



## ORIGINAL PAPER

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# Assessment of quality of life in outpatients with osteoarthritis

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### ABSTRACT

**Introduction.** Osteoarthritis is a chronic and one of the most often appearing causes of the afflictions on the part of the motor organ. A chronic condition has a negative impact on all areas of human functioning. Its occurrence, but mainly the severity of its symptoms results in significant reduction in quality of life, which is why it is important to assess the effects of the treatment process and rehabilitation.

**Aim.** Assessment of quality of life of patients with osteoarthritis as regards variables such as age, gender, duration of the disease.

**Material and Methods.** The study includes a group of 40 patients diagnosed with osteoarthritis treated in the Health Centre of General Physicians in Mieścisko, Poland in the period from October 2014 to January 2015. The tool which was used to investigate the quality of life of people with osteoarthritis was the Polish version of the scale Arthritis Impact Measurement Scales 2 (AIMS-2).

**Results.** The lowest level of the quality of life was indicated by the subjects in the areas of: arthritis pain ( $6.54 \pm 1.96$ ), walking and bending ( $6.51 \pm 2.81$ ) and mobility ( $7.21 \pm 2.06$ ). The highest level of quality of life occurred in the areas of: support from family and friends ( $1.56 \pm 2.16$ ), household tasks ( $2.47 \pm 3.16$ ), self-care ( $2.50 \pm 2.92$ ), arm function ( $2.58 \pm 2.72$ ), hand and finger function ( $2.71 \pm 3.03$ ), work ( $2.67 \pm 2.38$ ) and mood ( $3.14 \pm 1.56$ ). The youngest participants obtained a result of higher level of the quality of life, which was subject to deteriorate with age.

**Conclusions.** Patients with osteoarthritis require a permanent, comprehensive, multifaceted and multidirectional proceedings in order to improve comfort and quality of life.

**Keywords:** quality of life, osteoarthritis, outpatient treatment, Arthritis Impact Measurement Scales-2.

## Introduction

Osteoarthritis is a chronic and one of the most often appearing causes of the afflictions on the part of the motor organ [1, 2]. For the first time this disease was considered as a separate disease entity in 1907. For many years osteoarthritis was regarded as a result of the natural ageing process. Currently it is known that numerous genetic, biochemical, mechanical and of inflammatory nature factors correspond to the formation of degenerative changes and their advancement [3].

In particular, this medical condition is regarding elderly people. It is manifested in between 40 and 60

years old and its frequency is increasing with age. More severe forms of the disease occur in women [3]. According to E.J. Kucharz [2], this disease mostly affects knee joints, hip joints and hands. It is estimated that 67% of women and 55% of men over age 55 have been diagnosed with osteoarthritis. For people over 80 years old this percentage increases significantly. These data show that osteoarthritis is the overriding problem in the ageing societies of Europe.

A chronic condition has a negative impact on all areas of human functioning. Its occurrence, but main-

ly the severity of its symptoms results in significant reduction in quality of life, which is why it is important to assess the effects of the treatment process and rehabilitation. This should aim for the improvement of well-being and functioning of a patient within the framework of the basic activities of daily life, with a particular effect on "life competencies" and quality of life [4].

## Aim

The aim of the study was to assess the quality of life of patients with osteoarthritis on the basis of the Polish version of the scale Arthritis Impact Measurement Scales-2 (AIMS-2).

In the study the following research questions were asked:

1. What is the quality of life of patients with osteoarthritis in respective areas of AIMS-2 scale?
2. Does the quality of life in respective areas of AIMS-2 scale depend on the gender of respondents?
3. Does the quality of life in respective areas of AIMS-2 scale depend on the age of the respondents?
4. Does the quality of life in respective areas of AIMS-2 scale depend on the duration of the disease?

## Material and Methods

The study was conducted among the patients of Health Centre of General Physicians in Mieścisko, Poland in the period from October 2014 to January 2015. The study includes a group of 40 patients diagnosed with osteoarthritis treated in this clinic. A diagnosis of osteoarthritis has been established on the basis of the radiological criteria of the disease. Most of the patients were also under the medical supervision of a rheumatologist. The nature of the research was voluntary. Participants were also informed that the survey is anonymous and free of charge.

