Evaluation of the quality of life in patients who have undergone total hip replacement due to degenerative disease based on the WHOQOL-BREF quality of life assessment scale and the Harris Hip Score

Ocena jakości życia pacjentów po endoprotezoplastyce stawu biodrowego w wyniku choroby zwyrodnieniowej, w oparciu o skale oceny jakości życia WHOQOL-BREF oraz Harris Hip Score

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Summary
Introduction. The aim of the study was to evaluate the quality of life in patients who had undergone total hip replacement due to degenerative disease with the mean time of observation 7.34 (±4.73).
Material and methods. The research was conducted on a group of 55 patients (mean age = 69 years, SD ± 8). The quality of life was evaluated based on the WHOQOL-BREF quality of life assessment scale, the Harris Hip Score and the VAS scale. The examined variables were subject to statistical analysis by means of the STATISTICA 9.0. software for Windows, based on Pearson's linear correlation coefficient ($p<0.05$). The dependence between the examined scales of the quality of respondents' life was analyzed by means of the Mann-Whitney U test.
Results. The research has demonstrated that over 74% of the respondents have abandoned their previous physical activity and a considerable number of the respondents – 43.64% - had to give up their hobbies. The research has also shown that the body mass and the BMI have a statistically significant effect on the quality of life in somatic terms. A rising BMI was accompanied by an increasing subjective pain sensation. The amount of time which has passed since the hip replacement procedure had a significant impact on the pain sensation and the decreased quality of patients' life. The quality of patients' life decreased in all areas of life as a result of the increased pain sensation.
Conclusions. The quality of respondents' life deteriorates and the pain sensation intensifies as more time has passed since the hip replacement procedure. No statistically significant difference was found between the male and female respondents with respect to the quality of life and the experienced pain sensation.
Key words: osteoarthritis, total hip arthroplasty, hip replacement, quality of life

Streszczenie
Wstęp. Celem pracy była ocena jakości życia pacjentów po zabiegu endoprotezoplastyki stawu biodrowego, w wyniku choroby zwyrodnieniowej, ze średnim okresem obserwacji 7,34 lata (±4,73).
Materiał i metody. Badaniami objęto grupę 55 pacjentów, ze średnią wieku 69±8 lat. Oceny jakości życia dokonano w oparciu o skalę oceny jakości życia WHOQOL-BREF, skalę Harrisa (Harris Hip Score) oraz skalę VAS. Wyniki badań zmiennych poddano analizie statystycznej za pomocą pakietu statystycznego STATISTICA for Windows 9.0, w oparciu o współczynniki korelacji liniowych Pearsona ($p<0,05$). Analizę zależności badanych skal oceny jakości życia ankietowanych analizowano za pomocą testu U Manna-Whitneya.
Wyniki. Z badań wynika, że ponad 74% ankietowanych zrezygnowało z dotychczasowej aktywności fizycznej, a znaczny procent 43,64% zmuszony był do zaprzestania swojego hobby. Badania wskazały na istotny statystycznie wpływ masy ciała oraz związany z nią parametr BMI, na jakość życia w wymiarze somatycznym, wraz ze wzrostem BMI wzrastało również subiektywne odczucie bólu. Czas, który upłynął od zabiegu endoprotezoplastyki, istotnie wpływał na odczuwanie dolegliwości bólowych oraz na spadek jakości życia pacjentów we wszystkich sferach życia w wyniku nasilenia dolegliwości bólowych.
Wnioski. Wraz ze wzrostem czasu, jaki upłynął od wszczepienia endoprotezy stawu biodrowego, zauważalny był spadek jakości życia badanych, jak i wzrost odczuwania dolegliwości bólowych. Nie stwierdzono istotnej statystycznie różnicy, pomiędzy jakością życia oraz odczuwanym poziomem bólu pomiędzy kobietami, a mężczyznami.
Słowa kluczowe: choroba zwyrodnieniowa stawu biodrowego, protezoplastyka stawu biodrowego, jakość życia

INTRODUCTION

The degenerative hip joint disease is characterized by the slowly progressive pain, joint deformation and restricted functionality.

