Quality of life of osteoarthritis patients in the aspect of analgesic treatment

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ABSTRACT

Introduction: Osteoarthritis an inflammatory process in the synovial membrane. These changes cause pain and joint deformities. Pharmacists can assess patients' quality of life, which can be a good criterion for assessing analgesics treatment effectiveness and prevent the growing phenomenon of polypharmacy and self-treatment.

Purpose: To answer these questions: 1) Is there a relationship between the quality of life of patients with osteoarthritis taking analgesics and those with osteoarthritis taking analgesics and implemented rehabilitation? 2) Do patients using analgesics practice polypharmacy? 3) Are patients with osteoarthritis the main consumers of painkillers? and 4) Does the use of analgesics affect the health-related quality of life of patients with osteoarthritis?

Materials and methods: The study was conducted on 240 people who were divided into three groups: osteoarthritis, reference (generally healthy, occasionally taking analgesics), and control (generally healthy, no intake of analgesics). To assess the rise in analgesics consumption by patients with osteoarthritis and the phenomenon of polypharmacy, an original questionnaire was used.

Results: There is a relationship between the quality of life of patients with osteoarthritis taking analgesics. Statistical analysis showed that in the years 2013-2015 the purchase of prescription analgesics and without a prescription systematically, significantly increased.

Conclusions: Patients using analgesics unknowingly practice polypharmacy. In Ars Medica Pharmacies, analgesics purchases by patients with osteoarthritis grew significantly in the analyzed period, but they are not the main analgesics consumers. Use of analgesics by patients with osteoarthritis improves their health-related quality of life.

Keywords: Osteoarthritis, analgesics, quality of life

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INTRODUCTION

Osteoarthritis (OA, *morbus degenerativus articulorum, osteoarthrosis*) is characterized by progressive degradation and loss of articular cartilage as well as abnormal bone growth and remodeling, located directly under the cartilage. In the early stages of OA, an inflammatory process takes place in the synovial membrane, which leads to secondary damage to or destruction of the membrane. Degenerative changes also apply to joint capsules, ligaments, and periarticular muscles. Osteoarthritis causes subchondral bone sclerosis and joint space narrowing. Osteophytes form and deformations of bone contours occur. These changes cause pain and joint deformities [1-4].

Non-pharmacological and pharmacological treatment of osteoarthritis has been systematized by the Society for Rheumatology [5].

Nonpharmacological treatment consists of informing the patient and his relatives about the nature of the disease, about the importance of compliance with the treatment program, changing the patient's lifestyle (weight reduction, using a bicycle, cane, or walker), reducing the surface area of joint compression, performing exercises increasing muscle mass, undergoing physical therapy and balneotherapy [5-8].

In the pharmacological treatment of low-intensity pain, local treatment is used. For mild to moderate pain, oral medicinal products containing ibuprofen or naproxen from the group of non-steroidal anti-inflammatory drugs are administered; while for severe pain, low-dose glucocorticosteroid therapy (2.5-5mg of prednisone per day) is used [9,10].

The maximum daily dose (MDD) of paracetamol for an adult is 4g. 99% of preparations with this substance are available without a prescription, which could lead to an accidental overdose [11-13].

The most commonly prescribed analgesics belonging to the group of weak opioids include tramadol. The daily dose of tramadol hydrochloride should not exceed 400 mg. Tramadol has a small addictive potential, but tolerance, mental and physical dependence may develop during long-term use [12,13].

The next group of analgesics used in OA are non-steroidal anti-inflammatory drugs (NSAIDs). The first line drugs in OA treatment should be standard NSAIDs/COX-2 inhibitors. All oral NSAIDs/COX-2 inhibitors have a similar analgesic effect. They differ in the potential adverse effects on the gastrointestinal tract, liver, heart, and kidneys [9].

With insufficient control over the multidirectional treatment of the patient by various specialists and the lack of medical supervision over the patient's use of drugs, according to the promoters of pharmaceutical care, it is the pharmacist who should constantly monitor the safety of pharmacotherapy.

Therefore, the aim of this study was to find answers to the following questions:

- Is there a relationship between the quality of life of patients with diagnosed OA receiving analgesics (prescription medicine (Rx) + medicine without a prescription (OTC)), the quality of life of patients with diagnosed OA receiving analgesics (Rx + OTC) and who have implemented rehabilitation?
- Do patients using analgesics unknowingly practice polypharmacy?
- Are patients with OA the main consumers of painkillers and is this phenomenon increasing?
- Does the use of analgesics affect the health-related quality of life of patients with OA?