The tool which was used to investigate the quality of life of people with osteoarthritis was the Polish version of the scale Arthritis Impact Measurement Scales 2 (AIMS-2). It was developed by the Center for Rheumatic Diseases in Boston. The scale consists of two parts. The first part consists of 57 questions that help examine the quality of life in 12 the following areas: mobility, walking and bending, hand and finger function, arm function, arthritis pain, the ability to self-care, household task, work, social activity, support from family and friends, the level of emotional tension and mood. The areas can be divided into the

physical, social interaction, symptom, role and affect subscales [5–7].

The range of scores is from 0 (good functioning and good quality of life) to 10 (poor functioning and poor quality of life). Each of the above-mentioned scales takes into account four or five positions with five alternative answers: from "always" to "never" and from "every day" to "not at all" [6]. In the second part questions for determining the level of contentment and life satisfaction of patients and their individual assessment of the impact of the disease on the functioning in separate areas are included. The latter part refers to questions indicating the areas of quality of life, in which patients wish to see improvement.

The last part of the questionnaire presents questions relating to the perception of the respondents of the current and future state of health as well as socio-demographic data. The obtained results can be classified into the assessment model of three or five components [6].

## Characteristics of the participants

The study was conducted among 40 patients (13 men and 27 women) suffering from osteoarthritis. Most respondents were aged over 70 years old (35%). The average age of study participants was  $63.38 \pm 16.36$  years old. Most respondents were 68 years old. The oldest participant was 91 years old, while the youngest was 24 years old. The largest group of respondents were married (62.5%). Much less participants were widowed (25%) and the least numerous group consisted of unmarried participants (12.5%). Most respondents completed secondary school (47.5%). Every fourth person had vocational education (25%). The smallest group consisted of participants with primary (15%) and higher education (12.5%). The family income was often located in the range of 1501–3000 PLN (37.5%). The average income was  $2587.68 \pm 2357.47$  PLN. The highest income reached 12500 PLN, while the lowest 600 PLN. Most frequently respondents were suffering from the disease more than ten years (37.50%). Slightly fewer people were suffering for less than five years (35%) and the least suffered from six to ten years (27.50%). The average duration of the disease was  $11.85 \pm 9.72$  years. The longest duration of the disease was forty years and the shortest was two years.

The detailed characteristics of the study group in terms of socio-demographic variables is shown in **Table 1**.

**Table 1.** Demographic and clinical characteristics in outpatients with osteoarthritis

Variables	Characteristics of variables	N	%
Age in years	Age ≤ 55	13	32.50
	Age 56–70	13	32.50
	Age > 70	14	35.00
	Mean	63.38	
	SD	16.36	
	Mode	68	
	Median	68	
	Max	91	
	Min	24	
Gender	Male	13	32.50
	Female	27	67.50
Marital status	Married	25	62.50
	Widowed	10	25.00
	Never married	5	12.50
Educational level	Primary	6	15.00
	Technical	10	25.00
	Secondary	19	47.50
	University education	5	12.50
Approximate family income	≤ 1500 PLN	14	35.00
	1501–3000 PLN	15	37.50
	> 3000 PLN	11	27.50
	Mean	2587.68	
	SD	± 2357.47	
	Mode	4000	
	Median	1850	
	Max	12500	
Duration of the disease in years	≤ 5 years	14	35.00
	6–10 years	11	27.50
	> 10 years	15	37.50
	Mean	11.85	
	SD	± 9.72	
	Mode	20	
	Median	9	
	Max	40	
	Min	2	

## Statistical analysis

In order to prepare the test results, descriptive and elementary methods of statistical inference were used. Statistical analysis compared the results according to gender, age and duration of the disease. To test the hypotheses, chi-square test was used. The level of significance was accepted as  $p < 0.05$ . In addition, the Spearman correlation was also used.

## Results

Analyzing the results obtained by patients suffering from osteoarthritis in 12 areas in the first part of the AIMS-2 questionnaire, it can be stated that the highest level of quality of life occurred in the areas of: support

from family and friends ( $1.56 \pm 2.16$ ), household tasks ( $2.47 \pm 3.16$ ), self-care ( $2.50 \pm 2.92$ ), arm function ( $2.58 \pm 2.72$ ), hand and finger function ( $2.71 \pm 3.03$ ), work ( $2.67 \pm 2.38$ ) and mood ( $3.14 \pm 1.56$ ).