The pain in its initial stage may be vague, it may radiate to the groin or the front part of the femur. Subsequently, the pain may spread to the buttocks or the distal femur. The pain is usually closely related to the patient's activity, however, as the diseases develops, the pain may also be experienced during the rest or sleep [1,2]. The experienced pain sensation and the limited joint mobility affect the patients' locomotor activity which leads to deterioration in the patient's quality of life and may result in a loss of self-esteem, incapacity for work and social isolation [1-3]

When the outcome of both the conservative and pharmacological treatment is unsatisfactory, it may be necessary to perform surgery. The decision about surgical procedure is laden with responsibility and risk due to the potential post-operative complications.

The stage of development of the disease and deformation, the patients' age and health state and the accompanying diseases determine the choice of surgical treatment. Of importance is also the fact that two-year non-surgical treatment is more costly that surgical treatment [3].

Surgical procedure is a treatment of choice and it is mainly used with patients who are in an advanced stage of the degenerative disease and who did not respond to conservative treatment [4]. The main indication for performing total hip replacement is a considerable degree of pain which cannot be relieved through pharmacological treatment and which compromises the patient's daily activities.

The aim of the study was to examine the quality of life in patients who have undergone hip replacement due to the progressive hip osteoarthritis in respect of the time that has passed since the surgery as well as other comparative parameters. In the course of the research, the authors attempted to answer the following basic research questions:

1. What effect does the osteoarthritis of the hip and the experienced level of pain have on the patients' quality of life?
2. Does the time elapsed since the hip replacement have a noticeable effect on the increased sensation of pain and the change in the quality of life?
3. What effect does the respondents' age, body mass, BMI have on the pain sensation and deteriorating quality of life?
4. Do the osteoarthritis-related disorders differ depending on the respondents' gender?

MATERIAL AND METHODS

The research was conducted in a group of 55 patients, 19 men and 36 women, aged 55-83 (69±8) who had undergone total hip replacement and were staying in convalescent care at the Movement Therapy Centre in Krzeszowice. A statistical analysis of the variables confirmed the statistically significant differences in body mass and height in the male and female group, in both cases at the probability level of $p<0.0001$. The mean time elapsed since the hip replacement was 7.34 years ±4.73, within the score range of 1-20.

Within the sample group, 20 % of the respondents had the correct body mass, 29 persons (52,72%) were overweight and 13 persons (23.63%) suffered from 1st degree obesity. 83,64% of the respondents were drawing retirement pensions or disability benefits (84% of men and 83% of women), while 16,63% were in active employment. The majority of the respondents (75%) gave up

Tab. 1. Descriptive statistics of

Variable	Descriptive statistics						
	Mean value	Standard deviation	Minimum	Lower quartile	Median	Upper quartile	Maximum
Age	69,00	7,75	55,00	63,00	69,00	75,00	83,00
Body mass	75,36	11,04	58,00	66,00	73,00	82,00	100,00
Body height	164,65	7,56	150,00	159,00	163,00	170,00	183,00
BMI	27,80	3,64	19,88	25,15	27,41	30,47	36,20

Tab. 2. Results of the Kotmogorov-Smirnov test for the WHOQOL scale, Harris Hip Score and visual analogue scale (VAS) for the whole sample

Scale	Test K-S	Significance
WHOQOL scale - somatic domain	0.11	>0.2
WHOQOL scale - psychological domain	0.14	>0.2
WHOQOL scale - social domain	0.23	<0,02
WHOQOL scale - envrironmental domain	0.1	>0.2
VAS – points	0.1	>0.2
Harris Hip Score - points	0.1	<0,2

their previous activity due to pain sensation, 25% had an active lifestyle, and 44% of the respondents additionally had to abandon their hobbies.

The other variables were: the respondents' level of education (primary school 20%, vocational school 23.64%, secondary school 43.64% and college or university 12.73%), place of residence (village 34.54%, town 34.54, city 30.91%), waiting time for the rehabilitation services (1 month 5.45%, 2-6 months 50.91%, up to 12 months 24.45%, more than a year 18.18%).

The respondents' state of health was one of the main parameters subject to evaluation in this study. A 4-point subjective scale was adopted to assess the state of health: poor, average, good, very good. The majority of respondents rated their state of health as good (54.54%), and average (32.73%). The remaining group of the respondents reported a poor, or a very good state of health (3.64% and 9.09% of the sample respectively). Over 80% of men rated their state of health as at least good. Women gave a lower rating to their state of health, most of them reported an average state of health (42%).

