

ORIGINAL ARTICLE

Assessment of patients satisfaction following total hip arthroplasty in a rheumatology hospital

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ABSTRACT

Background. Total hip replacement is one of the most frequently used surgical techniques in the treatment of degenerative joint diseases. The surgical procedure aims to improve patients' quality of life and overall health status (well-being) in the coming years. Pain reduction or its complete elimination promotes better functioning in daily life, which positively affects the psychological well-being of patients. Patient satisfaction following hip arthroplasty depends on the quality of medical services provided, hospital conditions, and the attitude of the medical staff. Comprehensive education, postoperative care, and early rehabilitation play a key role, accelerating the recovery of full physical mobility.

Aim. Assessment of patient satisfaction in a rheumatology hospital following total hip arthroplasty.

Material and methods. The study was conducted among 116 patients following hip replacement surgery at the Department of Trauma and Orthopedic Surgery in the Gen. Jerzy Ziętek Silesian Rheumatology Center in Ustroń. The study period spanned four months, from August 2024 to November 2024. A self-designed questionnaire consisting of 30 questions, including both closed-ended and open-ended items, was used for data collection.

Results. The quality of life of patients significantly improved following hip replacement surgery, as did their health status (well-being) compared to the preoperative period. The study results indicate that respondents reported a significant reduction in pain, which was confirmed using the Visual Analog Scale (VAS). Following the procedure, perceived pain decreased by 5 points, enabling a return to performing basic daily activities without pain. Initiating rehabilitation on the first postoperative day contributed to

the rapid recovery of physical mobility and the improvement of respondents' psychological status. Patient education following hip arthroplasty plays an important role in the recovery process.

Conclusions. Patients following hip arthroplasty experienced a significant reduction in pain, which contributed to an improvement in their quality of life across physical, psychological, and social dimensions. High patient satisfaction was the result of the efficacy of the procedure, the quality of medical care, and early postoperative rehabilitation, which positively influenced the recovery process.

KEYWORDS Hip replacement, satisfaction, early postoperative rehabilitation

1. Introduction

Since the dawn of medicine, attempts have been made to implant foreign materials into the human body. Advances in civilization and increased average life expectancy have made joint diseases one of the major challenges of modern medicine. The hip joint shows a particular susceptibility to degenerative and deformative changes, as, being a weight-bearing joint, it is subjected to higher loads and is more vulnerable to damage. Hip replacement surgery aims to restore joint function and improve the quality of life for patients suffering from advanced degenerative changes. Implanting an artificial joint allows patients to increase their physical function, while pain that previously interfered with or prevented daily activities is alleviated [1-5]. Despite evidence of clinical efficacy, growing importance in evaluating treatment outcomes is attributed to the patient's perspective, particularly their level of post-operative satisfaction. Satisfaction, as a subjective indicator for evaluating the procedure, takes into account not only the medical outcome but also the fulfillment of patient expectations, the quality of medical care, and the ability to return to social and professional life. Analyzing the factors that determine patient satisfaction following hip replacement helps not only to better understand their needs, but also to improve the treatment and rehabilitation process [6-11]. The primary objective of this study was to evaluate patient satisfaction after hip replacement surgery and to analyze the factors influencing patient satisfaction with the outcomes of the surgery and treatment results.

2. Methodology

Data were collected using a custom-designed questionnaire consisting of 30 questions, including both closed-ended and open-ended items. The first section of the questionnaire (6 questions) addressed sociodemographic data such as sex, age, education, marital status, place of residence, education, and current employment status. The next section focused on comorbidities and the primary reason for requiring a total hip replacement. Patients were asked about prior pain symptoms that led to the decision to undergo surgical treatment. In the subsequent section of the survey, patients evaluated pain intensity prior to surgery as well as pain severity during their hospital stay in the ward. Respondents rated pain using a visual analog scale (VAS). The questionnaire also contained questions regarding early postoperative rehabilitation. Patients evaluated the extent to which the rehabilitation process met their expectations and whether they considered rehabilitation a crucial element of recovery. The final section of the questionnaire contained three open-ended questions. Respondents were asked to provide:

additional comments regarding their experiences with hip replacement surgery and postoperative care,

a subjective evaluation of the procedure performed, reflections on their decision to undergo surgery, specifically considering whether, if faced with the need for a hip replacement again, they would choose to undergo the same procedure once more.

The open-ended questions allowed for gathering individual patient perspectives regarding their satisfaction with the surgical procedure and postoperative treatment. The survey results will

serve to evaluate the efficacy of the hip replacement performed and the factors influencing its effectiveness.

2.1. Study Setting Characteristics

The study was conducted on a group of 116 patients staying in the Department of Trauma and Orthopedic Surgery at the Gen. Jerzy Zietek Silesian Center for Rheumatology in Ustron. All patients had undergone total hip replacement surgery. The study period lasted four months, from August 2024 to November 2024.

2.2. Statistical Analysis

All statistical calculations were performed using the statistical package R-4.4.2 and Microsoft Excel 365 software. Quantitative variables were characterized using, among others, the arithmetic mean and standard deviation, whereas qualitative variables measured on a nominal scale were presented using frequencies and percentages. The significance of differences between two groups (paired variables model) was examined using a significance test of

differences, namely the Wilcoxon test, while for three groups, the Friedman test was used. The significance of differences among more than two groups was examined using the Kruskal-Wallis test. The relationship between two variables measured on a nominal scale was examined using the chi-square test, the chi-square test with Yates's correction, and Fisher's exact test. In all calculations, the significance level was set at $p < 0.05$.

3. Results

3.1. Sociodemographic Characteristics

A total of 116 patients participated in the study. There were 45 women, accounting for 38.8% of respondents, and 71 men, accounting for 61.2% of the study group. The most common place of residence among the studied patients was rural areas (65 individuals, 56%). Fifty-one respondents resided in urban areas, accounting for 44%. Detailed data are presented in Table I.

Table I. Sociodemographic and Clinical Characteristics of the Study Group

Demographic Profile		n	%
Sex	Female	45	38.8
Sex	Male	71	61.2
Age	Below 50	9	7.8
Age	51 - 65	38	32.7
Age	65 - 80	61	52.6
Age	Over 80	8	6.9
Place of residence	Rural area	65	56.0
Place of residence	Town	51	44.0
Education	Primary	16	13.8
Education	Vocational	46	39.6
Education	Secondary	40	34.5
Education	Higher	14	12.1
Marital status	Single (Female)	4	3.4
Marital status	Single (Male)	3	2.6
Marital status	Married	86	74.1
Marital status	Divorced	4	3.4
Marital status	Widowed	19	16.4
Employment status	Manual worker	22	19.0
Employment status	Non-manual worker	17	14.6
Employment status	Retiree / Disability pensioner	77	66.4
Employment status	Unemployed	0	0.0
Comorbidities	Cardiovascular diseases	60	51.7
Comorbidities	Diabetes	24	20.7
Comorbidities	Respiratory diseases	8	6.9
Comorbidities	Obesity	28	24.1
Comorbidities	Rheumatoid arthritis (RA)	32	27.6

Comorbidities	Lyme disease	6	5.2
Comorbidities	Other	19	16.4

n – number of respondents, % – total number as a percentage

In the evaluation of patient quality of life after hip replacement surgery, the results obtained showed no statistically significant relationship between

sociodemographic and clinical data and the assessment of post-operative quality of life. Detailed data are presented in Table II.