MATERIALS AND METHODS

The Bioethics Committee of the Medical University of Bialystok approved this study with approval no. R-I002/15/2016. The questionnaire was conducted in a group of 240 people, which were divided into the following subgroups:

- Osteoarthritis group (OA) - 120 patients; age: 63.8±15.1 years; people diagnosed during hospitalization or by a primary care physician, that declared they are being treated for OA; and according to the same level of trust were included in the study; disease duration: 9.4 ± 9.3 years.
- Reference group (C+A) - 60 people, generally healthy, sporadically taking analgesics for headaches, tired/overworked muscles, age: 62.4±9.8 years, no coexisting diseases.
- Control group (C) - 60 healthy people, who in the last 2 months did not take analgesics at all, age: 64.6±9.1 years, no coexisting other diseases.

An analysis of the data pertaining to the purchase of analgesics and pain relieving products was also done in three Ars Medica Pharmacies in 2013-2015.

The data were obtained on the basis of drug purchases by patients who declared in the survey that they were suffering from OA and were included in the study group according to the same level of trust.

Statistical analysis was done using the Statistica PL software (Statsotf, Cracov, Poland).

The non-parametric tests, chi^2 test, Fisher's exact test, Yule φ coefficient, and Spearman test, were used.

All statistical hypotheses were verified at a significance level of $p<0.05$.

RESULTS

Table 1. Perception of health-related quality of life by patients with OA

	C ±SD	C+A ±SD	OA ±SD	p C : C+A	p C : OA	p C+A : OA
Physical domain	0.1±0.04	0.16±0.09	4.87±0.3	0.96	**0.0001**	**0.0001**
Emotional domain	0.1±0.06	0.13±0.06	4.1±0.2	0.85	**0.0001**	**0.0001**
Social interactions	0.2±0.05	0.35±0.05	3.3±0.2	0.24	**0.003**	**0.001**
Symptom	0.1±0.05	1.43±0.07	5.13±0.3	**0.046**	**0.0001**	**0.0001**

Abbreviations: C- control group, C+A- reference group of people that are generally healthy occasionally taking analgesics, OA- osteoarthritis patients, p- statistical significance <0.05, SD- standard deviation.

Table 2. Analysis of the severity of pain in the last week in people from the studied groups (0-10 scale)

C	C+A	OA	C : C+A	C : OA	C+A : OA
0					
100	30	1.7	**p=0.00001, r=0.538**	**p=0.00001, r=0.952**	**p=0.00001, r=0.18**
10					
0	10	8.3	**p=0.012, r=0.053**	**p=0.0214, r=0.029**	p=0.7111, r=0.001
20					
0	40	3.4	**p=0.00001, r=0.25**	p=0.1527, r=0.011	**p=0.00001, r=0.227**
30					
0	10	13.3	**p=0.012, r=0.053**	**p=0.003, r=0.049**	p=0.519, r=0.002
40					
0	0	18.3	ns	**p=0.0059, r=0.042**	**p=0.0059, r=0.042**
50					
0	0	20	ns	**p=0.0002, r=0.077**	**p=0.0002, r=0.077**
60					
0	0	13.3	ns	**p=0.003, r=0.049**	**p=0.003, r=0.049**
70					
0	10	16.6	**p=0.012, r=0.053**	**p=0.0008, r=0.063**	p=0.2304, r=0.08
80					
0	0	0	ns	ns	ns
90					
0	0	3.4	ns	p=0.1527, r=0.011	p=0.1527, r=0.011
100					
0	0	1.7	ns	p=0.3146, r=0.006	p=0.3146, r=0.006

Abbreviations: C- control group, C+A- reference group of people that are generally healthy occasionally taking analgesics, ns- non-statistical significance, OA- osteoarthritis patients, p- statistical significance <0.05, r- correlation coefficient, SD- standard deviation.

Table 3. Analysis of data on the use of analgesics by osteoarthritis patients

	Yes (%)	No (%)	p, r
Do you take analgesics prescribed by a doctor?	86.7	13.3	**p=0.00001 r=0.538**
Do you take analgesics that can be purchased without a prescription?	75	25	**p=0.00001 r=0.25**
Do you take analgesics in the form of pills?	90	10	**p=0.0001 r=0.64**
Do you take analgesics in the form of patches?	25	75	**p=0.00001 r=0.25**
Do you take analgesics in the form of suppositories?	25	75	**p=0.00001 r=0.25**
Do you take analgesics in the form of ointments?	78.3	21.7	**p=0.00001 r=0.321**

Abbreviations: p- statistical significance <0.05, r- correlation coefficient.

Presenting in Table 1 the HRQOL, using a three-component model, a statistically significant decrease in the health-related quality of life was obtained when analyzing the physical, emotional, and social domains in the group of patients with OA compared with the control group (C) and the reference group (C+A). Considering joint pain as a constituent of HRQOL, a significant decrease in the quality of life in the reference group (C+A) and the OA group was obtained compared with the control group (C), and in the OA group compared with the reference group (C+A).

