

## Determinants of Functional Capacity in Patients with Lumbosacral Discopathy Treated Conservatively

### Uwarunkowania wydolności funkcjonalnej chorych z dyskopatią lędźwiowo-krzyżową poddanych leczeniu zachowawczemu

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#### Abstract

**Introduction.** Back pain has now become a disease of our civilization. One of the reasons being the herniated nucleus pulposus, which often leads to a restriction in various aspects of the bio-psycho-physical functioning. These disorders intensify the pain discomfort which occurs.

**Aim.** Assessment of functional capacity in the case of patients with lumbar discectomy-cross treated conservatively and the evaluation of the lumbosacral disc disease impact on the quality of life.

**Material and Methods.** The study included 181 patients, two days before discharge from hospital, hospitalized in the Department of Neurological Clinic, at the Medical University of Białystok in the period from June to December 2013 due to lumbosacral disc disease. The research tools included: our questionnaire, the WHOQOL-BREF Scale assessing the quality of life, as well as the Visual Analogue Scale — VAS.

**Results.** The group of respondents included 102 women (56.4%) and 79 men (43.6%) aged 24–76 years (mean age 48.3±12.7 years). The overall quality of life for the studied group of patients with lumbosacral discopathy ranged at the level of 3.32±0.83, which indicates patients' average satisfaction with their quality of life. Self-assessment of health condition on scale from 1 to 5 ranged 2.83±0.99, which meant average satisfaction with health condition. The respondents working mentally better assess the physical realm, while those with higher education better evaluated the quality of their lives. Lonely people worse assessed the psychological sphere than those married or not-married. Feeling the pain discomfort of strong and maximum intensity significantly affected patients' assessment regarding the physical sphere and resulted in the decrease of the quality of life.

#### Conclusions.

1. There is a relationship between the functional capacity of patients with lumbosacral discopathy and the type of work performed, marital status, the level of education, and risk factors.
2. Patients with lumbosacral discopathy of the spine, especially those feeling strong pain, have a reduced quality of life, particularly in the field of physical fitness. (JNNS 2015;4(1):4–12)

**Key Words:** lumbosacral discopathy of the spine, conditions, quality of life

#### Streszczenie

**Wstęp.** Zespoły bólowe kręgosłupa stały się obecnie chorobą cywilizacyjną. Jedną z przyczyn jest przepuklina jądra miążdżystego, która często prowadzi do wystąpienia ograniczenia funkcjonowania w różnych aspektach bio-psycho-fizycznych. Zaburzenia te potęgują pojawiające się dolegliwości bólowe.

**Cel.** Ocena wydolności funkcjonalnej chorych z dyskopatią lędźwiowo-krzyżową poddanych leczeniu zachowawczemu oraz ocena wpływu dyskopatii lędźwiowo-krzyżowej na jakość życia chorych.

**Materiał i metody.** Badaniem objęto 181 pacjentów dwa dni przed wypisem ze szpitala, hospitalizowanych w Klinice Neurologii Uniwersytetu Medycznego w Białymstoku, w okresie od czerwca do grudnia 2013 r., z powodu dyskopatii lędźwiowo-krzyżowej. Narzędziami badawczymi były: ankieta konstrukcji własnej, skala WHOQOL-BREF oceniająca jakość życia oraz Wizualna Skala Analogowa — VAS.

**Wyniki.** Wśród badanych było: 102 kobiety (56,4%) oraz 79 mężczyzn (43,6%) w wieku 24–76 lat (średnia wieku  $48,3 \pm 12,7$  lat). Ogólna jakość życia dla badanej grupy osób z dyskopatią lędźwiowo-krzyżową kształtowała się na poziomie średniej  $3,32 \pm 0,83$ , co wskazuje na średnie zadowolenie pacjentów ze swojej jakości życia. Samoocena stanu zdrowia w skali od 1 do 5 wyniosła  $2,83 \pm 0,99$ , co oznaczało średnie zadowolenie ze stanu zdrowia. Osoby pracujące umysłowo lepiej oceniają dziedzinę fizyczną, a osoby z wyższym wykształceniem oceniały lepiej swoją jakość życia. Osoby samotne gorzej oceniały dziedzinę psychologiczną od osób nigdy niebędących oraz pozostających w związkach małżeńskich. Odczuwanie dolegliwości bólowych o natężeniu silnym i maksymalnym istotnie wpływało na ocenę pacjentów w dziedzinie fizycznej powodując obniżenie jakości życia.