The lowest level of quality of life were observed around: arthritis pain ( $6.54 \pm 1.96$ ), walking and bending ( $6.51 \pm 2.81$ ) and mobility ( $7.21 \pm 2.06$ ). In addition, overall results of each of the subscales were compared and it is noticed that the highest level of quality of life occurred in the subscale of roles ( $2.67 \pm 2.38$ ), indicating slightly more than average degree of quality of life, and by far the lowest in the symptom subscale ( $6.54 \pm 1.96$ ), which indicates a low level of quality of life (**Table 2, Figures 1, 2, 3**).

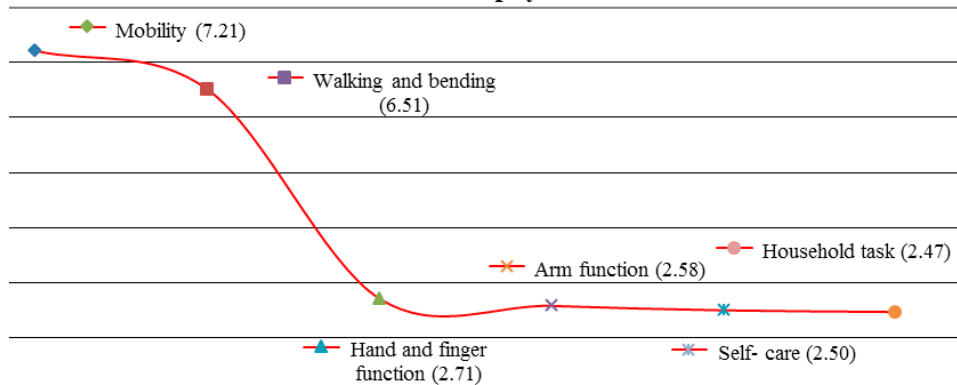
**Table 2.** AIMS-2 scale in outpatients with osteoarthritis

AIMS-2 scale	No. of patients	Mean	SD	Mode	Median	Max	Min
Mobility	40	7.21	± 2.06	5	7	10	5
Walking and bending	40	6.51	± 2.81	10	7	10	1
Hand and finger function	40	2.71	± 3.03	0	2	10	0
Arm function	40	2.58	± 2.72	0	2	10	0
Self-care	40	2.50	± 2.92	0	2	10	0
Household task	40	2.47	± 3.16	0	1	10	0
Social activity	40	4.34	± 2.15	5	5	10	0
Support from family	40	1.56	± 2.16	0	0	10	0
Arthritis pain	40	6.54	± 1.96	9	7	10	2
Work	15*	2.67	± 2.38	3	2	8	0
Level of tension	40	5.15	± 1.47	5	6	8	3
Mood	40	3.14	± 1.56	2	3	7	1

Scores range from 0–10; 0 – high assessment, 10 – poor assessment

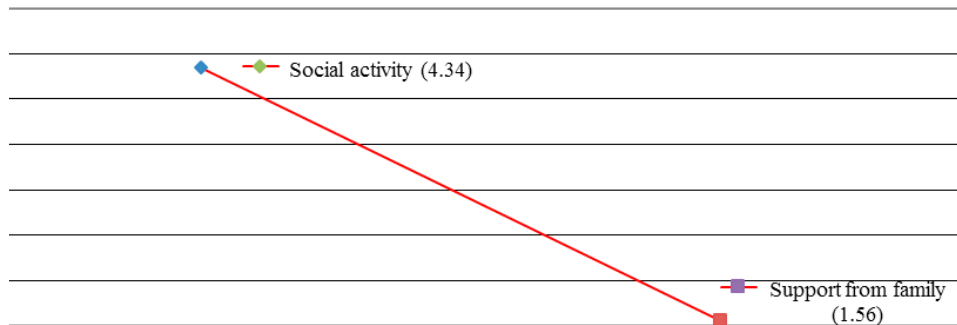
\* A number of the employed patients

### AIMS- 2 scale– physical subscale



**Figure 1.** The average values of the particular areas of the AIMS-2 scale. Scores range from 0–10; 0 – high assessment, 10 – poor assessment