In the group of people who sporadically take analgesics (C+A), the number of people not experiencing pain significantly decreased compared with the control group (C). The correlation between these two variables was high. In the reference group (C+A), the number of people experiencing pain significantly increased at "10," "20," "30," and "70" compared with the control group (C). Correlations between the two variables pertaining to responses on pain levels "10," "30," and "70" were slight, while the responses on pain level "20" were poor. In the group of osteoarthritis patients, the number of people not experiencing pain significantly decreased compared with the control group (C). The correlation between these two variables was almost complete. In the OA group, the number of people experiencing pain significantly increased at "10," "30," "40," "50," "60," and "70" compared with the control group (C). Correlations between the two variables regarding all of the above answers were slight. In the OA group, the number of people not experiencing pain and those experiencing pain at the "20" level significantly decreased compared with the reference group (C+A). Correlations between these two variables were poor. In the OA group, the number of people experiencing pain significantly increased at "40," "50," and "60" compared with the reference group (C+A). Correlations between the two variables regarding the above answers were slight (Table 2).

Statistical analysis of the data on the use of analgesics by OA patients showed that significantly more patients took analgesics prescribed by a doctor. The correlation between these two variables was high. Also, significantly more patients took analgesics that can be purchased without a prescription. The correlation between these two variables was poor. The forms of drugs preferred by OA patients were pills (9 people in 10 answered "Yes") and ointments (almost 8 people in 10 answered "Yes"), than patches (3/4 people answered "No") and suppositories (3/4 people answered "No"). Over 2/5 people chose analgesics in the form of pills, the second 2/5 chose ointments for topical use, more than 1/10 decided to use patches, and 1/10 suppositories (Table 3).

Data analysis of the purchase of prescription medicinal products containing diclofenac as an analgesic active substance for OA patients, showed that the purchase of these preparations decreased significantly in 2015 compared with 2013 and 2014. The purchase of non-prescription diclofenac products in 2014 and 2015 was significantly higher than in 2013. The general purchase of medicinal products with prescription and non-prescription diclofenac in 2015 was significantly higher compared with purchases in 2013 and 2014, and in 2014 was significantly higher than in 2013 (Table 4).

Data analysis of the purchase of prescription medicinal products containing meloxicam in a dose of 7.5 mg as an analgesic active substance for OA patients, showed that the purchase of these preparations decreased significantly in 2015 and 2014 compared with 2013. The purchase of medicinal products containing meloxicam in a dose of 7.5 mg without a prescription in 2014 and 2015 was significantly higher compared with purchases in 2013, and in 2015 was significantly higher than in 2014. The general number of purchased medicinal products containing meloxicam in a dose of 7.5 mg with and without a prescription in 2014 and 2015 was significantly higher compared with the number of purchases in 2013, and in 2015 was significantly higher than in 2014. There were no statistically significant differences in the amount of purchased preparations with meloxicam in a dose of 15 mg, as an analgesic substance, considering the purchase of prescription-only products (Table 4).

Data analysis of the purchase of prescription medicinal products containing nimesulide showed that in 2015 it was significantly lower compared with 2013 and 2014, and in 2014 it was significantly lower than in 2013 (Table 4).

The number of the purchased medicines with tramadol and paracetamol, available by prescription, was significantly higher in 2015 compared with 2014, and in 2014 was significantly higher compared with 2013. Data analysis of the purchase of non-prescription medicinal products containing paracetamol showed that in 2015 it was significantly higher compared with 2013 and 2014, and in 2014 it was significantly higher than in 2013. The number of purchased non-prescription medicinal products containing ibuprofen was significantly higher in 2015 compared with 2013 and 2014, and in 2014 was significantly higher than in 2013. The number of purchased medicinal products with ibuprofen and paracetamol, available without a prescription, was significantly higher in 2015 and 2014 compared with 2013 (Table 4).

There were no statistically significant differences in the purchase of preparations with naproxen, as an analgesic substance, considering the purchase of non-prescription products (Table 4).

Table 4. Data analysis regarding purchases of medical products with pain relieving activities in Ars Medica Pharmacies by osteoarthritis patients