Table II. Assessment of Quality of Life Based on Sociodemographic and Clinical Data

Demographic Profile		Quality of Life After Surgery				χ^2	p
Demographic Profile		has definitely improved		remained the same/got worse		χ^2	p
Demographic Profile		n	%	n	%	χ^2	p
Sex	Female	38	84.4	7	15.6	0.064	0.79942
Sex	Male	60	84.5	11	15.5	0.064	0.79942
Age	Below 65	40	85.1	7	14.9	0.012	0.91392
Age	Over 65	58	84.1	11	15.9	0.012	0.91392
Place of residence	Rural area	53	81.5	12	18.5	0.533	0.46512
Place of residence	Town	45	88.2	6	11.8	0.533	0.46512
Education	Primary & Vocational	55	88.7	7	11.3	1.189	0.27562
Education	Secondary & Higher	43	79.6	11	20.4	1.189	0.27562
Marital status	Married	75	87.2	11	12.8	1.167	0.28002
Marital status	Single	23	76.7	7	23.3	1.167	0.28002
Employment	Manual worker	19	86.4	3	13.6	-	1.00003
Employment	Non-manual worker	14	82.4	3	17.6	-	1.00003
Employment	Retiree / Disability pensioner	65	84.4	12	15.6	-	1.00003
Comorbidities	None	11	91.7	1	8.3	0.093	0.76052
Comorbidities	Yes, including:	87	83.6	17	16.4	0.093	0.76052
Comorbidities	Cardiovascular diseases	50	83.3	10	16.7	0.027	0.86882
Comorbidities	Diabetes	22	91.7	2	8.3	0.802	0.37042
Comorbidities	Respiratory diseases	5	62.5	3	37.5	-	0.12083
Comorbidities	Obesity	21	75.0	7	25.0	-	0.22953
Comorbidities	Rheumatoid arthritis (RA)	30	93.8	2	6.3	2.462	0.11672
Comorbidities	Lyme disease	4	66.7	2	33.3	-	0.25323
Comorbidities	Other	17	89.5	2	10.5	0.173	0.67762

2Yates' correction for the chi-square test, 3Fisher's exact test

The majority of patients (84.5%) reported that their quality of life significantly improved after surgery, for 12.1% of patients quality of life remained unchanged, and in 4 patients (3.4%) quality of life worsened. Statistical analysis using Fisher's exact test revealed a statistically significant relationship between the reason for hip replacement and the patients' psychological well-being after surgery ($p=0.0059$). Patients with osteoarthritis, rheumatoid

arthritis, and hip fracture or dislocation reported that their psychological well-being significantly improved, whereas this was less apparent in individuals with congenital hip defects and other hip conditions. A considerable portion of these patients experienced no change in their psychological well-being. However, the results presented below showed no statistically significant relationship between sociodemographic and clinical data and psychological well-being after surgery. Detailed data are presented in Table III.

Table III. Assessment of Mental Well-Being After Surgery by Sociodemographic and Clinical Data

Demographic Profile		Mental Well-Being After Surgery				χ^2	p
Demographic Profile		it has definitely improved		remained the same/got worse		χ^2	p
Demographic Profile		n	%	n	%	χ^2	p
Sex	Female	39	86.7	6	13.3	0.064	0.79942
Sex	Male	59	83.1	12	16.9	0.064	0.79942
Age	Below 65	39	83.0	8	17.0	0.012	0.91392
Age	Over 65	59	85.5	10	14.5	0.012	0.91392
Place of residence	Rural area	57	87.7	8	12.3	0.672	0.41252
Place of residence	Town	41	80.4	10	19.6	0.672	0.41252
Education	Primary & Vocational	53	85.5	9	14.5	0.004	0.95052
Education	Secondary & Higher	45	83.3	9	16.7	0.004	0.95052
Marital status	Married	73	84.9	13	15.1	0.008	0.92762
Marital status	Single	25	83.3	5	16.7	0.008	0.92762
Employment status	Manual worker	17	77.3	5	22.7	-	0.23653
Employment status	Non-manual worker	13	76.5	4	23.5	-	0.23653
Employment status	Retiree / Disability pensioner	68	88.3	9	11.7	-	0.23653
Comorbidities	None	8	66.7	4	33.3	-	0.09043
Comorbidities	Yes, including:	90	86.5	14	13.5	-	0.09043
Comorbidities	Cardiovascular diseases	51	85.0	9	15.0	0.061	0.80572
Comorbidities	Diabetes	21	87.5	3	12.5	0.034	0.85432
Comorbidities	Respiratory diseases	5	62.5	3	37.5	-	0.07303
Comorbidities	Obesity	23	82.1	5	17.9	-	0.51833
Comorbidities	Rheumatoid arthritis (RA)	30	93.8	2	6.3	1.266	0.26052
Comorbidities	Lyme disease	5	83.3	1	16.7	-	0.58973
Comorbidities	Other	19	100.0	0	0.0	2.341	0.12612

2Yates' correction for the chi-square test, 3Fisher's exact test

The majority of patients (75.9%) reported that their health status significantly improved compared to before the procedure, 21.6% experienced a slight improvement, in 2 patients it remained unchanged, and in one patient it worsened. Statistical analysis using Fisher's exact test showed no statistically significant relationship between the reason for hip replacement and the evaluation of health status compared to before the surgery ($p=0.7103$). This indicates that the reason for hip replacement surgery does not affect the patients' assessment of

their health status. The results above demonstrated a statistically significant relationship between patient health status and marital status, as well as the comorbid condition of diabetes.

Among married respondents, 82.6% experienced a significant improvement in health status, whereas among unmarried patients, 43.3% reported that their health status slightly improved, remained unchanged, or even worsened.

In 95.8% of patients with diabetes, a significant improvement in health status was observed. Detailed data are presented in Table IV.

Table IV. Assessment of Health Status Based on Sociodemographic and Clinical Data

Demographic Profile		Patients' Health Status		χ^2	p
Demographic Profile		has definitely improved	has improved/ remained the same/got worse	χ^2	p

Demographic Profile		n	%	n	%	χ^2	p
Sex	Female	30	66.7	15	33.3	3.395	0.06541
Sex	Male	58	81.7	13	18.3	3.395	0.06541
Age	Below 65	36	76.6	11	23.4	0.023	0.87891
Age	Over 65	52	75.4	17	24.6	0.023	0.87891
Place of residence	Rural area	51	78.5	14	21.5	0.546	0.46011
Place of residence	Town	37	72.5	14	27.5	0.546	0.46011
Education	Primary & Vocational	48	77.4	14	22.6	0.176	0.67451
Education	Secondary & Higher	40	74.1	14	25.9	0.176	0.67451
Marital status	Married	71	82.6	15	17.4	8.142	0.00431
Marital status	Single	17	56.7	13	43.3	8.142	0.00431
Employment status	Manual worker	17	77.3	5	22.7	0.039	0.98041
Employment status	Non-manual worker	13	76.5	4	23.5	0.039	0.98041
Employment status	Retiree / Disability pensioner	58	75.3	19	24.7	0.039	0.98041
Comorbidi-ties	None	9	75.0	3	25.0	-	1.00003
Comorbidi-ties	Yes. including:	79	76.0	25	24.0	-	1.00003
Comorbidi-ties	Cardiovascular diseases	42	70.0	18	30.0	2.042	0.15301
Comorbidi-ties	Diabetes	23	95.8	1	4.2	5.407	0.02012
Comorbidi-ties	Respiratory diseases	5	62.5	3	37.5	-	0.39493
Comorbidi-ties	Obesity	22	78.6	6	21.4	0.014	0.90502
Comorbidi-ties	Rheumatoid arthritis (RA)	27	84.4	5	15.6	1.188	0.27572
Comorbidi-ties	Lyme disease	5	83.3	1	16.7	-	1.00003
Comorbidi-ties	Other	14	73.7	5	26.3	0.002	0.96812

1the chi-square test , 2Yates' correction for the chi-square test, 3Fisher's exact test

The majority of patients (74.1%) reported that their hip joint functions significantly better after replacement, 17.2% rated its function as slightly better, in 5 patients (4.3%) hip joint functionality remained unchanged, while in 5 patients (4.3%) hip joint functionality worsened. The results presented above demonstrated a statistically significant relationship between the evaluation of hip joint functionality and sex, as well as marital status.

Among 81.7% of men, hip joint functionality significantly improved, whereas among 37.8% of

women, according to their assessment, it slightly improved, remained unchanged, or even worsened.

Among 80.2% of married respondents, hip joint functionality significantly improved, whereas among 43.3% of unmarried patients, according to their assessment, it slightly improved, remained unchanged, or even worsened.

At a significance level of $p=0.1$, a significant improvement in hip joint functionality was observed in 91.7% of patients with diabetes. Detailed data are presented in Table V.