### AIMS- 2 scale- social interaction subscale



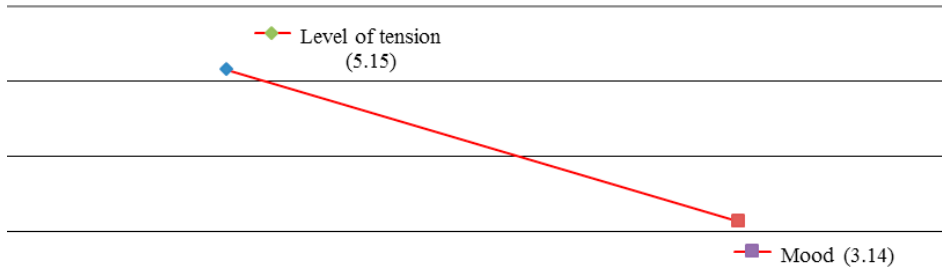
**Figure 2.** The average values of the particular areas of the AIMS-2 scale. Scores range from 0–10; 0 – high assessment, 10 – poor assessment

The second part of the AIMS-2 questionnaire was also analyzed. The questionnaire contained questions relating to the level of life satisfaction of patients, the impact of the disease on their functioning and the areas of quality of life requiring changes according to the views of the patients. Due to the results one can

observe that the patients experienced an average quality of life in terms of satisfaction with their health condition in 12 areas of health ( $4.64 \pm 2.22$ ) and the impact of the disease on each of them ( $4.54 \pm 1.87$ ).

Analyzing the subsequent results obtained by patients it was noticed that the respondents rated

### AIMS- 2 scale- affect subscale



**Figure 3.** The average values of the particular areas of the AIMS-2 scale. Scores range from 0–10; 0 – high assessment, 10 – poor assessment

**Table 3.** Subjective assessment of health in outpatients with osteoarthritis

AIMS -2 scale	Mean ( $\pm$ SD)	Mode	Median	Max	Min
Satisfaction with each health area	4.64 ( $\pm$ 2.22)	3	4	9	2
Arthritis impact on each area of health	4.54 ( $\pm$ 1.87)	5	5	8	1
Assessment of the current state of health	7.41 ( $\pm$ 2.32)	7	7	10	3
Contentment of the current state of health	5.38 ( $\pm$ 2.57)	5	5	10	3
Arthritis impact	5.69 ( $\pm$ 2.40)	5	5	10	0

Scores range from 0–10; 0 – high assessment, 10 – poor assessment

**Table 4.** Areas for improvement

Refers to the last month	N	%
Mobility level	7	17.50
Walking and bending	24	60.00
Hand and finger function	6	15.00
Arm function	3	7.50
Self-care	5	12.50
Household tasks	11	27.50
Social activity	5	12.50
Support from family	4	10.00
Arthritis pain	25	62.50
Work	8	20.00
Level of tension	4	10.00
Mood	15	37.50
None of the domains requires improving	1	2.50

their health at a low level ( $7.41 \pm 2.32$ ) and they were pleased with the current state of health at a moderate level ( $5.38 \pm 2.57$ ). It was also observed that the influence of the disease on their lives ( $5.69 \pm 2.40$ ) indicates a moderate state of health, compared with other people (**Table 3**).

From **Table 4** one can indicate that 62% of patients would expect improvement in arthritis pain, and 60% in terms of walking and bending, and subsequently mood 37.50%. Quite often, as an area in need of improvement, respondents indicated work associated with household tasks (27.50%) and work understood as a professional activity (20%), as well as the level of mobility (17.50%). Least likely as areas for improvement respondents

indicated self-care and social activity (12,50%) and support from family (10%), as well as the arm function (7.50%). Only one person (2.50%) did not identify any area that requires improvement.

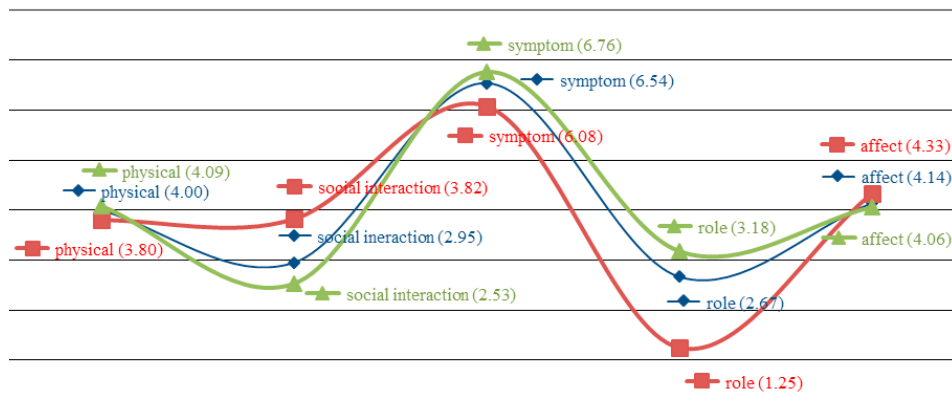
The research shows that the results obtained from the individual subscales by a group of men and women showed a statistically significant difference in social interaction subscale, where  $p = 0.038$  (**Table 5, Figure 4**). In addition, based on the analysis, it was found that the highest level of quality of life in the physical subscale was represented by the youngest respondents, being the age of 55 inclusive ( $2.76 \pm 1.51$ ). Next in line were people aged 56–70 years ( $3.64 \pm 1.69$ ). The lowest level of quality of life in the physical subscale