The research was carried out between October 2010 and January 2011. The quality of life was rated using assessment scales and questionnaires such as: the WHO-QOL-BREF quality of life assessment scale and the Harris Hip Score. The pain sensation was evaluated based on the visual analogue scale VAS. Additionally, the patients were requested to fill in a questionnaire constructed by the author.

Correlations between the scales were measured to assess whether the above-mentioned tools are appropriate for the sample group. A statistical analysis was carried out using the STATISTICA 9.0 software, based on the principles of descriptive and mathematical statistics.

Pearson's linear correlation coefficient was employed to analyze the dependence between the quality of life scales and the quantitative variables such as: age, body build, time elapsed since hip replacement. The dependence between the quality of life scales and the respondents' gender was analyzed by means of the Mann-Whitney U test. The P value of $p<0.05$ was assumed as statistically significant, whereas $p<0.01$ was assumed as statistically highly significant.

The Kolmogorov–Smirnov test was employed to determine whether the analyzed variables were normally distributed. Based on the WHO guidelines, the WHOQL

Tab.3. VAS pain scores depending on the respondents' gender

Variable	Gender	Descriptive statistics							U Mann-Whitney test
		Mean value	Standard deviation	Minimum	Lower quartile	Median	Upper quartile	Maximum	
VAS score	Women	31.89	21.31	0.00	12.50	33.50	45.00	80.00	0.9224
	Men	31.32	17.78	5.00	17.00	31.00	37.00	78.00	
Intensity of pain	Women	1.25	1.05	0.00	0.00	1.00	2.00	4.00	0.5641
	Men	1.05	0.78	0.00	0.00	1.00	2.00	2.00	

Tab. 4. The WHOQOL - Bref scores in breakdown by particular domains of life

Variable	Descriptive statistics						
	Mean value	Standard deviation	Minimum	Lower quartile	Median	Upper quartile	Maximum
Quality of life	3.55	0.60	2.00	3.00	4.00	4.00	5.00
Satisfaction with the state of health	3.20	0.78	1.00	3.00	3.00	4.00	4.00
Somatic	22.11	3.53	13.00	20.00	22.00	24.00	32.00
Psychological	18.51	2.40	13.00	17.00	19.00	20.00	23.00
Social	8.04	1.04	5.00	7.00	8.00	9.00	10.00
Environmental	26.40	3.33	20.00	25.00	26.00	29.00	33.00

scale was divided into four domains: somatic, psychological, social and environmental. The answers were consecutively translated into score points and assigned an appropriate rank. The ultimate formula yielded a standardized result of 100 points for each domain. The Harris Hip Score was also included in the final analysis after translating the data and obtaining a totalized result for each patient (Table 2).

RESULTS

For the purposes of pain assessment, a standardized visual analogue scale was employed and the dependence was analyzed between the pain sensation and the time elapsed since the surgery. Both the 'time elapsed since the surgery' variable and the VAS scores were approximately normally distributed, which means they complied with the assumptions for using the correlation matrix (Pearson's correlation) (Fig.1)

An analysis of the correlations revealed a statistically significant relationship between the pain sensation (VAS) and the time elapsed since the hip replacement surgery. This means that the pain sensation became more intense as more time has passed since the surgery R= -0.41, p<0.001.

The mean VAS subjective pain score was 31.69 (SD ± 20.00, within a score range of 0 – 80) for the whole sample. The mean current pain intensity score was 1.18 (SD ± 0.96, within a score range of 0 - 4). An analysis of the data generated from pain scales depending on the respondents' gender revealed no statistically significant difference between the obtained results. The values of the variables were shown in Table 3.