#### **Wnioski.**

1. Istnieje związek pomiędzy wydolnością funkcjonalną chorych z dyskopatią lędźwiowo-krzyżową a rodzajem wykonywanej pracy, stanem cywilnym, wykształceniem i czynnikami ryzyka.
2. Pacjenci z dyskopatią lędźwiowo-krzyżową kręgosłupa, szczególnie odczuwający silny ból, mają obniżoną jakość życia, głównie w dziedzinie fizycznej. (PNN 2015;4(1):4–12)

**Słowa kluczowe:** dyskopia kręgosłupa lędźwiowo-krzyżowego, uwarunkowania, jakość życia

## **Introduction**

Discopathy is a serious problem, both in the social as well as in the clinical aspect. It is one of the most common reasons for pain discomfort. It results from the syndrome of structural changes in the course of disorders of the mutual system of elements forming the intervertebral disc and the vertebral canal [1]. Not only does the disease make the performance of everyday activities more and more difficult (walking, standing sitting etc.) but there is also deterioration of functioning in the both social and professional aspects of life. Pain, apart from making one suffer, and reducing one's daily life activities, also generates reduction of one's self-assessment and self-esteem [2]. Maintaining functional capacity and prevention of disability is the main task in the care of patients with lumbar discopathy. It is the loss of functional capacity which generates the occurrence of disability, contributes to the decrease of quality of life and results in a significant increase of both economic and social costs. Moreover, disability is an important component of the assessment of the patient's condition coming directly from the patient and being a valuable complement to doctor's assessment of the activity of the disease [3].

The purpose of this study was to analyse the factors having effect on the course of lumbosacral discopathy and to assess the functional capacity of patients with lumbosacral discopathy who were subject to conservative treatment, as well as to observe the impact of the disease on patients' quality of life.

## **Material and Methods**

The research included 181 patients, hospitalised due to lumbosacral discopathy in the Neurological Clinic at the Medical University of Białystok, two days before being discharged from hospital. Our own questionnaire as well as standardized research tools were applied in the study:

- the WHOQOL-BREF Scale evaluating life quality of both healthy as well as ill people. It contains 26 questions which analyse four spheres of life. The physical sphere — taking into consideration: mobility, pain and discomfort, energy and fatigue, ability to work, dependency on medicines and treatment, rest and sleep as well as daily life activities. The psychological sphere — which includes: positive feelings, negative feelings, self-assessment, physical appearance, spirituality/religion/personal faith and thinking/learning/memory/ability to focus. Social relationships — the respondent assesses: personal relationships, sexual activity as well as social support. Environment — assessing: home environment, transport, physical environment (pollution, climate, traffic, noise), the possibility of gaining new skills and information, financial resources, the possibility of participating in recreation and leisure, health and healthcare (quality and accessibility), independence as well as both physical and mental safety. The scale contains two questions which are analysed separately. They regard the individual perception of the quality of life and the respondent's personal perception of health. The questions are scored in the scope ranging from 1 to 5. The higher the score the better the quality of life (the so called positive direction). The score

for each sphere is obtained by the calculation of the arithmetic mean from the elements included in each sphere. In each sphere there can be obtained maximum 20 points [4].

- the visual-analogue VAS Scale of pain (Visual Analogue Scale) — the patient evaluates the perceived pain intensity from 0 to 10, where 0 — means there is no pain, 1–4 the presence of slight pain, 5–6 medium pain, 7–8 strong pain, 9–10 maximum pain [5].

The BMI index (Body Mass Index) was determined, where the value  $BMI < 18.5$  defines underweight,  $18.5–24.99$  — the correct value,  $25.0–29$ , overweight,  $\geq 30$  — obesity.

## Results

The research included 181 patients: 102 women (56.4%) and 79 men (43.6%) aged from 24 to 76 years (mean age  $48.3 \pm 12.7$ ). The biggest group included patients aged 40–60 years.

Most respondents had the secondary (73;40%) and higher education (55;30%), whereas 15 respondents (9%) had vocational education.

Physical labour was performed by 86 respondents (47.5%), intellectual work by 55 (30.4%), 23 (12.7%) patients were retired, 11 (6.1%) were unemployed, whereas 6 patients (3.3%) were pensioners.

113 respondents (62.4%) were married, 24 (13.3%) were single, 23 (12.7%) divorced, and 21 (11.6%) were widowers/widows.

The largest group 81;44.8%, included patients, whose BMI had the correct value ranging  $18.5–24.99$ . 70;38.7% were overweight, and 25;13.7% were obese. Whereas 5;2.8% were underweight.

The occurrence of pain discomfort for more than 4 weeks was experienced by 109;60.2%, from 2 to 4 weeks — 37;20.4%, and 35;19.4% from 2 weeks.