Table V. Assessment of Hip Joint Function Based on Sociodemographic and Clinical Data

Demographic Profile		Assessment of Hip Joint Function				χ^2	p
Demographic Profile		improved significantly		improved slightly / remained unchanged / worsened		χ^2	p
Demographic Profile		n	%	n	%	χ^2	p
Sex	Female	28	62.2	17	37.8	5.444	0.01961
Sex	Male	58	81.7	13	18.3	5.444	0.01961

Age	Below 65	34	72.3	13	27.7	0.133	0.71521
Age	Over 65	52	75.4	17	24.6	0.133	0.71521
Place of residence	Rural area	49	75.4	16	24.6	0.120	0.72921
Place of residence	Town	37	72.5	14	27.5	0.120	0.72921
Education	Primary & Vocational	49	79.0	13	21.0	1.664	0.19711
Education	Secondary & Higher	37	68.5	17	31.5	1.664	0.19711
Marital status	Married	69	80.2	17	19.8	6.442	0.01111
Marital status	Single	17	56.7	13	43.3	6.442	0.01111
Employment	Manual worker	17	77.3	5	22.7	0.225	0.89361
Employment	Non-manual worker	12	70.6	5	29.4	0.225	0.89361
Employment	Retiree / Disability pensioner	57	74.0	20	26.0	0.225	0.89361
Comorbidities	None	8	66.7	4	33.3	-	0.50463
Comorbidities	Yes, including:	78	75.0	26	25.0	-	0.50463
Comorbidities	Cardiovascular diseases	42	70.0	18	30.0	1.313	0.25181
Comorbidities	Diabetes	22	91.7	2	8.3	3.539	0.05992
Comorbidities	Respiratory diseases	5	62.5	3	37.5	-	0.40923
Comorbidities	Obesity	22	78.6	6	21.4	0.065	0.79852
Comorbidities	Rheumatoid arthritis (RA)	25	78.1	7	21.9	0.060	0.80622
Comorbidities	Lyme disease	3	50.0	3	50.0	-	0.16353
Comorbidities	Other	14	73.7	5	26.3	0.021	0.88352

1the chi-square test , 2Yates' correction for the chi-square test, 3Fisher's exact test

Assessment of hip pain in patients after surgery

The results of the Friedman test revealed statistically significant differences in pain intensity following hip replacement surgery, from the preoperative period through discharge from the hospital ($F=175.358$, $p<0.001$). Detailed data are presented in Table VI.

Table VI. VAS (Visual Analog) Scale

VAS	N	M	SD	Min	Max	Q1	Me	Q3
before surgery	116	6.78	1.74	2.00	10.00	5.00	7.00	8.00
during the "first 24 hours"	116	3.71	2.11	0.00	10.00	2.00	4.00	5.00
on the day of discharge from hospital	116	1.85	1.53	0.00	7.00	1.00	2.00	2.00

Note: M – mean, SD – standard deviation, Q1 – 25th percentile, Me – median, Q3 – 75th percentile, Min – minimum value, Max – maximum value

The results obtained using the Kruskal-Wallis test showed no statistically significant differences ($H = 5.181$, $p = 0.2692$) in pain levels between the day of

admission and the day of discharge depending on the reason for joint replacement. This means that, regardless of the reason for joint replacement, patients experienced a reduction in pain levels of nearly 5 points on the day of discharge compared to admission ($p < 0.0001$). Detailed data are presented in Table VII.

Table VII. Differences in VAS scores between the day of admission and the day of discharge, by reason for prosthesis implantation

Reason for Endoprosthesis Implantation	N	M	SD	Min	Max	Q1	Me	Q3
Osteoarthritis	Osteoarthritis	Osteoarthritis	Osteoarthritis	Osteoarthritis	Osteoarthritis	Osteoarthritis	Osteoarthritis	Osteoarthritis
VAS before surgery	73	6.66	1.63	4.00	10.00	5.00	7.00	8.00
VAS on the day of discharge from hospital	73	1.84	1.57	0.00	7.00	1.00	2.00	2.00
VAS Difference	73	-4.82	2.19	-10.00	0.00	-6.00	-5.00	-4.00
	Z = 7.167	Z = 7.167	Z = 7.167	Z = 7.167	p < 0.0001	p < 0.0001	p < 0.0001	p < 0.0001
Rheumatoid Arthritis	Rheumatoid Arthritis	Rheumatoid Arthritis	Rheumatoid Arthritis	Rheumatoid Arthritis	Rheumatoid Arthritis	Rheumatoid Arthritis	Rheumatoid Arthritis	Rheumatoid Arthritis
VAS before surgery	19	7.11	2.28	2.00	10.00	5.00	7.00	9.00
VAS on the day of discharge from hospital	19	1.58	1.07	0.00	3.00	0.00	2.00	2.00
VAS Difference	19	-5.53	1.90	-9.00	-2.00	-7.00	-6.00	-4.00
	Z = 3.823	Z = 3.823	Z = 3.823	Z = 3.823	p = 0.0001	p = 0.0001	p = 0.0001	p = 0.0001
Hip Fractures or Dislocations	Hip Fractures or Dislocations	Hip Fractures or Dislocations	Hip Fractures or Dislocations	Hip Fractures or Dislocations	Hip Fractures or Dislocations	Hip Fractures or Dislocations	Hip Fractures or Dislocations	Hip Fractures or Dislocations
VAS before surgery	13	7.00	1.22	4.00	9.00	7.00	7.00	8.00
VAS on the day of discharge from hospital	13	1.69	1.55	0.00	5.00	0.00	2.00	2.00
VAS Difference	13	-5.31	1.97	-9.00	-2.00	-7.00	-5.00	-4.00
	Z = 3.180	Z = 3.180	Z = 3.180	Z = 3.180	p = 0.0015	p = 0.0015	p = 0.0015	p = 0.0015
Congenital Hip Defects	Congenital Hip Defects	Congenital Hip Defects	Congenital Hip Defects	Congenital Hip Defects	Congenital Hip Defects	Congenital Hip Defects	Congenital Hip Defects	Congenital Hip Defects
VAS before surgery	7	7.43	1.90	5.00	10.00	6.00	7.00	10.00
VAS on the day of discharge from hospital	7	2.57	2.07	0.00	5.00	1.00	2.00	5.00
VAS Difference	7	-4.86	2.67	-9.00	-1.00	-6.00	-5.00	-2.00
	Z = 2.366	Z = 2.366	Z = 2.366	Z = 2.366	p = 0.0180	p = 0.0180	p = 0.0180	p = 0.0180
Other Hip Joint Disorders	Other Hip Joint Disorders	Other Hip Joint Disorders	Other Hip Joint Disorders	Other Hip Joint Disorders	Other Hip Joint Disorders	Other Hip Joint Disorders	Other Hip Joint Disorders	Other Hip Joint Disorders
VAS before surgery	4	5.50	1.91	3.00	7.00	4.00	6.00	7.00
VAS on the	4	2.75	1.71	1.00	5.00	1.50	2.50	4.00

day of discharge from hospital								
VAS	4	-2.75	2.22	-5.00	0.00	-4.50	-3.00	-1.00
Difference								
	Z = 1.604	Z = 1.604	Z = 1.604	Z = 1.604	p = 0.1088	p = 0.1088	p = 0.1088	p = 0.1088

M – mean, *SD* – standard deviation, *Q1* – 25th percentile, *Me* – median, *Q1* – 75th percentile,

Min – minimum value, Max – maximum value, *Z* – Wilcoxon statistic approximated by a normal distribution

The results obtained using the Mann-Whitney U test showed statistically significant differences in pain levels before surgery and on the day of hospital

discharge based on gender (*Z* = -1.983, *p* = 0.0474). This means that women experienced a greater reduction in pain levels on the day of hospital discharge than men. Both men and women showed a statistically significant decrease in pain levels from the day of admission to the day of surgery through to the day of hospital discharge (*p* < 0.0001). Detailed data are presented in Table VIII.

Table VIII. Differences in VAS scores between the day of admission and the day of discharge by VAS score and sex

Sex	N	M	SD	Min	Max	Q1	Me	Q3
Female	Female	Female	Female	Female	Female	Female	Female	Female
VAS before surgery	45	7.47	1.82	4.00	10.00	6.00	7.00	9.00
VAS on the day of discharge from hospital	45	2.09	1.49	0.00	6.00	1.00	2.00	3.00
VAS Difference	45	-5.38	2.41	-10.00	0.00	-7.00	-6.00	-4.00
	Z = 5.645	Z = 5.645	Z = 5.645	Z = 5.645	p < 0.0001	p < 0.0001	p < 0.0001	p < 0.0001
Male	Male	Male	Male	Male	Male	Male	Male	Male
VAS before surgery	71	6.34	1.56	2.00	10.00	5.00	7.00	7.00
VAS on the day of discharge from hospital	71	1.70	1.55	0.00	7.00	1.00	1.00	2.00
VAS Difference	71	-4.63	1.97	-9.00	0.00	-6.00	-5.00	-3.00
	Z = 7.167	Z = 7.167	Z = 7.167	Z = 7.167	p = 0.0001	p = 0.0001	p = 0.0001	p = 0.0001

M – mean, *SD* – standard deviation, *Q1* – 25th percentile, *Me* – median, *Q1* – 75th percentile,

Min – minimum value, Max – maximum value, *Z* – value of the Wilcoxon test statistic approximated by a normal distribution

The results obtained using the Mann-Whitney U test did not reveal any statistically significant differences in pain levels between preoperative and discharge days based on age (*Z* = 1.119, *p* = 0.2631).

This means that, regardless of age, patients experienced a similar reduction in pain levels on the day of hospital discharge, by approximately 5 points. Both in patients under 65 years of age and in those over 65, a statistically significant decrease in pain levels was observed from the day of admission to surgery until the day of hospital discharge (*p* < 0.0001). Detailed data are presented in Table IX.

