, those suffering from MS had the most difficulties going out shopping — 69.09% and getting outside walking distance — 63.92%, as well as household activities — 50.51%, small repairs — 49.48%, taking medications — 42.27%, food preparation — 40.21%. The respondents revealed the greatest independence in the use of telephone and finance management — difficulties indicated 14.44% and 24.74%, respectively. It has been found that the loss of efficiency in performing basic and complex life functions according to the Katz and Lawton scale significantly decreased along with age of the subjects and the duration of the disease, primary progressive form of MS, the number of exacerbations, lack of relapses remission, i.e. the severity of the disease.

Snarska et al. [13] in her study on the quality of life of patients with Multiple Sclerosis examined the level of disability using the EDSS scale. The author indicates that the correct neurological status has been diagnosed only in 3% of subjects, minimal neurological symptoms — 31%, slight motor impairment — 28%, significant motor impairment — 38%. As in own research, it has been proved that the level of disability according to the EDSS scale was highly dependent on patient's age, duration of the disease, number of relapses, and number of hospitalizations. Snarska et al. proved that according to the WHOQOL-100 scale, patients with MS experienced the lowest quality of life in the area of their physicality and psyche as well as functioning in the society [13].

Kowalik [12] in his studies using the MSQOL-54 tool, observed that among the patients with MS, the greatest limitations apply to the physical area of life. As Lorencowicz et al. [14] emphasizes in his publication, a person with MS is forced to constantly adapt to the new conditions of functioning in a society with increasing disability. At the same time, the loss of control over own independence and life usually occurs rapidly, as Łabuz-Roszak emphasizes [15]. Jabłońska et al. [16] indicates in her publication that physical condition of patients with MS is a factor significantly affecting the assessment of their quality of life.

Brola et al. [17], in his research pointed out that the decrease in the quality of life of patients with Multiple Sclerosis from the Świętokrzyskie region is due to advanced disability, as well as older age, long duration of the disease and limited access to work and immunotherapy. It has been confirmed in publication by Tasiemski et al. [18], that the stage of the disease, with symptoms increasing in time, the progression of the disease that aggravates the symptoms, and occurrence in young age are factors significantly affecting the size of negative changes in the quality of functioning of a person with MS [18].

Łabuz-Roszak et al. [15] discussed the quality of life of patients with MS in terms of depressive disorders. The standardized scales used by the authors confirmed that the quality of life is significantly deteriorated in patients less physically active, with a secondary progressive form of the disease, and significantly decreases with age. These factors contribute to the appearance of depressive disorders, which should also be included in the comprehensive care of a patient with MS.

Humańska et al. examined relationship between the quality of life and functional condition of patients with Multiple Sclerosis [19]. According to the author, more independent patients in both, basic (ADL) and complex (IADL) activities of daily living, assessed their quality of life significantly higher.

Health is not a constant value but a variable that changes under the influence of factors dependent and independent of human [17]. Every human being may contribute to health improvement or deterioration by undertaken actions. On the other hand, an individual has no influence on random events, such as an accident or illness, which significantly disturb the proper functioning of human body. However, even in the case of illness, the actions taken are not without significance for health [8,15]. Following Juczyński [10], undertaking actions improving own health is considerably influenced by health locus of control. The application of the MHCL scale enables the determination of the most important health condition, which in this context may be the individual's own actions, the influence of others or chance.

Own research showed that the health locus of control among patients with Multiple Sclerosis has most frequently been determined by external factors: the chance and the influence of others that dominated the individual's own actions. It has been found that with the age of the subject and the duration of the disease, the importance of internal health locus of control significantly lost value and has been observed the least frequent in patients with primary progressive MS. The external health locus of control indicates a low sense of responsibility for one's own health in patients with MS, which results from the specificity of the course of the disease: the variety and variability of symptoms and the paroxysmal nature of the disease.

As indicated by Kurpas et al. [20], the health locus of control in case of a chronic disease, which without dispute, is Multiple Sclerosis, is important for the possibility of improving one's own health. The author conducted a study among patients with chronic cardiovascular and nervous diseases as well as with diabetes. Kurpas observed that these groups revealed the internal health locus of control, which is significant from the point of view of treatment. Patients convinced of the possibility of actively modifying their own health are more willing and more likely to take beneficial actions in the field of nutrition or physical activity. On the other hand, patients convinced of the key role of influence of others on their health are more disciplined in complying with the recommendations of medical staff and appearing at follow up visits. However, patients convinced of the dominant impact of chance on their own health, as obtained in own research, are more often passive about health promoting actions. What is more, they do not show particular consistency in compliance with medical recommendations and regular diagnostic tests, which among MS patients is associated with their own disability and dependence on third parties.

The health locus of control in chronic disease was also under the research of Kurowska et al. [21]. The authors proved that in the group of patients after kidney transplantation, the dominant belief was the impact of others on their health and effectiveness of their own actions. The least important was the statement that health depends on the chance. In their research, it has been emphasized that despite the fight against the disease and its significant impact on life, the patient may enjoy every day.

Health behavior is any individual behavior that may have a huge impact on own health. Responsibility for one's own health is an extremely important factor in case of chronic disease in order to maintain the best condition as long as possible. Multiple Sclerosis is a disease significantly affecting the quality of human life [22]. The paroxysmal form of the disease, the variety and variability of symptoms, and increasing disability significantly limit the independence of patients with MS in performing basic life activities and performing social roles. The severity of the disease significantly affects the daily functioning of patients, which results in the need of third parties support [23]. As a result of increasing limitations on the independent functioning of MS patients, a health locus of control is placed in external factors, such as chance and the influence of others, which indicates a low sense of responsibility for own health of patients with MS [24].

Conclusions

1. Factors that significantly reduce the independence of patients with MS include age, primary progressive MS, duration and number of exacerbations, and no remissions.
2. As a result of increasing limitations in independent functioning of MS patients, the health locus of control is placed in external factors such as chance and the influence of others.
3. The health locus of control in external factors indicates low sense of responsibility for one's own health in patients with MS, which results from the specificity of the course of the disease: the variety and variability of symptoms and the paroxysmal nature of the disease.

Implications for Nursing Practice

Multiple Sclerosis is an incurable and chronic disease that accompanies patients for the rest of their lives. For this reason, attention should be paid to the elements of patients' daily lives that may affect its course and which facilitate its control. It is also important to encourage patient positive attitude and close contact with people who give support when needed. For this reason, it is worth define individual approach to MS adapted to patient's needs, in which a nurse often becomes a mentor.

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Corresponding Author:
Katarzyna Krystyna Snarska
Department of Clinical Medicine,
Medical University of Białystok
Szpitalna 37 street, 15-295 Białystok, Poland
e-mail: khajduczek@wp.pl

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Author Contributions: Beata Gąsowska$^{A, B, D, F}$, Monika Chorąży$^{B, D, F}$, Katarzyna Krystyna Snarska$^{A, B, E, G, H}$, Cecylia Dolińska$^{D, F, I}$
(A — Concept and design of research, B — Collection and/or compilation of data, D — Statistical analysis, E — Writing an article, F — Search of the literature, G — Critical article analysis, H — Approval of the final version of the article, I — Acquisition of assets [eg financial])
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