The intensity of back pain among respondents, both among women as well as men, ranged from 1 to 9 on the 10-point VAS scale. The average value of back pain in women ranged  $5.02 \pm 1.83$ , and in the case of men it had values ranging  $5.39 \pm 1.78$ . The level of pain perceived as slight was indicated by 68;37.6%, and as medium 63;34.8%. Strong pain was felt by 47;25.9%. 3;1.7% described their pain in the maximum pain category.

102;56.35% respondents were cigarette smokers, including 63;60.7% women and 39;49.3% men. 31;30.4% women and 32;40.5% men had suffered from spine injuries in the past. Almost all respondents (108;59.7%) did not know the reasons for their disease.

The overall quality of life for the group of respondents with lumbosacral discopathy ranged within the mean of  $3.32 \pm 0.83$ , which indicates patients' medium satis-

faction with their quality of life. The self-assessment of health condition on the scale from 1 to 5 ranged  $2.83 \pm 0.99$ , which meant medium satisfaction with health condition (Table 1).

Table 1. The overall quality of life and self-assessment of health condition in the group of respondents

Spheres	Medium	Min	Max	SD
Overall quality of life	3.31	1.00	5.00	0.83
Self-assessment of health condition	2.83	1.00	4.00	0.99

Range 1–5

Patients with lumbosacral discopathy evaluated the physical realm as the worst one —  $12.10 \pm 2.56$ , and the social realm was evaluated as the best —  $14.53 \pm 2.91$  (Table 2).

Table 2. Statement regarding the quality of life in each sphere

Spheres	Mean	Min	Max	SD
Physical sphere	12.10	4	18	2.56
Psychological sphere	12.90	7	18	2.16
Social relationships	14.53	6	20	2.91
Environment	13.56	8	18	2.35

Range 4–2

The overall quality of life in patients with lumbosacral discopathy on the scale from 1 to 5 ranged:  $3.3 \pm 0.80$  with women, and  $3.29 \pm 0.80$  with men and it was statistically insignificant.

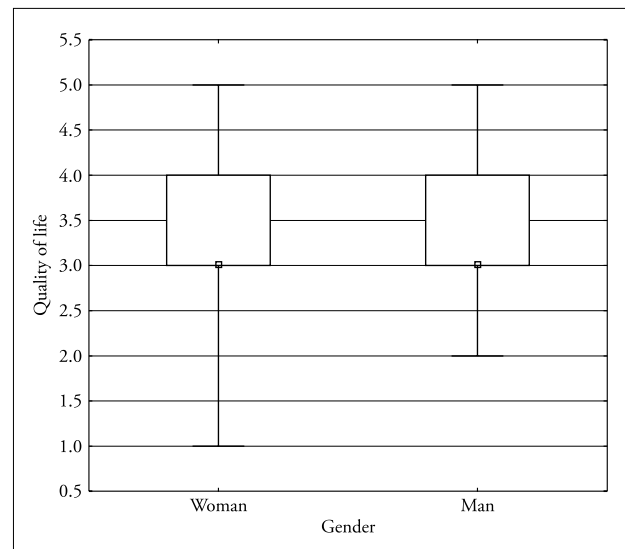


Figure. Mean values for the quality of life for women and men

4;3.9% respondents in the female group were very dissatisfied with the quality of life, 4;8.8% were dissatisfied, 42;41.2% were moderately satisfied. 43;42.2%

were satisfied and 4;3.9% of respondents were very satisfied. Whereas, in the male group there were no respondents who were very dissatisfied, 15;19% were dissatisfied, 28;35.5% were moderately satisfied, 34;43% were satisfied and 2;2.5% of men were very satisfied (Table 3).

The self-assessment of patients ranged on average  $2.79 \pm 1.12$  with women and  $2.89 \pm 0.81$  in the male group it was statistically insignificant.

18;17.7% of women and 4;5% of men were very dissatisfied with their health condition, 37;36.3% of women and 18;22.8% of men were satisfied. The group did not contain patients who assessed their health condition as very good (Table 4).

Analysing the impact of gender on the quality of life in each sphere it was shown that the physical sphere had been evaluated the lowest (the mean:  $12.2 \pm 2.6$  and  $12.1 \pm 2.6$ ), both by the female as well as by male respondents

whereas social relationships (the mean:  $14.3 \pm 2.8$  and  $14.8 \pm 3.01$ ) were evaluated the best (Table 5). No statistically significant differences between women and men were identified in the assessment of each sphere.