Table IX. Comparison of Pain Symptoms by Patient Age

Age	N	M	SD	Min	Max	Q1	Me	Q3
Patients up to	Patients up to	Patients up to	Patients up to	Patients up to	Patients up to	Patients up to	Patients up to	Patients up to

age of 65	age of 65	age of 65	age of 65	age of 65	age of 65	age of 65	age of 65	age of 65
VAS before surgery	47	6.77	1.46	4.00	10.00	6.00	7.00	7.00
VAS on the day of discharge from hospital	47	1.57	1.44	0.00	5.00	1.00	1.00	2.00
VAS Difference	47	-5.19	2.21	-10.00	0.00	-7.00	-5.00	-4.00
	Z = 5.841	Z = 5.841	Z = 5.841	Z = 5.841	p < 0.0001	p < 0.0001	p < 0.0001	p < 0.0001
Patients over the age of 65	Patients over the age of 65	Patients over the age of 65	Patients over the age of 65	Patients over the age of 65	Patients over the age of 65	Patients over the age of 65	Patients over the age of 65	Patients over the age of 65
VAS before surgery	69	6.78	1.92	2.00	10.00	5.00	7.00	8.00
VAS on the day of discharge from hospital	69	2.04	1.58	0.00	7.00	1.00	2.00	3.00
VAS Difference	69	-4.74	2.15	-9.00	0.00	-6.00	-5.00	-4.00
	Z = 7,009	Z = 7,009	Z = 7,009	Z = 7,009	p = 0,0001	p = 0,0001	p = 0,0001	p = 0,0001

M – mean value, *SD* – standard deviation, *Q1* – 25th percentile, *Me* – median value, *Q3* – 75th percentile,

Min – minimum value, Max – maximum value, Z – Wilcoxon test statistic approximated by a normal distribution

The results obtained using the Mann-Whitney U test revealed statistically significant differences in pain levels prior to surgery and on the day of hospital discharge based on place of residence (Z = -2.008, p

= 0.0446). This means that patients living in urban areas experienced a greater reduction in pain levels on the day of discharge compared to patients living in rural areas.

Both rural and urban residents demonstrated a statistically significant decrease in pain levels from the day of admission for surgery to the day of hospital discharge (p < 0.0001). Detailed data are presented in Table X.

Table X. Comparison of Pain Levels by Place of Residence

Place of residence	N	M	SD	Min	Max	Q1	Me	Q3
Rural area	Rural area	Rural area	Rural area	Rural area	Rural area	Rural area	Rural area	Rural area
VAS before surgery	65	6.49	1.76	2.00	10.00	5.00	6.00	8.00
VAS on the day of discharge from hospital	65	1.89	1.63	0.00	7.00	1.00	2.00	2.00
VAS Difference	65	-4.60	2.23	-9.00	0.00	-6.00	-5.00	-3.00
	Z = 5.645	Z = 5.645	Z = 5.645	Z = 5.645	p < 0.0001	p < 0.0001	p < 0.0001	p < 0.0001
Town / City	Town / City	Town / City	Town / City	Town / City	Town / City	Town / City	Town / City	Town / City
VAS before surgery	51	7.14	1.67	4.00	10.00	6.00	7.00	8.00
VAS on the day of discharge from hospital	51	1.80	1.41	0.00	6.00	1.00	2.00	3.00
VAS Difference	51	-5.33	2.06	-10.00	0.00	-7.00	-6.00	-4.00

Z = 7.167	Z = 7.167	Z = 7.167	Z = 7.167	p = 0.0001	p = 0.0001	p = 0.0001	p = 0.0001
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M – mean value, *SD* – standard deviation, *Q1* – 25th percentile, *Me* – median value, *Q3* – 75th percentile,

Min – minimum value, Max – maximum value, Z – Wilcoxon test statistic approximated by a normal distribution

The results obtained using the Mann-Whitney U test showed no statistically significant differences in pain levels before surgery and on the day of hospital discharge based on education (Z = -1.367, p = 0.1716). This means that regardless of education

Table XI. Comparison of Pain Levels by Educational Attainment

Education	N	M	SD	Min	Max	Q1	Me	Q3
Primary and Vocational education	Primary and Vocational education	Primary and Vocational education	Primary and Vocational education	Primary and Vocational education	Primary and Vocational education	Primary and Vocational education	Primary and Vocational education	Primary and Vocational education
VAS before surgery	62	6.60	1.72	2.00	10.00	5.00	7.00	8.00
VAS on the day of discharge from hospital	62	1.90	1.70	0.00	7.00	1.00	2.00	3.00
VAS Difference	62	-4.69	2.22	-10.00	0.00	-6.00	-5.00	-4.00
	Z = 5.645	Z = 5.645	Z = 5.645	Z = 5.645	p < 0.0001	p < 0.0001	p < 0.0001	p < 0.0001
Secondary and Higher education	Secondary and Higher education	Secondary and Higher education	Secondary and Higher education	Secondary and Higher education	Secondary and Higher education	Secondary and Higher education	Secondary and Higher education	Secondary and Higher education
VAS before surgery	54	6.98	1.76	4.00	10.00	6.00	7.00	8.00
VAS on the day of discharge from hospital	54	1.80	1.34	0.00	5.00	1.00	2.00	2.00
VAS Difference	54	-5.19	2.11	-9.00	0.00	-7.00	-5.50	-4.00
	Z = 7.167	Z = 7.167	Z = 7.167	Z = 7.167	p = 0.0001	p = 0.0001	p = 0.0001	p = 0.0001

M – mean value, *SD* – standard deviation, *Q1* – 25th percentile, *Me* – median value, *Q3* – 75th percentile,

Min – minimum value, Max – maximum value, Z – Wilcoxon test statistic approximated by a normal distribution

The results obtained using the Mann-Whitney U test showed no statistically significant differences in pain levels before surgery and on the day of hospital discharge based on marital status (Z =

level, a similar decrease in pain levels of approximately 5 points was observed in patients on the day of hospital discharge. Both in patients with primary and vocational education and in those with secondary and higher education, a statistically significant decrease in pain levels was observed from the day of admission for surgery to the day of hospital discharge (p < 0.0001). Detailed data are presented in Table XI.

-0.432, p = 0.6658). This means that regardless of marital status, a similar decrease in pain levels of approximately 5 points was observed in patients on the day of hospital discharge. Both in patients in a relationship and in unmarried patients, a statistically significant decrease in pain levels was observed from the day of admission for surgery to the day of hospital discharge (p < 0.0001). Detailed data are presented in Table XII.

Table XII. The Impact of Pain on Marital Status

Marital Status	N	M	SD	Min	Max	Q1	Me	Q3
Married	Married	Married	Married	Married	Married	Married	Married	Married

VAS before surgery	86	6.58	1.73	2.00	10.00	5.00	7.00	8.00
VAS on the day of discharge from hospital	86	1.69	1.50	0.00	7.00	1.00	2.00	2.00
VAS Difference	86	-4.90	2.07	-10.00	0.00	-6.00	-5.00	-4.00
	Z = 5.645	Z = 5.645	Z = 5.645	Z = 5.645	p < 0.0001	p < 0.0001	p < 0.0001	p < 0.0001
Single	Single	Single	Single	Single	Single	Single	Single	Single
VAS before surgery	30	7.33	1.71	4.00	10.00	6.00	7.00	9.00
VAS on the day of discharge from hospital	30	2.33	1.56	0.00	6.00	1.00	2.00	3.00
VAS Difference	30	-5.00	2.49	-9.00	0.00	-7.00	-5.50	-3.00
	Z = 7.167	Z = 7.167	Z = 7.167	Z = 7.167	p = 0.0001	p = 0.0001	p = 0.0001	p = 0.0001

M – mean value, *SD* – standard deviation, *Q1* – 25th percentile, *Me* – median value, *Q3* – 75th percentile,

Min – minimum value, Max – maximum value, *Z* – Wilcoxon test statistic approximated by a normal distribution

The results obtained using the Kruskal-Wallis test showed no statistically significant differences in pain levels before surgery and on the day of hospital discharge based on occupational activity (*Z*

= 1.535, *p* = 0.4641). This means that regardless of occupational activity, a similar decrease in pain levels of approximately 5 points was observed in patients on the day of hospital discharge. Both in professionally active and inactive patients, a statistically significant decrease in pain levels was observed from the day of admission for surgery to the day of hospital discharge (*p* < 0.0001). Detailed data are presented in Table XIII.