The respondent self-assessment of the quality of life using the WHOQOL-BREF questionnaire yielded a mean quality of life score of 3.55, within a score range of 2-5. The level of satisfaction with the state of health

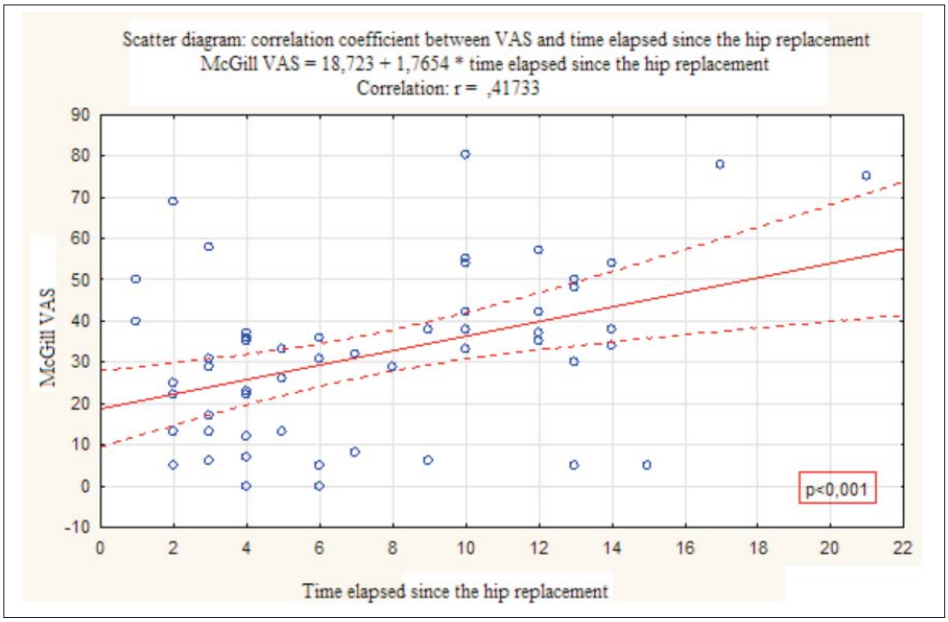

Fig. 1. Scatter diagram: correlation coefficient between VAS and time elapsed since the hip replacement

Tab. 5. Summary of Harris hip scores (modified) and comparison of the scores according to the gender

Variable		Descriptive statistics							
		Mean value	Standard deviation	Minimum	Lower quartile	Median	Upper quartile	Maximum	
Harris Hip Score		62.76	16.61	30	47	66	77	87	
Variable	Gender	Descriptive statistics							U Mann-Whitney test
		Mean value	Standard deviation	Minimum	Lower quartile	Median	Upper quartile	Maximum	
Harris Hip Score	Women	60.91	17.51	30.00	45.50	63.50	76.50	87.00	0.3256
	Men	66.26	14.54	32.00	60.00	68.00	77.00	85.00	

received an average rating of 3.2 within a score range of 1-4 (Table 4).

The Harris Hip Score yielded an average point score of 62.76 within a score range of 30-87. No significant differences were found with respect to genders. The average Harris Hip Score outcome was 60.91 points for women and 66.26 points for men (Table 5).

To answer the research questions posed, it was necessary to examine the correlation between the scales and questionnaires used in the research, and the age, body build and time elapsed since the total hip replacement surgery.

A statistical analysis of the data revealed that the age showed a significant ($p<0.05$) negative correlation with the quality of life scores in the psychological domain and a highly significant ($p<0.01$) negative correlation with the environmental domain. This means that the quality of life ratings in those two domains decreased with increasing age. Simultaneously, the VAS subjective pain rating increased together with age, which means that increasing age was accompanied by a deteriorating quality of life in terms of pain which is the basic subjective indicator of the patients' quality of life.

Body mass showed significant negative correlation with the quality of life in the somatic domain and positive correlation with the VAS score. Increased obesity leads to a deteriorating quality of life in the somatic domain and the subjective pain rating increases. As for

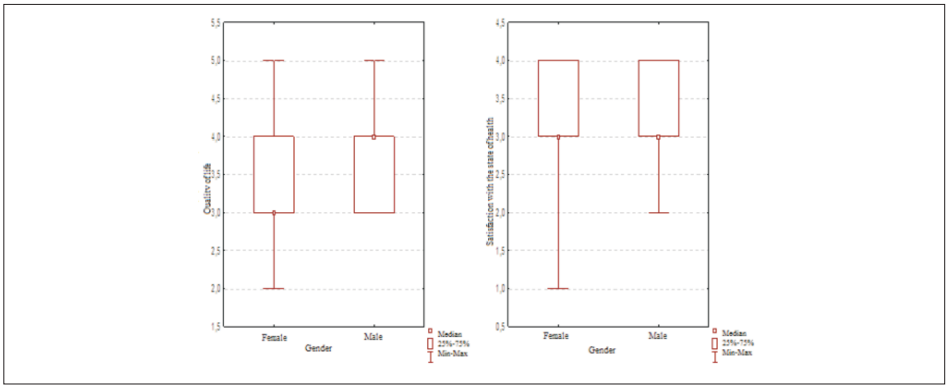

Fig. 2. Distribution of the rating of quality of life and satisfaction with the state of health depending on the respondents' gender