Analysing the impact of the type of work performed, it was shown that the best results were obtained in the group where intellectual work was performed (excluding the psychological sphere) whereas the worst results were obtained with the retired respondents (apart from the physical sphere). In the case of these groups only correlation between the work performed and the score obtained in the physical and social sphere was indicated ( $p < 0.05$ ). Respondents who work intellectually better assess the physical sphere (mean  $13.13 \pm 1.5$ ) than those who work physically, the unemployed, retired or pensioners. The respondents who were on pension much worse assessed social relationships (mean  $10.17 \pm 3.37$ ) (Table 6).

Table 3. Overall assessment of the quality of life according to WHOQOL-BREF

Scale	Women		Men	
	Number of patients	Percentage of patients	Number of patients	Percentage of patients
1	4	3.9%	0	0%
2	9	8.8%	15	19%
3	42	41.2%	28	35.5%
4	43	42.2%	34	43%
5	4	3.9%	2	2.5%
Overall	102	100%	79	100%

Table 4. Self-assessment of health condition according to WHOQOL-BREF

Scale	Women		Men	
	Number of patients	Percentage of patients	Number of patients	Percentage of patients
1	18	17.7%	4	5%
2	23	22.5%	18	22.8%
3	24	23.5%	39	49.4%
4	37	36.3%	18	22.8%
5	0	0%	0	0%
Overall	102	100%	79	100%

Table 5. The relationship between the gender and the assessment of the quality of life in each sphere

Spheres	Women				Men			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Physical sphere	12.2	2.6	5	18	12.1	2.6	4	16
Psychological sphere	12.7	2.3	7	17	13.2	2.0	8	18
Social relationships	14.3	2.8	6	20	14.8	3.01	8	20
Environment	13.4	2.5	8	18	13.7	2.15	10	18

Range 4–20

Table 6. Relationship between the work performed and the quality of life

Spheres	Type of the work performed									
	Physical		Intellectual		Pension		Retirement		Unemployed	
	Average	Dev.	Average	Dev.	Average	Dev.	Average	Dev.	Average	Dev.
Physical sphere	12.04	2.6	13.13	1.5	10.17	3.25	11.00	2.73	10.90	4.01
Psychological sphere	13.20	2.0	12.9	2.12	13.3	2.9	12.13	2.43	12.27	2.28
Social relationships	14.9	2.3	15.25	3.01	10.17	3.37	12.61	3.38	14.63	1.69
Environment	13.3	2.14	14.03	2.7	14.17	1.47	13.21	2.37	13.9	1.87
Overall quality of life	3.19	0.85	3.56	0.66	3.5	0.80	3.17	0.09	3.18	0.98
Self-assessment of health condition	2.84	0.90	2.92	1.13	3.16	0.70	2.52	1.08	2.73	0.79

Range 4–20

Table 7. Relationships between the quality of life and the BMI value

Spheres	BMI							
	Underweight		Standard		Overweight		Obesity	
	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.
Physical sphere	10.4	4.04	11.95	2.6	12.56	2.12	11.7	1.79
Psychological sphere	13.6	3.13	13.22	2.3	12.84	1.77	11.9	2.16
Social relationships	10.4	4.34	14.7	2.6	14.8	2.82	14.16	3.42
Environment	12.8	2.05	13.44	2.35	13.5	2.37	14.28	2.32
Overall quality of life	2.6	0.55	3.3	0.89	3.31	0.75	3.4	0.82
Self-assessment of health condition	3.6	0.55	2.7	1.03	2.8	1.03	2.7	0.79

Range 4–20

Table 8. Relationship between respondents' age and the quality of life

Spheres	Age of the group studied													
	20–30		30–40		40–50		50–60		60–70		70–80		90–100	
	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.
Physical sphere	12.0	2.4	12.8	2.1	11.6	2.8	12.5	2.0	11.4	2.4	11.1	4.2	8.0	0
Psychological sphere	12.7	2.6	13.3	2.3	12.8	2.0	12.7	1.7	12.2	2.4	14	2.3	10.0	0
Social relationships	14	2.4	15.1	2.7	14.9	2.6	14.6	2.8	12.7	2.8	13	4.5	9.0	0
Environment	13.2	3.4	13.67	2.5	13	2.1	13.4	2.2	13.2	1.5	14.6	2.9	10.0	0
Overall quality of life	3.3	0.6	3.5	0.8	3.3	0.8	3.2	0.7	3.1	0.9	2.8	0.9	5	0
Self-assessment of health condition	2.3	1.1	3.1	0.9	2.5	1.0	3.1	0.7	2.2	0.9	3.3	1.1	3	0

Range 4–20

The physical sphere was best assessed by the overweight respondents (12.56±2.12), and worst by those with underweight (10.4±4.04). The psychological sphere was best assessed by underweight respondents and worst by respondents with obesity. Social relationships are best assessed by patients with standard BMI as well as by patients with overweight whereas it is evaluated as the worst by the patients with underweight (10.4±4.34). The overall quality of life was best assessed by patients with obesity (3.4±0.82), and worst by those with un-

derweight (2.6±0.55). The self-assessment of health condition was best evaluated in the group of respondents with underweight (3.6±0.55), and worst with patient with obesity (2.7±0.79) as well as with those with standard weight (2.7±1.3) (Table 7).