Table XIII. Comparison of the Impact of Pain on Work Activity

Type of Employment	N	M	SD	Min	Max	Q1	Me	Q3
Manual laborer	Manual laborer	Manual laborer	Manual laborer	Manual laborer	Manual laborer	Manual laborer	Manual laborer	Manual laborer
VAS before surgery	22	6.86	1.67	4.00	10.00	5.00	7.00	8.00
VAS on the day of discharge from hospital	22	1.45	1.44	0.00	5.00	0.00	1.00	2.00
VAS Difference	22	-5.41	2.22	-10.00	-2.00	-7.00	-5.00	-4.00
	Z = 7.167	Z = 7.167	Z = 7.167	Z = 7.167	p < 0.0001	p < 0.0001	p < 0.0001	p < 0.0001
White-collar worker	White-collar worker	White-collar worker	White-collar worker	White-collar worker	White-collar worker	White-collar worker	White-collar worker	White-collar worker
VAS before surgery	17	6.65	1.17	4.00	9.00	6.00	7.00	7.00
VAS on the day of discharge from hospital	17	1.47	1.37	0.00	5.00	1.00	1.00	2.00
VAS Difference	17	-5.18	2.10	-8.00	0.00	-7.00	-5.00	-5.00
	Z = 3.823	Z = 3.823	Z = 3.823	Z = 3.823	p = 0.0001	p = 0.0001	p = 0.0001	p = 0.0001

Retiree / Disability pensioner	Retiree / Disability pensioner	Retiree / Disability pensioner	Retiree / Disability pensioner	Retiree / Disability pensioner	Retiree / Disability pensioner	Retiree / Disability pensioner	Retiree / Disability pensioner	Retiree / Disability pensioner
VAS before surgery	77	6.78	1.88	2.00	10.00	5.00	7.00	8.00
VAS on the day of discharge from hospital	77	2.05	1.57	0.00	7.00	1.00	2.00	3.00
VAS Difference	77	-4.73	2.18	-9.00	0.00	-6.00	-5.00	-3.00
	Z = 3.180	Z = 3.180	Z = 3.180	Z = 3.180	p = 0.0015	p = 0.0015	p = 0.0015	p = 0.0015

M – mean value, *SD* – standard deviation, *Q1* – 25th percentile, *Me* – median value, *Q3* – 75th percentile,

Min – minimum value, Max – maximum value, *Z* – Wilcoxon test statistic approximated by a normal distribution

Understanding Patient Awareness Regarding Living with a Hip Replacement

In 80.2% of patients, no complications occurred following hip replacement surgery, whereas 10.3% of patients experienced postoperative complications that required surgical reintervention and a prolonged hospital stay, and 9.5% of patients experienced certain postoperative complications that required additional treatment and intensive rehabilitation. The results obtained using Fisher's

exact test showed no statistically significant relationship between postoperative complications and the reason for hip replacement ($p = 0.9305$). This indicates that the reason for hip replacement does not affect the occurrence of postoperative complications in patients. However, it can be noted that complications were most frequent among patients diagnosed with rheumatoid arthritis (26.3%). The results presented below demonstrated a statistically significant relationship between the occurrence of complications following hip replacement and the presence of respiratory diseases in patients. Among patients with this type of disease, 87.5% experienced complications following hip replacement. Detailed data are presented in Table XIV.

Table XIV. Comparison of sociodemographic data with the incidence of complications following hip replacement

Demographic Profile		Complications Following Endoprosthesis Implantation				χ^2	<i>p</i>
Demographic Profile		Yes		No		χ^2	<i>p</i>
Demographic Profile		<i>n</i>	%	<i>n</i>	%	χ^2	<i>p</i>
Sex	Female	7	15.6	38	84.4	0.462	0.49662
Sex	Male	16	22.5	55	77.5	0.462	0.49662
Age	Below 65	7	14.9	40	85.1	0.744	0.38822
Age	Over 65	16	23.2	53	76.8	0.744	0.38822
Place of residence	Rural area	16	24.6	49	75.4	1.502	0.22042
Place of residence	Town	7	13.7	44	86.3	1.502	0.22042
Education	Primary & Vocational	13	21.0	49	79.0	0.109	0.74141
Education	Secondary & Higher	10	18.5	44	81.5	0.109	0.74141
Marital status	Married	17	19.8	69	80.2	0.057	0.81162
Marital status	Single	6	20.0	24	80.0	0.057	0.81162
Employment status	Manual worker	2	9.1	20	90.9	2.256	0.32361
Employment status	Non-manual worker	3	17.6	14	82.4	2.256	0.32361
Employment status	Retiree / Disability	18	23.4	59	76.6	2.256	0.32361

	pensioner						
Comorbidities	None	0.0	0.0	12	100.0	2.065	0.15072
Comorbidities	Yes, including:	23	22.1	81	77.9	2.065	0.15072
Comorbidities	Cardiovascular diseases	11	18.3	49	81.7	1.178	0.27781
Comorbidities	Diabetes	4	16.7	20	83.3	0.205	0.65062
Comorbidities	Respiratory diseases	7	87.5	1	12.5	-	0.00083
Comorbidities	Obesity	5	17.9	23	82.1	0.136	0.71232
Comorbidities	Rheumatoid arthritis (RA)	7	21.9	25	78.1	0.047	0.82852
Comorbidities	Lyme disease	2	33.3	4	66.7	-	0.61163
Comorbidities	Other	3	15.8	16	84.2	0.184	0.66782

1the chi-square test , 2Yates' correction for the chi-square test, 3Fisher's exact test

The study sought to gather patients' opinions on the importance of early postoperative rehabilitation following hip replacement surgery.

In response to "Question 22," regarding whether postoperative rehabilitation was necessary for restoring proper hip joint function, the vast majority of patients (97.4%) felt that postoperative rehabilitation was of crucial importance in recovering hip joint function. Only two individuals (1.7%) stated that rehabilitation did not help them and actually worsened their health status. Meanwhile, one respondent (0.9%) stated that rehabilitation was unnecessary and saw no need for it.

Regarding "Question 23," which addressed the evaluation of early postoperative rehabilitation, 92 individuals (79.3%) rated it very favorably, emphasizing that rehabilitation following the procedure was tailored to their individual needs. Twenty-one respondents (18.1%) considered postoperative rehabilitation insufficient, pointing to certain shortcomings in the physical rehabilitation process. Three respondents (2.6%) noted limited access to medical equipment or difficulties in performing regular exercises under specialist supervision. None of the respondents evaluated the rehabilitation completely negatively.

"Question 24" addressed knowledge regarding the essence of early postoperative rehabilitation after hip replacement surgery. Nearly all respondents, as many as 104 patients (89.6%), provided a correct answer to the question. A significantly smaller

proportion of patients (9 individuals, representing 7.8%) believed that rehabilitation should consist of a rapid return to intensive exercise without proper preparation. Only 3 individuals (2.6%) felt that the approach taken by medical staff—primarily physical therapists—should be identical for every patient regardless of their health status. None of the respondents (0%) selected the response suggesting the avoidance of physical exercise to refrain from straining the new joint. "Question 25" concerned the types of rehabilitation exercises included in the rehabilitation program. Nearly all patients, as many as 105 individuals (90.5%), selected gait training exercises, e.g., using crutches or a walker. In second place were active motion exercises, e.g., leg raises, knee flexion, and extension, selected by 97 respondents (83.6%). In third place were antithrombotic exercises, selected by 91 respondents (78.4%). Breathing exercises were chosen least frequently, with 40 individuals (34.5%) selecting this option.

In response to "Question 26," regarding the use of orthopedic equipment (crutches, walker) during ambulation, all patients unequivocally reported that they use such devices. None of the respondents indicated that they do not use crutches or a walker (0%). Regarding "Question 27," concerning post-operative instructions following hip replacement, patients reported receiving the following recommendations:

102 individuals (87.9%) received a rehabilitation exercise program

88 respondents (75.9%) were instructed on antithrombotic prophylaxis

87 individuals (75.0%) were briefed on surgical wound care

71 patients (61.2%) were instructed on how to properly perform activities of daily living (such as walking, standing up, or negotiating stairs); 69 individuals (59.5%) received guidance on gradual

activity progression; and 43 individuals (37.1%) received recommendations to avoid heavy lifting

59 respondents (50.9%) received reminders regarding regular follow-up appointments with a medical specialist. Detailed data are presented in Table XV.