Tab. 6. Correlations between the examined scales, age, body build and time elapsed since the hip replacement

Variable	Correlations				
	Age	Body mass	Body height	BMI	Years since the hip replacement
Quality of life	-0.1150	0.1922	0.1151	0.1407	-0.1128
	p=0.403	p=0.160	p=0.403	p=0.306	p=0.412
Satisfaction with the state of health	0.1196	-0.2411	-0.1325	-0.1660	-0.1196
	p=0.384	p=0.076	p=0.335	p=0.226	p=0.384
Somatic	-0.1926	-0.3346	-0.1013	-0.3012	-0.2234
	p=0.159	p=0.013	p=0.462	p=0.025	p=0.101
Psychological	-0.2885	0.0132	0.0181	-0.0057	-0.2105
	p=0.033	p=0.924	p=0.896	p=0.967	p=0.123
Social	-0.0969	0.0555	0.1104	-0.0201	-0.0480
	p=0.481	p=0.687	p=0.423	p=0.884	p=0.728
Environmental	-0.4349	0.1571	0.0019	0.1767	-0.4712
	p=0.001	p=0.252	p=0.989	p=0.197	p<0.001
VAS score	0.3123	0.2828	0.0354	0.2821	0.4173
	p=0.020	p=0.036	p=0.798	p=0.037	p=0.002
Intensity of pain	0.0422	0.1921	-0.0065	0.2280	0.2786
	p=0.760	p=0.160	p=0.963	p=0.094	p=0.039
Harris Hip Score	-.1725	-.1145	.0419	-.1572	-.3778
	p=.208	p=.405	p=.761	p=.252	p=.004

the time elapsed since the hip surgery, it is highly negatively correlated with the quality of life in the environmental domain. The more time elapsed since the surgery, the lower the quality of life rating in the environmental domain, which might be to a large extent related to the respondents' age. As the period of time since the hip replacement surgery increases, there is also a highly significant increase in the VAS rating, a significant increase in the intensity of pain sensation and a highly significant drop in the Harris Hip score (Table 6)

An analysis of the correlations between the scales was carried out. Self-perceived quality of life and satisfaction with the state of health were not significantly correlated (r=0.1182). The quality of life scale in the social domain showed highly significant positive correlation (r=0.3881) with the psychological scale. The quality of life in the social domain were not significantly correlated with the other scales (Table 7). All other correlation dependencies were significant (p<0.05) or highly significant (p<0.01), which means that the research tools have been selected correctly with respect to the material under investigation.

The U Mann-Whitney test was used to analyze the dependence between the quality of life assessment scales and the pain sensation depending on the respondents' gender. No significant differences were found between the examined quality of life scales depending on the patients' gender (Table 8). The distributions of: rating of the quality of life and satisfaction with one's health state, somatic

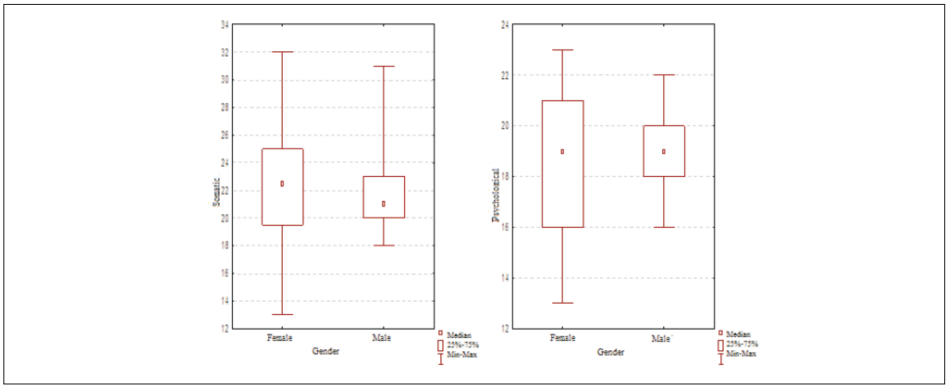

Fig. 3. Distribution of the somatic and psychological domain of the WHOQOL-Bref scale depending on the respondents' gender