The physical sphere was worst assessed by elderly patients above 60 years of age. The patients whose age ranged from 90 to 100 years significantly worse than others evaluated the spheres: physical, psychological, social relationships as well as the environment they live in.

Table 9. Relationship between the quality of life and the level of education of the group surveyed

Spheres	Education									
	Primary		Vocational		Incomplete Secondary		Secondary		Higher	
	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.
Physical sphere	10.84	2.81	12.20	2.67	10.94	1.93	12.04	2.74	13.02	2.09
Psychological sphere	13.11	2.18	13.40	2.13	13.47	1.74	12.00	2.23	13.71	1.77
Social relations	14.16	3.96	16.06	1.98	13.89	2.28	14.25	3.26	14.87	2.24
Environment	14.42	2.17	13.33	2.16	13.47	2.61	12.91	2.25	14.20	2.31
Overall quality of life	3.16	0.89	3.20	0.67	3.11	0.73	3.21	0.93	3.60	0.66
Self-assessment of health status	2.68	0.88	3.13	0.83	2.74	0.65	2.73	1.00	2.96	1.15

Range 4–20

Table 10. Relationship between the marital status and the quality of life

Spheres	Marital status							
	Single man/woman		Married		Widower/widow		Divorced	
	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.
Physical sphere	12.75	1.98	12.17	2.45	10.90	3.89	12.26	1.86
Psychological sphere	13.79	1.67	12.96	2.17	12.57	2.50	12.00	1.91
Social relations	14.71	3.38	15	2.338	12.57	3.34	13.91	3.78
Environment	14.08	1.95	13.27	2.46	14.48	2.54	13.56	1.75
Overall quality of life	3.67	0.64	3.24	0.85	3.05	0.92	3.56	0.66
Self-assessment of health condition	2.88	1.08	2.85	0.98	3.10	0.88	2.47	1.04

Range 4–20

Those patients best evaluated the overall quality of life (mean  $5 \pm 0$  points, on the 5-point scale). There were no statistically significant correlations identified between the quality of life and the age of the population studied (Table 8).

The best results in all spheres, except for social relations, were achieved with patients with higher education. The respondents with primary or incomplete secondary education much worse than the rest of the patients surveyed assessed their quality of life in the physical sphere. The psychological sphere was assessed as the worst by patients with the secondary education (Table 9). There was proved a correlation ( $p < 0.05$ ) between the level of education and the quality of life in the physical and psychological spheres, social relations and the overall quality of life.

Both female and male respondents who were not married obtained higher scores in the following spheres: physical, psychological, social relations, overall quality of life as well as in the self-assessment of their health conditions compared to the respondents who were married, widowers/widows and the divorced. The physical sphere, social relations and the overall quality of life were worst evaluated by the widowers/widows, whereas the psychological sphere and the self-assessment

of health condition were evaluated as the worst by those divorced (Table 10). There were identified statistically significant correlations between the marital status and the psychological area, social relations and the overall quality of life ( $p < 0.05$ ). Lonely patients (widowers/widows, the divorced) worse evaluated the psychological realm than those not married as well as the married respondents. Widowers and widows worse evaluated social relations than the married respondents. Also, widowers and widows worse assess the overall quality of life.

The patients who smoked worse evaluated only the physical realm and the overall quality of life than the respondents who did not smoke. The rest of the determinants remained at the same level. There has been identified a significant correlation ( $p < 0.05$ ) between the physical sphere and the overall quality of life and smoking (Table 11).