**Table 5.** AIMS-2 scale in outpatients with osteoarthritis and gender

AIMS-2 scale	Women		Men		p
	N	Mean (SD)	N	Mean (SD)	
Physical	27	4.09 (± 2.33)	13	3.80 (± 2.51)	F = 0.136; p = 0.714
Social interaction	27	2.53 (± 1.66)	13	3.82 (± 2.01)	F = 4.642; p = 0.038
Symptom	27	6.76 (± 1.80)	13	6.08 (± 2.26)	F = 1.063; p = 0.309
Role	11	3.18 (± 2.55)	4	1.25 (± 1.02)	F = 2.083; p = 0.173
Affect	27	4.06 (± 1.45)	13	4.33 (± 1.29)	F = 0.329; p = 0.570

Scores range 0–10; 0 – high quality of life, 10 – poor quality of life

**Relationship between quality of life (AIMS-2) and gender**



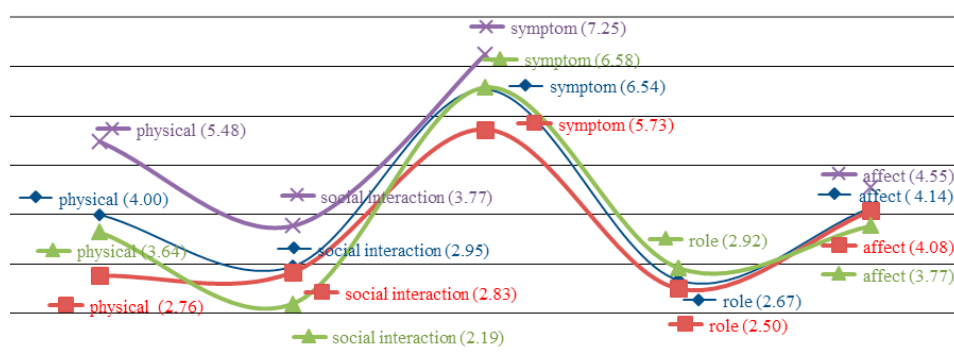
**Figure 4.** Men (line with squares), women (line with triangles), mean score (line with dots). Scores range from 0–10; 0 – high assessment, 10 – poor assessment

**Table 6.** AIMS-2 scale in outpatients with osteoarthritis and age

AIMS-2 scale	age ≤ 55		age 56–70		age > 70		p
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	
Physical	13	2.76 (± 1.51)	13	3.64 (± 1.69)	14	5.48 (± 2.81)	F = 5.908; p = 0.006
Social interaction	13	2.83 (± 1.49)	13	2.19 (± 1.25)	14	3.77 (± 2.36)	F = 2.715; p = 0.079
Symptom	13	5.73 (± 1.90)	13	6.58 (± 1.46)	14	7.25 (± 2.25)	F = 2.142; p = 0.132
Role	9	2.5 (± 2.34)	6	2.92 (± 2.64)	0		F = 0.103; p = 0.753
Affect	13	4.08 (± 1.32)	13	3.77 (± 1.59)	14	4.55 (± 1.24)	F = 1.101; p = 0.343