Table XV. Patients' opinions on early postoperative rehabilitation

		Size (n)	Percentage (%)
		Size (n)	Percentage (%)
		Size (n)	Percentage (%)
In your opinion, was post-surgery rehabilitation necessary to restore normal hip joint function?	Yes, postoperative rehabilitation was crucial in restoring normal hip joint function.	113	97.4
In your opinion, was post-surgery rehabilitation necessary to restore normal hip joint function?	No, postoperative rehabilitation didn't help me; in fact, it made my health worse.	2	1.7
In your opinion, was post-surgery rehabilitation necessary to restore normal hip joint function?	It is an unnecessary element in the recovery process.	1	0.9
How would you rate the course of early postoperative rehabilitation?	Very good; the rehabilitation following hip replacement was tailored to the patient's individual needs.	92	79.3
How would you rate the course of early postoperative rehabilitation?	I was not sufficiently trained on the rehabilitation process.	21	18.1
How would you rate the course of early postoperative rehabilitation?	Not very well, due to limited access to medical equipment	3	2.6
How would you rate the course of early postoperative rehabilitation?	Bad—no opportunity to exercise regularly with a physical therapist.	0	0.0
What does early postoperative rehabilitation after hip replacement surgery involve?	Early postoperative rehabilitation involves following an exercise program designed to improve muscle strength, gradually increase hip joint mobility, and teach proper walking technique.	104	89.6
What does early postoperative rehabilitation after hip replacement surgery involve?	Early postoperative rehabilitation involves a rapid return to intense exercise without proper preparation.	9	7.8
What does early postoperative rehabilitation after hip replacement surgery involve?	Early postoperative rehabilitation involves treating every patient the same, regardless of their health condition.	3	2.6
What does early postoperative rehabilitation after hip replacement surgery involve?	Early postoperative rehabilitation involves avoiding physical exercise so as not to strain the new joint.	0	0.0
What types of exercises were included in the rehabilitation program?	Breathing exercises, such as deep inhalations and exhalations.	40	34.5
What types of exercises were included in the rehabilitation program?	Anticoagulant exercises, such as rotating the feet and flexing and extending the foot.	91	78.4
What types of exercises were included in the rehabilitation program?	Isometric exercises, such as tensing the thigh muscles for a few seconds and then relaxing them.	78	67.2

What types of exercises were included in the rehabilitation program?	Walking exercises, such as walking with a walker or cane.	105	90.5
What types of exercises were included in the rehabilitation program?	Passive range-of-motion exercises performed using an Artromot-type CPM (Continuous Passive Motion) machine.	0	0.0
What types of exercises were included in the rehabilitation program?	Active physical exercises, such as lifting the leg, bending and straightening the knee.	97	83.6
Do you use orthopedic equipment when getting around?	Yes, I use assistive devices (crutches, a walker).	116	100.0
Do you use orthopedic equipment when getting around?	No, I don't use it.	0	0.0
Do you use orthopedic equipment when getting around?	I don't need orthopedic aids.	0	0.0
What instructions did you receive regarding what to do after your hip replacement surgery?	Tips for Caring for a Postoperative Wound.	87	75.0
What instructions did you receive regarding what to do after your hip replacement surgery?	Rehabilitation Exercise Program.	102	87.9
What instructions did you receive regarding what to do after your hip replacement surgery?	Reminder to Schedule Regular Follow-Up Visits with Your Orthopedic Doctor.	59	50.9
What instructions did you receive regarding what to do after your hip replacement surgery?	Recommendations for Thromboprophylaxis.	88	75.9
What instructions did you receive regarding what to do after your hip replacement surgery?	Recommendations for performing daily activities, such as walking, standing up, or going down stairs.	71	61.2
What instructions did you receive regarding what to do after your hip replacement surgery?	Avoiding Lifting Heavy Objects.	43	37.1
What instructions did you receive regarding what to do after your hip replacement surgery?	Gradually increasing physical activity as recommended by a physical therapist.	69	59.5
What instructions did you receive regarding what to do after your hip replacement surgery?	I did not receive any recommendations.	0	0.0

Understanding the Factors That Influence Satisfaction Levels

Level of Education Received After Hip Replacement Surgery.

For further analysis, the single patient who rated the level of education as low was excluded. The results presented above demonstrated a statistically significant relationship between the level of education received after surgery and the place of residence. The majority of patients living in urban areas (84%) rated the level of post-operative

education as very high, whereas among patients living in rural areas, 32.3% rated the level of education lower, at a moderate level. At a significance level of $p = 0.1$, it can be stated that patients under 65 years of age rated the level of post-operative education lower than patients over 65 years of age. Among patients over 65 years of age, 80.9% rated the level of education as very high, whereas 34% of patients under 65 years of age rated it at a moderate level. Detailed data are presented in Table XVI.

Table XVI. Relationship Between Patients' Level of Education After Surgery and Their Place of Residence

Demographic Profile		Level of education attained after the procedure (N=115)				χ^2	p
Demographic Profile		Very high		Average		χ^2	p
Demographic Profile		n	%	n	%	χ^2	p
Sex	Female	34	77.3	10	22.7	0.234	0.62831
Sex	Male	52	73.2	19	26.8	0.234	0.62831

Age	Below 65	31	66.0	16	34.0	3.283	0.07001
Age	Over 65	55	80.9	13	19.1	3.283	0.07001
Place of residence	Rural area	44	67.7	21	32.3	0.398	0.04591
Place of residence	Town	42	84.0	8	16.0	0.398	0.04591
Education	Primary & Vocational	46	74.2	16	25.8	0.025	0.87501
Education	Secondary & Higher	40	75.5	13	24.5	0.025	0.87501
Marital status	Married	66	76.7	20	23.3	0.344	0.55722
Marital status	Single	20	69.0	9	31.0	0.344	0.55722
Employment status	Manual worker	13	59.1	9	40.9	0.599	0.10031
Employment status	Non-manual worker	15	88.2	2	11.8	0.599	0.10031
Employment status	Retiree / Disability pensioner	58	76.3	18	23.7	0.599	0.10031

1the chi-square test , 2Yates' correction for the chi-square test.

The results presented below demonstrated a statistically significant relationship between the level of education received after surgery and health status, quality of life, and psychological well-being

following hip replacement surgery. Among patients who received a very high level of education, 89.5% reported that their health status significantly improved, while the vast majority of patients (over 90%) also indicated that their quality of life and psychological well-being significantly improved. Detailed data are presented in Table XVII.

Table XVII. The Relationship Between the Level of Education Received After Surgery and Health Status, Quality of Life, and Mental Well-Being

		Level of education attained after the procedure (N=115)				χ^2	p
		Very high		Average		χ^2	p
		n	%	n	%	χ^2	p
Health Status	has improved significantly	77	89.5	11	37.9	29.337	<0.00012
Health Status	improved slightly / remained the same / worsened	9	10.5	18	62.1	29.337	<0.00012
Quality of Life	has definitely improved	84	97.7	14	48.3	38.180	<0.00012
Quality of Life	remained the same/got worse	2	2.3	15	51.7	38.180	<0.00012
Mental Well-Being	has definitely improved	81	94.2	17	58.6	19.044	<0.00012
Mental Well-Being	remained the same/got worse	5	5.8	12	41.4	19.044	<0.00012

2Yates' correction for the chi-square test

The results obtained do not show a statistically significant relationship between the factors

influencing satisfaction levels following hip arthroplasty and gender. Detailed data are presented in Table XVIII.

Table XVIII. Factors affecting satisfaction levels by sex

		Sex				χ^2	p
		Female		Male		χ^2	p
		n	%	n	%	χ^2	p

Reduction or complete resolution of pain	29	38.2	47	61.8	0.037	0.84661
Increasing mobility and improving the ability to move around	27	60.0	43	60.6	0.004	0.95181
Effective and consistent rehabilitation	19	42.2	31	43.7	0.023	0.87871
Professional medical care	34	75.6	45	63.4	1.879	0.17041
Comprehensive and Easy-to-Understand Patient Education	28	62.2	32	45.1	3.245	0.07161

1the chi-square test

The results presented above demonstrated a statistically significant association between comprehensive and understandable patient education and age. A higher proportion of patients

aged over 65 than those under 65 indicated that their satisfaction level following hip arthroplasty was influenced by comprehensive and understandable patient education. Detailed data are presented in Table XIX.

Table XIX. Factors influencing satisfaction levels and patient education by age groups

	Age				χ^2	p
	Below 65		Over 65		χ^2	p
	n	%	n	%	χ^2	p
Reduction or complete resolution of pain	30	63.8	46	66.7	0.099	0.75231
Increasing mobility and improving the ability to move around	30	63.8	40	58.0	0.401	0.52661
Effective and consistent rehabilitation	19	40.4	31	44.9	0.231	0.63071
Professional medical care	31	66.0	48	69.6	0.167	0.68231
Comprehensive and Easy-to-Understand Patient Education	19	40.4	41	59.4	4.039	0.04441

1the chi-square test

The results presented above demonstrated a statistically significant relationship between professional medical care and place of residence. A

higher proportion of patients living in urban areas than in rural areas (80.4%) indicated that professional medical care influenced their level of satisfaction following hip replacement surgery. Detailed data are presented in Table XX.