Tab. 7. Correlations between the examined quality of life scales

Variable	Correlations								
	Quality of life	Satisfaction with the state of health	Somatic	Psychological	Social	Environment	VAS score	Intensity of pain	Harris Hip Score
Quality of life		0.1182	0.3721	0.4709	0.2049	0.3872	-0.3743	-0.3012	.5956
		p=0.390	p=0.005	p=0.000	p=0.134	p=0.003	p=0.005	p=0.025	p=.000
Satisfaction with the state of health	0.1182		0.5647	0.4603	0.2432	0.3467	-0.3620	-0.3204	.3485
	p=0.390		p<0.001	p<0.001	p=0.074	p=0.010	p=0.007	p=0.017	p=.009
Somatic	0.3721	0.5647		0.6534	0.2524	0.5244	-0.6488	-0.4745	.5925
	p=0.005	p<0.001		p<0.001	p=0.063	p<0.001	p<0.001	p<0.001	p=.000
Psychological	0.4709	0.4603	0.6534		0.3881	0.6634	-0.5713	-0.4339	.4822
	p=0.000	p=0.000	p<0.001		p=0.003	p<0.001	p<0.001	p=0.001	p=.000
Social	0.2049	0.2432	0.2524	0.3881		0.2319	-0.0075	-0.0067	-.0049
	p=0.134	p=0.074	p=0.063	p=0.003		p=0.088	p=0.957	p=0.961	p=.972
Environmental	0.3872	0.3467	0.5244	0.6634	0.2319		-0.5472	-0.3575	.4694
	p=0.003	p=0.010	p<0.001	p<0.001	p=0.088		p=0.000	p=0.007	p=.000
VAS score	-0.3743	-0.3620	-0.6488	-0.5713	-0.0075	-0.5472		0.6630	-.7856
	p=0.005	p=0.007	p<0.001	p<0.001	p=0.957	p=0.000		p<0.001	p=.000
Intensity of pain	-0.3012	-0.3204	-0.4745	-0.4339	-0.0067	-0.3575	0.6630		-.6739
	p=0.025	p=0.017	p<0.001	p=0.001	p=0.961	p=0.007	p<0.001		p=.000
Harris Hip Score	.5956	.5956	.5956	.5956	.5956	.5956	.5956	.5956	
	p=.000	p=.000	p=.000	p=.000	p=.000	p=.000	p=.000	p=.000	

and psychological as well as environmental and social domains of the WHOQOL-Bref scale depending on the respondents' gender were shown in Fig 2-3.

DISCUSSION

Research into the patient's quality of life is one of the important tools for evaluating the effectiveness of the therapeutic procedures used. According to Siegrist as quoted by Trojanowska [5], research into the quality of life serves three purposes in medicine: it shows the patient's subjective perception which might differ from the professional's view; additional information, it provides knowledge necessary for the choice of the therapeutic procedure and indicate the patients' needs concerning non-hospital care.

The guidelines of the American College of Rheumatology recommend early education of the patients and their families. They recommend reducing the joint loading and using mobility assist equipment and physical therapy [4].

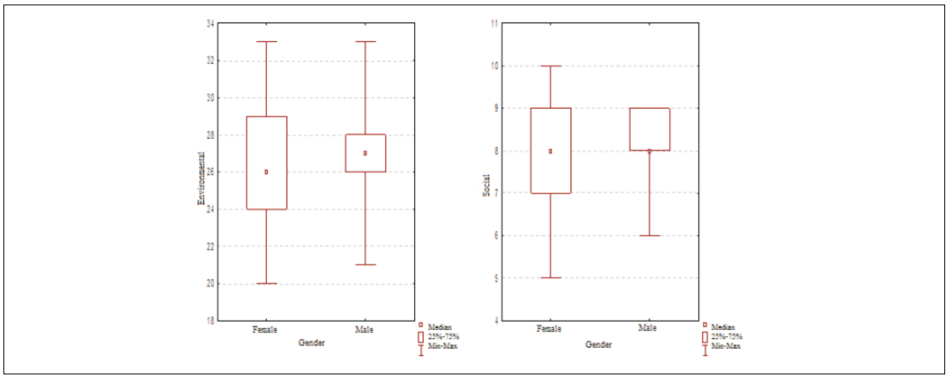

Fig. 4. Distribution of the environmental and social domain of the WHOQOL-Bref scale depending on the respondents' gender