Scores range 0–10; 0 – high quality of life, 10 – poor quality of life

**Relationship between quality of life (AIMS-2) and age**



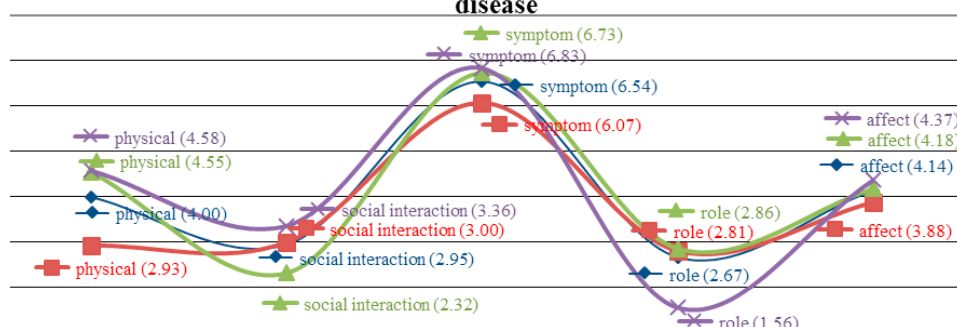
**Figure 5.** Age ≤ 55 (line with squares), age 56–70 (line with triangles), age > 70 (line with x-mark), mean score (line with dots). Scores range from 0–10; 0 – high assessment, 10 – poor assessment

**Table 7.** AIMS-2 scale in outpatients with osteoarthritis and duration of the disease

AIMS-2 scale	≤ 5 years		6–10 years		> 10 years		p
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	
Physical	14	2.93 (± 1.70)	11	4.55 (± 2.76)	15	4.58 (± 2.38)	F = 2.334; p = 0.111
Social interaction	14	3.00 (± 2.08)	11	2.32 (± 1.69)	15	3.36 (± 1.75)	F = 0.993; p = 0.380
Symptom	14	6.07 (± 1.71)	11	6.73 (± 1.89)	15	6.83 (± 2.27)	F = 0.604; p = 0.552
Role	6	2.81 (± 2.87)	7	2.86 (± 2.42)	2	1.56 (± 0.44)	F = 0.221; p = 0.805
Affect	14	3.88 (± 1.42)	11	4.18 (± 1.68)	15	4.37 (± 1.18)	F = 0.446; p = 0.644

Score range 0–10; 0 – high quality of life, 10 – poor quality of life

**Relationship between quality of life (AIMS-2) and duration of the disease**



**Figure 6.** ≤ 5 years (line with squares), 6–10 years (line with triangles), > 10 years (line with x-mark), mean score (line with dots)

**Table 8.** Spearman correlations between AIMS-2 scale and age and duration of the disease

AIMS-2 scale	Age	Duration of the disease
Physical	0.56	0.25
Social interaction	0.27	0.12
Symptom	0.44	0.17
Role	0.09	-0.04
Affect	0.20	0.08

was represented by the oldest respondents at the age of more than 70 years of age ( $5.48 \pm 2.81$ ).

These relationships are statistically significant ( $p = 0.005$ ) (Table 6, Figure 5). In all analyzed subscales a weak positive correlation between age and the audited subscale was demonstrated (Table 8). This means that the elderly represent a lower standard of living in all investigated subscales.

The relationship between subscales and duration of the disease was analyzed as well (Table 7, Figure 6). In none of these subscales a significant statistical dependence was indicated, however, a weak positive correlation between the duration of illness and subscales of AIMS-2 sheet was demonstrated. For physical, social interaction, symptom and affect subscales the correlations were positive. In the case of role sub-

scale there was a negative correlation, which means that the shorter the duration of the disease, the better the quality of life resulting from social roles (Table 8).

## Discussion

In recent years, the quality of life has become an important aspect in daily medical practice and nursing, as well as the issue, which is still a matter of interest in many research environments [7]. The patients, through the assessment of their own health are included in the overall therapeutic process [8]. Using the Polish version of the scale AIMS-2, a group of 40 patients diagnosed with osteoarthritis were tested, in which 67.50% were women and the remaining 32.50% were men. The study shows that osteoarthritis is more common



among women, therefore in research conducted by other researchers women represent more than half of the patients [9, 6, 10].

The analysis showed that subjects operate very well in the area concerning running a household tasks. The slightly worse result concerned the self-care and hand and finger function. The lowest result was obtained by the respondents in the field of walking and bending and mobility. Salaffi et al. reached similar conclusions [11].