The patients who suffered spine injury in the past worse assess all spheres: the physical sphere ( $11.52 \pm 2.99$  vs.  $12.42 \pm 2.25$ ), psychological sphere ( $12.52 \pm 2.31$  vs.  $13.11 \pm 2.05$ ), social relations ( $14.28 \pm 2.57$  vs.  $14.68 \pm 3.07$ ), environment ( $13.37 \pm 2.72$  vs.  $13.66 \pm 2.13$ ), overall quality of life ( $3.14 \pm 0.10$  vs.  $3.41 \pm 0.71$ ), self-assessment of health condition ( $2.57 \pm 1.07$  vs.  $2.97 \pm 0.93$ ),

Table 11. Relationship between the quality of life and patients' smoking

Spheres	Risk factors — smoking							
	Yes (N=79)				No (N=102)			
	Mean	Dev. Stand.	Min	Max	Mean	Dev. Stand.	Min	Max
Physical sphere	11.47	2.92	4	18	12.61	2.14	5	16
Psychological sphere	12.82	2.35	7	18	12.97	2.00	7	17
Social relations	14.16	2.99	6	20	14.83	2.425	8	20
Environment	13.20	2.21	8	17	13.84	2.83	8	18
Overall quality of life	3.14	0.81	1	4	3.45	0.82	1	5
Self-assessment of health condition	2.78	0.96	1	4	2.87	1.03	1	4

Range 4–20

Table 12. The assessment of the relationship between pain severity and the quality of life

Spheres	Severity of pain							
	Light		Medium		Severe		Maximum	
	Mean	Dev.	Mean	Dev.	Mean	Dev.	Mean	Dev.
Physical sphere	12.12	2.41	12.70	2.299	11.38	2.96	11.00	2.65
Psychological sphere	13.03	1.96	12.78	2.00	13.02	2.62	11.00	1.00
Social relations	14.75	2.76	14.79	2.36	14.13	3.65	11.00	1.73
Environment	13.82	2.18	13.68	2.64	13.09	2.16	12.33	2.08
Overall quality of life	3.32	0.74	3.41	0.87	3.13	0.85	4.00	1.00
Self-assessment of health condition	2.75	0.94	2.97	1.12	2.79	0.93	2.67	0.58

Range 4–20

than the respondents, who did not suffer from such an injury ( $p < 0.05$ ).

The patients defining their pain as maximum, worse evaluate all determinants of the spheres except for the overall quality of life. The overall quality of life is evaluated as the best by the respondents who feel light and medium pain. There has been identified the statistically significant relationship between the severity of the pain perceived and the quality of life in the physical realm ( $p < 0.05$ ), (Table 12).

## Discussion

Back pain is one of the most common diseases of the 21st century, and its occurrence is continuously increasing [3]. Lumbosacral disc disease partially or totally excludes the patients from their professional career [6].

Nicpoń and partners indicated that the male gender is one of the factors favouring the occurrence of lumbosacral disc disease due to the fact that it is men more often work physically [7]. However, among the patients hospitalized in the Department of MU Neurological Clinic in Białystok due to lumbosacral disc disease were mainly women (102;56.4%).

Kukliński in his publication claims that the lumbosacral disc disease increasingly concerns young people aged 20–50 years, which is in the period of the highest life as well as professional activity [6]. In our research, the biggest group were patients aged 40–60 years, and the average age ranged  $48.3 \pm 12.7$  years.

Many authors, including Geppert, as the main reason for the discopathy consider the large load on the spine caused by hard physical work and changes in the intervertebral discs which develop with age [8]. However, research carried out by Zaniewska and partners proves that the disease with the same frequency occurs in the employees who work mentally [9]. Our research included 47.5% of respondents who work physically and 30.4% working mentally, the remaining group of respondents were retired, pensioners or unemployed.

Lisiński and partners emphasise that spine injuries and traumatic changes including sprains, fractures can generate the development of degenerative changes in the disc [10]. In the group of the respondents 30.4% of women and 40.5% of men had had spine injuries.

Spannbauer [11] as well as Klimaszewska and partners [2] emphasise, that obesity and smoking belong to the most significant risk factors responsible for the occurrence of lumbosacral spine discopathy. The group of

respondents consisted mainly of patients with standard BMI (44.8%), 38.7% were overweight, 13.7% were obese, whereas the smallest number of patients were underweight (2.8%). Among the respondents 102 patients (56.35%) smoked whereas 79 persons surveyed (43.65%) were non-smokers. The largest group turned out to consist of women who smoked (60.78%). Male smokers constituted 49.37% of the group.

Kurliszyn-Moskal in the research indicates the relationship between height and the occurrence of lumbosacral spine discopathy. Height in the case of women (over 170 cm) and in the case of men (over 180 cm) favours the occurrence of discopathy [12]. Average height with women was 163.8 cm ( $163.8 \pm 5.3$ ). Men on average were 176.3 cm tall ( $176.3 \pm 5.4$ ). Height of most women ranged from 160 to 170 cm (59%), whereas height of most men ranged from 170 to 180 cm (59.5%).