Table XX. Factors influencing satisfaction levels and medical care by place of residence

	Place of Residence				χ^2	p
	Rural area		Town / City		χ^2	p
	n	%	n	%	χ^2	p
Reduction or complete resolution of pain	43	66.2	33	64.7	0.026	0.87061

Increasing mobility and improving the ability to move around	36	55.4	34	66.7	1.520	0.21761
Effective and consistent rehabilitation	26	40.0	24	47.1	0.581	0.44611
Professional medical care	38	58.5	41	80.4	6.327	0.01191
Comprehensive and Easy-to-Understand Patient Education	33	50.8	27	52.9	0.054	0.81631

1the chi-square test

The results presented above showed no statistically significant relationship between factors influencing satisfaction levels after hip replacement and education level. Detailed data are presented in Table XXI.

Table XXI. Factors influencing satisfaction levels by education level

Education					χ^2	p
Primary & Vocational		Secondary & Higher			χ^2	p
n	%	n	%		χ^2	p
Reduction or complete resolution of pain	38	61.3	38	70.4	1.053	0.30471
Increasing mobility and improving the ability to move around	36	58.1	34	63.0	0.289	0.59061
Effective and consistent rehabilitation	26	41.9	24	44.4	0.074	0.78551
Professional medical care	44	71.0	35	64.8	0.503	0.47821
Comprehensive and Easy-to-Understand Patient Education	31	50.0	29	53.7	0.158	0.69051

1the chi-square test

discomfort associated with the implanted prosthesis. Therefore, studies conducted in this field help identify potential shortcomings, assess the quality of medical care provided, and better plan the treatment process and early postoperative rehabilitation [1–7].

4. Discussion

Following hip replacement surgery, patient satisfaction with the procedure is an important component of evaluating treatment effectiveness. This evaluation encompasses the patient's subjective opinion regarding the entire treatment process—from hospital admission, through the surgery itself, to postoperative rehabilitation. Following surgery, an improved quality of life entails less pain and greater comfort during activities of daily living. Although overall satisfaction with surgery is relatively high, some patients may experience difficulties in fully regaining mobility or may feel a degree of

In the present study, patient satisfaction following hip replacement was evaluated, with particular emphasis on factors influencing patient satisfaction with surgical outcomes and treatment results. Key factors include: improved hip joint function, enhanced patient comfort, absence of postoperative complications, and fulfillment of patient expectations regarding surgical outcomes. The study included 116 patients with a hip replacement

in the trauma and orthopedic surgery department. Based on the present study's findings, the majority of patients (84.5%) reported that their quality of life significantly improved after surgery, 12.1% reported no change in quality of life, and 4 patients (3.4%) experienced a worsening of their quality of life. Among patients with rheumatoid arthritis, 94.7% stated that their quality of life significantly improved after surgery. A study conducted by Stanek et al. evaluated a group of 120 individuals following total hip replacement. The study population consisted of 76 women (63.3%) and 44 men (36.7%) attending the specialist Outpatient Rehabilitation Clinic of the Karłowice Medical Center "KAR-MED." The study was conducted between February and December 2013 in Wrocław. In the study by Stanek et al., patients expressed a positive change in quality of life following surgery. The vast majority of respondents (76.7%) rated their quality of life higher compared to the preoperative period, while only 5% rated it worse [3]. The study conducted by Bodys-Cupak et al. was carried out in a group of 100 patients in the Trauma Surgery Department on the day prior to hip replacement surgery and in the Hospital Outpatient Orthopedic Clinic 6 months postoperatively. The study took place at the Krakow Center for Rehabilitation in Kraków from May 2012 to June 2013. Analyzing the data collected by Bodys-Cupak et al., 38 respondents (38%) rated their quality of life as moderate prior to surgery, 2 individuals (2%) were satisfied with life, while as many as 17 respondents (17%) declared dissatisfaction [4]. Following surgery, respondents' quality of life changed significantly. Eighty-three respondents (83%) were satisfied with their quality of life, while the remaining 17 respondents (17%) indicated that their quality of life had increased [4].

In the present study, it was demonstrated that the majority of patients (84.5%) reported that their psychological well-being improved following surgery. Patients with osteoarthritis, rheumatoid arthritis, or hip fracture/dislocation indicated a clear improvement in psychological status

postoperatively compared to the preoperative period. In the study by Stanek et al., it was noted that in 73 patients (60.8%), the disease hindered social activity prior to surgery [3]. In the study conducted by Bodys-Cupak et al., respondents' level of disease acceptance increased significantly [4]. The number of patients with low disease acceptance decreased from 36 to 4 individuals, while the number with high disease acceptance increased to 19 patients. The study conducted by Dziekońska et al. included 70 patients following hip replacement between 1999 and 2004. The study was carried out in the Medical Rehabilitation Ward of the Voivodeship Hospital in Białystok. According to Dziekońska et al., 32 respondents (46%) still felt apprehension about their future [12]. Thirty respondents (43%) declared acceptance of their situation and peace of mind, 4 individuals (6%) felt passivity and resignation, and 4 patients (6%) felt lonely. Eight women (16%) and 7 men (35%) reported a fear of prosthesis dislocation [12].

In the present study, respondents were asked about their health status (comfort) compared to their preoperative status. Patients reported that their health status had significantly improved (75.9%), 21.6% experienced a slight improvement, in 2 patients it remained unchanged, and in 1 patient it worsened. Similar results were reported in a study by Dziekońska et al., which showed that 12 respondents (17%) rated their health status as very good, and 24 individuals (34%) as good. The highest proportion of respondents, namely 27 individuals (39%), rated their health status as satisfactory, while 7 individuals (10%) rated it as unsatisfactory [12]. From the obtained study results, it can be concluded that hip replacement surgery positively affects quality of life, psychological well-being, and health status in most cases. Comparing the present study with the study by Stanek et al., it can be unequivocally stated that mobility improved following hip replacement surgery in both study groups [3]. In the present study, the majority of patients (74.1%) reported that their hip joint functioned significantly better, 17.2% rated hip joint

function as slightly better, in 5 patients (4.3%) hip joint function remained unchanged, and in 5 patients (4.3%) hip joint function worsened. Among men, 81.7% experienced a significant improvement in hip joint function, whereas among women, 37.8% reported that function slightly improved, remained unchanged, or even worsened. At a significance level of $p = 0.1$, a significant improvement in hip joint function was observed in 91.7% of patients with diabetes. In contrast, in the study by Stanek et al., female respondents predominated, accounting for 76 women (63.3%) and 44 men (36.7%) [3]. The most common comorbidities were arterial hypertension, affecting 60 individuals (50%), and musculoskeletal disorders, which were present in 50 individuals (41.7%) [3]. In the study conducted by Stanek et al., 56 respondents (46.7%) rated their preoperative physical fitness negatively, while 24 respondents (20.0%) were neutral. This evaluation was influenced by painful symptoms, such as hip, buttock, and thigh pain present in 83 patients (69.2%), as well as impaired walking ability and limping in 84 respondents (69.2%) [3]. The study by Stanek et al. showed that prior to surgery, patients experienced the greatest difficulty with climbing stairs (73 patients, 60.8%) and bending or kneeling (68 patients, 56.7%) [3]. When asked about their physical fitness following surgery, 74 respondents (61.7%) replied that it had improved, while 20 patients (16.7%) stated that they were fully fit [3]. In the study by Stanek et al., the vast majority—99 patients (82.5%)—believed that they became more independent following surgery [3].

The study presented by Bodys-Cupak et al. demonstrated a relationship between self-rated quality of life and the respondents' level of independence. The study revealed that patients with higher quality of life levels exhibited higher self-evaluations of their physical fitness [4]. Postoperatively, the respondents' body weight decreased significantly, which may have positively influenced their physical activity [4]. In the research study by Bodys-Cupak et al., patients' mobility was evaluated using the Barthel Index. Respondents

were divided into three groups based on their psychomotor status ("mild," "moderate-to-severe," and "severe") [4]. Based on the data analysis, a significant improvement in physical fitness after total hip replacement can be observed [4]. The proportion of patients in "moderate-to-severe" status decreased from 31 patients (31%) to 7 patients (7%), while the proportion in "mild" status increased from 68 hospitalized patients (68%) to 92 hospitalized patients (92%) [4]. Only one patient (1%) remained in "severe" status both before and after surgery.