In addition, the following study and the studies of the above authors (Salaffi et al.) confirmed that the lowest quality of life occurs in the areas of arthritis pain and walking and bending. According to the research conducted by Grygielska J. [12], for more than 70% of respondents it is fairly difficult to do activities related to engagement of hand joints and joints of the lower limbs "too many stairs, too heavy door." Similar results were obtained in study by Sierakowska et al. [8]. The aim of the study was to identify health problems in patients with osteoarthritis. The results indicated worse functioning of the patients in the physical subscale and they were related to mobility, ability to work, arthritis pain and household tasks. Rosemann et al. [10] also indicated that patients suffering from osteoarthritis demonstrated lower physical abilities of the lower part of the body. Additionally, the authors identified female sex as a group having a higher level of disability in the lower part of the body.

The study shows that in the subscale of social interaction, the best results occurred in the area of help from the closest people: friends and family. In contrast, poorer quality of life of respondents was demonstrated in the area of social activity.

Similar conclusions were reached by Sierakowska et al. [8]. The authors divided the patients evaluating the sense of social isolation into three groups: patients suffering social isolation all the time (group I), in the states of deterioration of general health (group II) and patients not experiencing social isolation at all (group III). The analysis showed that the progressive and chronic nature of the disease had a negative impact on the sense of social isolation and limited the performance of social roles. These problems intensified with age.

Patients comprising the first group numbered 34 people and they were over the age of 77 years old. After comparing these groups, a conclusion was made that it was the subjects of group I who assessed their functioning in four domains of HRQOL very poorly. Bączyk G. et al. [6] reached similar conclusions. They conducted a study in a group of Polish patients with rheumatoid arthritis. The population of 390 patients with rheu-

matoid arthritis showed the best results in the area of "support from friends and family," and the worst of the area "arthritis pain".

The following study also obtained the results presenting low quality of life in the analyzed symptom subscale. After reviewing the literature, it was observed that according to Sierakowska M. et al. [8], patients indicate arthritis pain as the dominant symptom of osteoarthritis (64 of 100 respondents).

After analyzing the data obtained in the subscale of roles, according to authors' own measurements, it is clear that more than half of the respondents were not able to work during the last month (57.5% of all respondents). In statistical terms the average score in this area of functioning is 2.67, which indicates little more than the average level of quality of life. Other authors, that is: Bączyk G. et al. [13] in their research comparing the functioning and quality of life of patients with osteoarthritis and rheumatoid arthritis based on a questionnaire AIMS-2 showed that the average value in the work area stands at 4.2, and therefore the 97 respondents with osteoarthritis rated the quality of life in this area much worse.

In the case of the affect subscale, results of the study showed that the higher level of the quality of life was observed in the mood area, while the lower quality of life was noticed in the level of tension area. The average result in statistical analysis in this subscale was 4.14. This reflects the average level of quality of life in this subscale. Very similar mean score (4.42) in this area was reached by the respondents participating in the research conducted by Bączyk G. et al. [13]. Similar conclusions were reached in the measurements of Sierakowska M. et al. [8]. They found that among 100 patients participating in the study, 64 respondents, mostly women, felt a state of depressed mood all the time. Patients in this group evaluated their quality of life related to the functioning in all domains much lower (physical, psychological, environmental, social).

After analyzing the following research, the relationship between the subscale of social interaction and gender was found. Women in the gender subscale have a higher level of quality of life compared to the quality of life in men. This is confirmed by research conducted by Majda et al. [14], which show that women indicated a higher level of quality of life, both before and after hip replacement surgery. Thus it was demonstrated that gender is a variable that determines the quality of life of the participating patients. A review of available literature provides information on the deterioration of the quality of life with age. One example is a study



conducted by Chacon JG et al. [15]. The results of his research showed a significant correlation between the result of the final scale of AIMS and the age group of patients suffering from osteoarthritis. This is also confirmed by the results of the following study showing that the youngest patients participating in the study have the highest level of quality of life, which is considerably reduced with age. This dependency is demonstrated in the physical subscale. The correlation between the subscale of social interactions and age was proven as well. Namely, people aged 56–70 years have the highest level of quality of life. A lower level is indicated by the subjects aged up to 50 years. The lowest rate of the quality of life was indicated by people over the age of 70 years.

Evaluation of the quality of life of patients with osteoarthritis is essential, because it is of great clinical importance. It concerns not only the sphere of therapy and rehabilitation, but also social, emotional and professional. Therefore patients with the described disease entity require a permanent, comprehensive, multifaceted and multidirectional proceedings in order to improve comfort and quality of life [16].

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### Conflict of interest statement

The authors declare no conflict of interest.

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