Tab. 8. Scores of the analyzed quality of life scales according to the respondents' gender

Variable	Gender	Descriptive statistics							U Mann-Whitney test
		Mean value	Standard deviation	Minimum	Lower quartile	Median	Upper quartile	Maximum	
Quality of life	Women	3.47	0.61	2.00	3.00	3.00	4.00	5.00	0.2871
	Men	3.68	0.58	3.00	3.00	4.00	4.00	5.00	
Satisfaction with the state of health	Women	3.17	0.77	1.00	3.00	3.00	4.00	4.00	0.6673
	Men	3.26	0.81	2.00	3.00	3.00	4.00	4.00	
Somatic	Women	22.25	3.86	13.00	19.50	22.50	25.00	32.00	0.3641
	Men	21.84	2.87	18.00	20.00	21.00	23.00	31.00	
Psychological	Women	18.25	2.68	13.00	16.00	19.00	21.00	23.00	0.4161
	Men	19.00	1.70	16.00	18.00	19.00	20.00	22.00	
Social	Women	8.00	1.12	5.00	7.00	8.00	9.00	10.00	0.8739
	Men	8.11	0.88	6.00	8.00	8.00	9.00	9.00	
Environmental	Women	26.00	3.53	20.00	24.00	26.00	29.00	33.00	0.2295
	Men	27.16	2.85	21.00	26.00	27.00	28.00	33.00	
VAS score	Women	31.89	21.31	0.00	12.50	33.50	45.00	80.00	0.9224
	Men	31.32	17.78	5.00	17.00	31.00	37.00	78.00	
Intensity of pain	Women	1.25	1.05	0.00	0.00	1.00	2.00	4.00	0.5641
	Men	1.05	0.78	0.00	0.00	1.00	2.00	2.00	
Harris Hip Score	Women	60.91	17.51	30.00	45.50	63.50	76.50	87.00	0.3256
	Men	66.26	14.54	32.00	60.00	68.00	77.00	85.00	

According to the studies conducted by Ogrodzka and Niedźwiedzki [6], 52% out of 55 respondents were not engaged in any sports activities prior to the occurrence of disorders related to the degenerative hip joint disease. After about 6 weeks following the surgery, their level of physical activity considerably improved, 1/3 of the respondents viewed themselves as fully physically fit and 2/3 as partially physically fit. Those results differ from the results of the author's own study according to which 75 % of the respondents abandoned their previous physical activity and 25% had an active lifestyle.

Analogously, the study concerning the respondents' professional career yielded different results from those presented in the work by Kołodziej et al [7] according to which 76% of the respondents returned to work and 24% gave up their career. By comparison, according to the author's own study only 16.63% of the respondents were in active employment. The reasons for such discrepancy may lie in the different age structure of the sample. In the study by Kołodziej et al, the respondents were of working age, i.e. women under 60 and men under 65 years of age.

According to Paans et al. [8] there is no sufficient evidence that regular exercise and loss of body mass alleviate the disorders associated with the degenerative disease. However, physical activity is the basic recommendation for improving the quality of life and postponing the surgical procedure.

The author's own research demonstrates there is a statistically significant correlation between the body mass and the related BMI parameter on the one hand, and the quality of life in the somatic domain on the other hand. The subjective pain sensation increases with an increasing BMI. The study by Wilk and Frańczuk [9] showed that there was an improvement in the respondents' functional parameters which was reflected in an improved range of motion of the hip joint in patients with the correct BMI value.