In medicine, the term — quality of life means a holistic approach to patients' health problems covering: both physical and mental health, as well as the environment. Discomfort results in limitation or deterioration of the aspects of life [1,2]. According to research carried out by many authors including Zaniewska and partners [9] as well as Radziszewski [13] lumbosacral discopathy leads to the decrease of the quality of life.

Zaniewska and partners point out that the assessment of the quality of life in the case of back pain caused by lumbosacral discopathy is affected by numerous factors including perception of pain, physical fitness, disease duration, as well as social support [9]. Klimaszewska and partners claim that the disease limits or worsens various aspects of life [2]. Also our research has proved that discopathy contributes to worsening of the quality of life. The overall quality of life for the group of respondents suffering from lumbosacral discopathy stayed on average at the level of  $3.32 \pm 0.83$ . That indicated patients' medium satisfaction with their quality of life. The self-assessment of health condition was worse, and on the scale from 1 to 5 it ranged  $2.83 \pm 0.99$ , which meant medium satisfaction with health condition.

In our research we analyzed the impact of demographic variables, coexistent diseases, risk factors and the severity of pain symptoms on quality of life, expressed by means of the WHOQOL-BREF Scale [4]. Similarly to the research carried out by Czaja and partners there was no statistically significant relationship identified between the quality of life, gender of respondents, BMI value, and age [1].

The type of work performed was the factor which significantly differentiated the quality of life. Gajewski and partners claim that the quality of life largely depends on the type of work performed [14]. It has been proved in our studies that the respondents who work mentally better assess the physical realm (mean 13.13) than the patients working physically, the unemployed, or retired.

The respondents who were pensioners assessed social relations much worse than the others did (mean 10.17).

Education of the group of respondents was another factor which was subject to studies. The level of education is often regarded as an indicator of health status. In the research carried out by Poznańska it was proved that the higher the education, the higher assessment of the quality of life [15]. The statistical analysis has confirmed the correlation ( $p < 0.05$ ) between education and the quality of life in the physical, psychological spheres, social relations and the overall quality of life. Respondents with higher education better evaluated their quality of life.

A lot of authors, including Poznańska, notice the correlation between life quality of the patients and their marital status. According to the research, lonely patients assess their quality of life as worse, compared to those who are married [15]. In our research there were identified statistically significant correlations between the marital status and the psychological realm, social relations and the overall quality of life. Lonely respondents (widowers/widows, the divorced) assessed the psychological realm worse compared to those who are not or are married. Widowers and widows evaluated social relations much worse than the married respondents. Widowers and widows also evaluate the overall quality of life as worse (mean 3.05).

Risk factors, such as smoking or spine injuries also contribute to lowering the quality of life [16,17]. Smokers worse assessed the physical realm (mean 11.47) as well as the overall quality of life (mean 3.14) compared to non-smokers. Whereas the respondents who suffered from a spine injury worse evaluated both the psychological realm (mean 12.52) as well as the overall quality of life (mean 2.57).

Jabłońska in her studies, emphasises that pain discomfort which accompanies lumbosacral discopathy can lead both to functional disability as well as to the reduction of patients' quality of life [16]. This problem is also pointed out by the research carried out by Kułak and partners [18]. It was proved in our studies that strong and maximum pain significantly affected patients' assessment regarding the physical sphere, and it also contributed to the deterioration of the quality of life. Those respondents who were describing the level of pain as slight or medium obtained better average score (mean 12.12 and 12.70) than the patients who experienced strong or maximum pain (mean 11.38 and 11.00).

## Conclusions

1. The risk factors for the occurrence and progress of lumbosacral disc disease include: age, obesity, gender, vibrations, smoking, lower physical



activity, degenerative-formation changes of the spine, social as well as living conditions.

2. There is a relationship between the functional capacity of patients with lumbosacral disc disease and the type of work performed, marital status, education, and risk factors.
3. Patients with lumbosacral disc disease, especially those feeling strong pain, have lowered quality of life, regarding in particular the physical realm.

## Implications for Nursing Practice

Dyscopathy, similarly to other chronic diseases of the nervous system, significantly affects not only the patient's functional ability but also the performance of social functions as well as the mental condition. However, the functional capacity of those patients considerably depends on the scope of their knowledge, psychological condition, lifestyle, quality of healthcare and also on the patient's motivation to improve the health condition. The medical personnel fulfills a significant role in this matter. Therefore, regardless of the stage of treatment, the patient ought to be given the information and educational support as well as emotional one for the purpose of improving functional capacity.