A study evaluating the severity of pain before and after hip arthroplasty was conducted by Bojarczuk et al. The study included 40 patients (24 women and 16 men) from the Department of Orthopedics and Rehabilitation at the 1st Military Clinical Hospital in Lublin. In the study by Bojarczuk et al., a correlation was observed between pain levels and hip joint mobility [13]. Preoperatively, 3 patients (7.5%) showed a slight effect of pain on restricting hip joint mobility [13]. Fourteen respondents (35%) considered that pain significantly restricted their range of motion, whereas total restriction of movement due to pain occurred in as many as 23 individuals (57.5%) [13]. In the study by Bojarczuk et al., pain levels postoperatively had a lesser impact on restricting hip joint movement [13]. Thirty-two patients (80%) reported no movement restrictions caused by pain, and only 8 patients (20%) reported a slight effect of pain on mobility restriction in the hip joint [13].

Contrasting results were observed in the study described by Dziekońska et al., in which patients reported issues associated with the implanted prosthesis [12]. Changes in the appearance of the operated limb and limping were reported by 30 women (62%) and 16 men (75%) [12]. Furthermore, 31 women (39%) and 34 men (43%) reported worsening joint mobility restriction, infection, impaired wound healing, and venous thromboembolic disease [12]. Differences in functional evaluation may stem from health status,

age, comorbidities, and the overall physical condition of the patient.

In the present study, all respondents participated in early postoperative rehabilitation. The majority of patients correctly answered questions concerning postoperative rehabilitation. A total of 113 patients stated that rehabilitation was essential for regaining mobility (97.4%). Ninety-two individuals (79.3%) rated the course of exercises with a physical therapist as very good. One hundred four hospitalized patients (89.6%) noted a significant improvement in muscle strength and a gradual increase in joint range of motion. Following total hip replacement, an improvement in gait quality using two forearm crutches was evident in 105 patients (90.5%). According to the study by Jadwiga Stanek et al., 92 patients experienced better gait quality (76.7%) [3]. Postoperatively, the proportion of patients utilizing rehabilitation increased from 57.5% (69 individuals) to 95% (114 individuals) [3]. Gait analysis following hip replacement was discussed in a study conducted by Konrad Kopeć et al., which involved 16 patients evaluated before and after surgery. A comparison of patients' gait quality was evaluated prior to surgery and six months postoperatively. The patients were treated at the Department and Clinic of Orthopedics and Traumatology of the Musculoskeletal System in Katowice. The study conducted by Kopeć et al. demonstrated gait improvement in the operated limb following replacement surgery compared to the preoperative state [14]. Study results suggest that the side affected by osteoarthritis (stance phase) was significantly shorter, accounting for 63.8% of the gait cycle compared to 69.4% of the gait cycle on the unaffected side [14]. Postoperatively, on the unaffected side, the swing phase lengthened from 30.6% to 35.1% of the gait cycle [49]. Following surgery, increases were also observed in single and double step length, cadence, average locomotion speed, and limb swing velocity during the swing phase [14].

The Visual Analog Scale (VAS) for pain presented in the present study was analyzed in relation to

variables such as age, occupational status, education level, and marital status. Considering sociodemographic variables, a similar reduction in pain level of approximately 5 points was observed on the day of hospital discharge. The study results obtained by Jadwiga Stanek et al. confirm these findings regarding pain reduction [3]. Preoperatively, 57 patients (47.5%) reported severe pain, whereas 30 patients (25%) described their pain as moderate [3]. Following joint replacement, 89 respondents (74.2%) experienced moderate pain, while 20 patients (16.7%) experienced no pain at all [3]. The proportion of patients experiencing very severe pain decreased from 19.2% (23 patients) to 0.8% (1 patient), and those experiencing severe pain decreased from 47.5% (57 patients) to 8.3% (10 patients) [3]. The percentage of respondents experiencing no pain doubled (from 8.3% to 16.7%) [3]. The study conducted by Anna Kieszowska-Grudny et al. was divided into two stages. In Stage I, 55 individuals participated (31 women, 24 men), whereas in Stage II, 44 respondents took part (25 women, 16 men). The study was conducted among elective patients in a trauma and orthopedic surgery department. Medical and psychological parameters were measured twice: preoperatively and four months postoperatively following total hip arthroplasty. The results of the study by Kieszowska-Grudny et al. indicate that surgical intervention has a positive effect on pain reduction [5]. Based on their findings, it is worth noting that among 41 participants, 29 (70.7%) discontinued analgesic medication, while 4 individuals (9.7%) reported a significant reduction in medication usage [5]. Analyzing the results of the study conducted by Katarzyna Bojarczuk et al., it can be unequivocally stated that postoperative pain decreased significantly [13]. Preoperatively, all 40 respondents (100%) experienced hip joint pain; however, following surgery and postoperative rehabilitation, perceived pain decreased, remaining present in only 13 patients (32.5%) [13]. More than half of the respondents—28 individuals (70%)—described hip pain lasting longer than one year [13]. Preoperatively, 27 patients (67.5%) described pain

as continuous, 9 patients (22.5%) as exertional, and the remaining 4 individuals (10%) as nocturnal pain. Postoperatively, nocturnal pain occurred in only 2 individuals (5%), exertional pain in 4 individuals (10%), and sporadic pain in 7 individuals (17.5%). Among them, 27 respondents (67.5%) experienced no pain discomfort. Prior to surgical intervention, pain affected 36 individuals (90%) while negotiating stairs, whereas after surgery, only 8 individuals experienced pain during this activity (20%) [13].

In the present study, a greater reduction in pain perception on the day of hospital discharge was observed among women than among men. A reduction in pain symptoms from hospital admission to discharge was observed in both patients under 65 years of age and those over 65 years of age. Regarding education level and marital status, a pain reduction of approximately 5 points was observed on the day of discharge.

Another important aspect is understanding the factors that influence patient satisfaction. In the present study, patients were asked about determinants of satisfaction. A higher proportion of patients over 65 years of age indicated that comprehensive and understandable patient education influenced their level of satisfaction. Conversely, a higher proportion of patients living in urban areas (80.4%) reported that professional medical care influenced their positive hospital stay experience.

The study published by Magdalena Delura et al. included 60 preoperative patients hospitalized across four surgical wards. The study site was the Specialist Provincial Hospital in Ciechanów, conducted between January and April 2013. Statistical analysis conducted by Delura et al. demonstrated minimal relationships between place of residence and satisfaction with nursing care [6]. Satisfaction with nursing care was higher among individuals living in rural areas (100%, 26 respondents) compared to those living in urban areas (97.1%, 33 respondents) [6]. In the study by Delura et al., patients' marital status was also

considered. Patient satisfaction with preoperative care was found to be higher among married individuals (34 individuals, 100%) than among widowed individuals (18 individuals, 94.7%) [6]. Consistent findings were obtained in the present study. Results in both groups may stem from greater emotional and physical support provided by a partner.

The final factor considered in that study was sex. Patient satisfaction with nursing care was slightly higher among the 33 male respondents (100%) than among the 26 female respondents (96.3%) [6]. Analysis of the data collected in the present study indicates that sex does not determine subjective evaluations of treatment outcomes. Both women and men rated their postoperative satisfaction at a high level.

In the study by Mirosława Dziekońska et al., patients reported that medical personnel were the primary source of support immediately after surgery. Thirty-four respondents cited physicians (30%), and 28 respondents (25%) cited nurses [12]. Fifty-two individuals (46%) indicated receiving emotional support from their families. Following surgery, 36 patients (51%) expected assistance from medical staff in relieving or eliminating pain, 21 hospitalized patients (30%) expected help with changing position in bed, and 13 individuals (19%) expected psychological support [12]. Patient satisfaction with medical services provided is a critical component influencing the operation of healthcare institutions.

5. Conclusions

Overall Quality of Life and Well-Being: Patient quality of life significantly improves following total hip arthroplasty in both physical and psychological domains, which is reflected in an enhancement of overall postoperative well-being.

Health Status and Independence: Total hip replacement positively impacts overall health status and living comfort, contributing to increased patient independence, which ultimately translates into improved daily functioning.

Restoration of Mobility: Patient mobility improves markedly following surgery. The removal of diseased hip joint structures and their replacement with a prosthetic joint allows for the restoration of a normal range of motion.

Early Rehabilitation: The early initiation of postoperative rehabilitation following hip arthroplasty is essential for treatment efficacy, as it enables faster patient mobilization and reduces the risk of postoperative complications.

Pain Reduction: In the study group, a noticeable reduction in pain intensity following hip replacement, evaluated using the Visual Analog Scale (VAS), demonstrates the effectiveness of surgical intervention in alleviating chronic pain.

Patient Education and Satisfaction: Patient education prior to and following hip replacement surgery plays a crucial role in the recovery process; however, satisfaction levels with treatment depend on individual patient expectations.

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