The results of research conducted by Lübbeke et al [10] demonstrate that obesity may affect the development of the degenerative disease not only due to mechanical overload, but also because it contributes to the development of inflammatory process resulting in increased pain and reduction of the functional capacity. The authors stress the necessity to prevent obesity in order to avoid early total hip replacement and disorders related to the degenerative disease.

Both Stickles et al. [10] and Lübbeke et al. observed that the patients whose body mass at the time of the hip replacement procedure considerably exceeded the standard were significantly younger than the persons with correct body mass. The mean age difference in the study conducted by Lübbeke et al. was 4 years, as compared to 9 years in the study carried out by Stickles et al. Additionally, the research authors highlighted the fact that those differences might affect the survival time for the joint replacements and the time before the revision hip surgery.

As the waiting time for the total hip replacement surgery in Poland is very long – between 2 to 2.5 years, there is a number of studies which discuss the social and economic aspect of that problem [3].

The author's own research shows that despite the prolonged, several month waiting period for rehabilitation treatment, nearly 84% of patients underwent rehabilitation treatment and more than 92% underwent continuous pharmacological treatment.

The surgical treatment has a great number of supporters due to the satisfactory clinical and economic effects [11]. When analyzing the economic aspects, Dutka et al. [3] compared the cost of one-time total hip replacement procedure and the two-year mean waiting time for the surgery. The costs of conservative treatment were nearly twice higher than the costs of a surgical treatment. The authors additionally presented a stance according to which the long waiting period for surgery results in significant deterioration of the respondents' quality of life.

A review of the relevant literature points to the positive effect of arthroplasty on the improved quality of life, usually after a short observation period: Wilk and Frańczuk [12] – assessment performed on the 3rd,7th,11th day and after 1,3,6 months following the surgery, Jongjit et al. [13] – an observation period of 4 weeks, Ogrodzka et Niedźwiedzki [6] after 6 weeks following the surgery, Starowicz et al. [14] – assessment of two groups over a 4-week and 6-month observation period

The study conducted by Rocławski et al. [15] which evaluated the results of the total hip replacement over a 2-year observation period demonstrated that the patients' quality of life improved after 3 month following the surgery. Results similar to those of the general population were achieved within two years after the surgery.

The significance of the short-term assessment of patients' functional ability after the surgery is generally known. There is, however, a shortage of wider studies carried out over a longer observation period, which has been pointed out by e.g. Mariconda et al [16]. The presented results of research into the quality of life, including pain sensation and patients' satisfaction after the arthroplasty, encompassed a 15-year observation period. Mariconda et al demonstrated that 15 years after the surgery the patients gave a lower rating to their state of health as compared with healthy persons in most health domains. The rating of the hip functionality based on the Harris Score and WOMAC scale was lower as compared with the control group composed of healthy persons, and higher as compared with persons who did not undertake this sort of therapy due to the advanced degenerative disease. Of importance is also the fact that 96% of patients were satisfied with the surgery results and 96.8% would undergo the treatment again.

The author's own research, where the mean period of time elapsed since the surgery was 7.34 years, corresponds with the results obtained by Mariconda et al. The time period which has passed since the hip replacement

had a major effect on the pain sensation and the quality of life measured using the WHOQOL-Bref questionnaire and Harris Score. As more time has passed since the hip replacement the VAS score rating was significantly higher and the Harris Hip Score rating of the quality of life decreased significantly.

The author's own results and the results obtained by other authors confirm the necessity of conducting further research in order to assess and verify the effect of the hip replacement procedure on every sphere of the patients' life, especially over a longer observation period. It is important to emphasize the role of regular rehabilitation and patients' education as necessary components of the process of improving the physical fitness. An analysis of the social and economic needs shows that after the surgery the patients' effectiveness increases and they cope better with the physical requirements at workplace. According to Bohm [17], the hip replacement surgery should be performed before the patient is forced to give up their career due to the ailments [18].

CONCLUSIONS

1. The respondents' quality of life decreases noticeably and the pain sensation increases as more time has elapsed since the hip replacement procedure.
2. The patients' quality of life decreases in all areas of life as a result of intensified pain.
3. No statistically significant differences were found between male and female respondents with respect to the quality of life and pain sensation.
4. It has been demonstrated that the hip joint pain increased depending on the respondents' age and body mass. Higher BMI values in some of the respondents were accompanied by higher pain sensation scores.

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