## References

- [1] Czaja E., Kózka M., Burda A. Jakość życia pacjentów z dyskopatią odcinka lędźwiowo-krzyżowego kręgosłupa. *Pielęgniarstwo Neurologiczne i Neurochirurgiczne*. 2012; 1(3):92–96.
- [2] Klimaszewska K., Krajewska-Kułak E., Kondzior D. i wsp. Jakość życia pacjentów z zespołami bólowymi odcinka lędźwiowego kręgosłupa. *Problemy Pielęgniarstwa*. 2011;19(1):47–54.
- [3] Nowak E., Nowak P., Zawadzka B. i wsp. Jakość życia chorych neurologicznie. *Studia Medyczne Akademii Świętokrzyskiej*, Kielce 2003;1:95–99.
- [4] Jaracz K., Wołowicka L., Kalfos M. *Analiza walidacyjna polskiej wersji WHOQOL-100*, Wydawnictwo Uczelniane AM w Poznaniu, Poznań 2001.
- [5] Zdunek P. Testy kliniczne w korzeniowych bólach dolnego odcinka kręgosłupa. *Rehabilitacja w praktyce*. 2009; 3:12–16.
- [6] Kukliński W. Fizjoterapia w zespołach bólowych kręgosłupa — wybrane problemy. *Kwartalnik Ortopedyczny*. 2009;3:258–265.
- [7] Nicpoń W.K., Harat M., Landowski J. Cechy kliniczne nerwobólul kulszowego i jego podłoże anatomiczne. *Ból*. 2002;3(2):7–12.
- [8] Geppert M.A. Rwa kulszowa — zasady postępowania. *Lekarz*. 2008;9:69–73.
- [9] Zaniewska R., Okurowska-Zawada B., Kułak W., Domian K. Analiza jakości życia pacjentów z zespołem

bólowym dolnego odcinka kręgosłupa po zastosowaniu przeskórnej elektrycznej stymulacji nerwów — TENS. *Medycyna pracy*. 2012;63(3):295–302.

- [10] Lisiński P., Wołoszyk M. Zastosowanie całkowitego wskaźnika bólu w ocenie leczenia fizykoterapeutycznego rwy kulszowej. *Fizjoterapia Polska*. 2005;5(3):305–312.
- [11] Spannauer A., Danek J. Czy bóle pleców to też Twój problem? Kilka uwag praktycznych dla pielęgniarki i rehabilitanta jak troszczyć się o swój kręgosłup. *Pielęgniarstwo Chirurgiczne i Angiologiczne*. 2008;4:129–135.
- [12] Kurliszyn-Moskal A. Terapia zespołów bólowych kręgosłupa lędźwiowo-krzyżowego — strategie postępowania. *Reumatologia*. 2009;47(6):368–371.
- [13] Radziszewski K.R. Analiza porównawcza aktywności zawodowej pacjentów z dyskopatią lędźwiową leczonych wyłącznie zachowawczo bądź operowanych. *Wiadomości Lekarskie*. 2007;60(1–2):15–20.
- [14] Gajewski T., Woźnica I., Młynarska M., Ćwikła S., Strzemecka J., Bojar I. Wybrane aspekty jakości życia osób ze zmianami zwyrodnieniowymi kręgosłupa i stawów. *Medycyna Ogólna i Nauki o Zdrowiu*. 2013;19(3):362–369.
- [15] Poznańska M. Wpływ wybranych czynników demograficznych oraz depresji na ocenę jakości życia osób po przebytej patologii kręgosłupa piersiowo-lędźwiowego. *Problemy Pielęgniarstwa*. 2013;21(3):340–347.
- [16] Kunikowska B., Lewandowska M., Glińska J., Puzder A., Szrajber B., Kujawa J. Analiza porównawcza jakości życia chorych z różnymi dysfunkcjami narządu ruchu. *Kwartalnik Ortopedyczny*. 2011;4:329–340.
- [17] Kułak W., Kondzior D. Dyskopatia kręgosłupa odcinka lędźwiowo-krzyżowego w korelacji z natężeniem bólu, depresją i akceptacją choroby. *Problemy Higieny i Epidemiologii*. 2010;91(1):153–157.
- [18] Jabłońska R., Ślusarz R., Królikowska A., Beuth W., Ciemnoczałowski W. Uwarunkowania wydolności funkcjonalnej chorych we wczesnym okresie pooperacyjnym leczenia dyskopatii lędźwiowo-krzyżowej. *Pielęgniarstwo Chirurgiczne i Angiologiczne*. 2008;4:144–150.

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**Conflict of Interest:** None

**Funding:** None

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(A — Concept and design of research, B — Collection and/or compilation of data, C — Analysis and interpretation 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)

**Received:** 26.09.2014

**Accepted:** 17.11.2014