Year	Number of packages/person	2013 : 2014	2014 : 2015	2013 : 2015
Diclofenac Rx				
2013	1.7	p=0.37, r=0.0005	**p=0.009, r=0.004**	**p=0.0005, r=0.007**
2014	1.5			
2015	1.3			
Diclofenac OTC				
2013	1.02	**p=0.010, r=0.006**	p=0.21, r=0.0009	**p=0.0001, r=0.01**
2014	1.3			
2015	1.9			
Diclofenac Rx+OTC				
2013	2.7	**p=0.020, r=0.002**	**p=0.005, r=0.002**	**p=0.00001, r=0.008**
2014	2.8			
2015	3.2			
Meloxicam 7.5 mg Rx				
2013	1.8	**p=0.040, r=0.002**	p=0.9, r=0.00001	**p=0.001, r=0.03**
2014	1.3			
2015	1.0			
Meloxicam 7.5 mg OTC				
2013	0.2	**p=0.00001, r=0.04**	**p=0.0008, r=0.006**	**p=0.00001, r=0.05**
2014	1.4			
2015	2.2			
Meloxicam 7.5 mg Rx+OTC				
2013	2.0	**p=0.040, r=0.001**	**p=0.002, r=0.003**	**p=0.00001, r=0.007**
2014	2.7			
2015	3.2			
Nimesulide Rx				
2013	3.9	**p=0.00001, r=0.053**	**p=0.022, r=0.003**	**p=0.00001, r=0.03**
2014	3.7			
2015	3.55			
Meloxicam 15 mg Rx				
2013	3.4	p=0.66, r=0.0001	p=0.23, r=0.0009	p=0.100, r=0.002
2014	3.0			
2015	2.8			
Tramadol + paracetamol Rx				
2013	1.3	**p=0.005, r=0.004**	**p=0.03, r=0.003**	p=0.63, r=0.0002
2014	1.0			
2015	0.7			
Paracetamol OTC				
2013	4.08	**p=0.00001, r=0.01**	**p=0.040, r=0.07**	**p=0.00001, r=0.01**
2014	5.1			
2015	6.0			
Ibuprofen OTC				
2013	5.7	**p=0.002, r=0.003**	**p=0.020, r=0.004**	**p=0.004, r=0.003**
2014	5.8			
2015	6.05			
Naproxen OTC				
2013	1.0	p=0.23, r=0.0008	p=0.110, r=0.001	p=0.26, r=0.0004
2014	1.2			
2015	1.4			
Ibuprofen + Paracetamol OTC				
2013	1.1	**p=0.00001, r=0.03**	p=0.230, r=0.004	**p=0.00001, r=0.02**
2014	2.2			
2015	2.8			

Abbreviations: OTC- medicine without a prescription, p- statistical significance <0.05, r- correlation coefficient, Rx- prescription medicine.

Data analysis of the purchase of heat patches showed that it was significantly higher in 2015 compared with 2013 and 2014, and in 2014 it was significantly higher than in 2013. The number of purchased mud preparations was significantly higher in 2015 compared with 2013 and 2014, and in 2014 was significantly higher than in 2013. There were no statistically significant differences in the amount of purchased preparations with viper venom and Devil's claw (*Harpagophytum procumbens*) (Table 5).

Table 5. Data analysis regarding purchases of non-prescription pain relieving products in Ars Medica Pharmacies by osteoarthritis patients

Year	Number of packages/person	2013 : 2014	2014 : 2015	2013 : 2015
Heat patches				
2013	0.9	**p=0.04, r=0.01**	**p=0.04, r=0.07**	**p=0.02, r=0.01**
2014	1.2			
2015	1.7			
Viper venom ointment				
2013	1.0	p=0.18, r=0.002	p=0.18, r=0.0001	p=0.95, r=0.00001
2014	1.1			
2015	1.0			
Mud preparations				
2013	0.8	**p=0.04, r=0.008**	**p=0.03, r=0.006**	**p=0.04, r=0.007**
2014	1.1			
2015	1.3			
Devil's claw ointment (*Harpagophytum procumbens*)				
2013	0.5	p=0.85, r=0.00003	p=0.87, r=0.0004	p=0.9, r=0.0002
2014	0.6			
2015	0.7			

Abbreviations: p- statistical significance <0.05, r- correlation coefficient.

Table 6. Data analysis regarding purchases of analgesics in Ars Medica Pharmacies by osteoarthritis patients and by osteoarthritis patients compared with the total quantity of all products purchased from this group of medicines

.Year	Number of packages/person	2013 : 2014	2014 : 2015	2013 : 2015
Rx analgesics				
2013	2.2	p=0.75, r=0.00002	**p=0.005, r=0.002**	**p=0.002, r=0.002**
2014	1.9			
2015	1.7			
OTC analgesics				
2013	1.1	**p=0.00001, r=0.03**	**p=0.00001, r=0.01**	**p=0.00001, r=0.07**
2014	1.7			
2015	2.3			
Rx+OTC analgesics				
2013	3.3	**p=0.00001, r=0.006**	**p=0.004, r=0.0009**	**p=0.00001, r=0.1**
2014	3.6			
2015	4.0			
	Number of products purchased by people with OA (%)			
2013	10.6	**p=0.001, r=0.0007**	**p=0.003, r=0.0006**	**p=0.00001, r=0,003**
2014	12.3			
2015	14.0			

Abbreviations: OA- osteoarthritis patients, OTC- medicine without a prescription, p- statistical significance <0.05, r- correlation coefficient, Rx- prescription medicine.

Data analysis of the purchase of prescription analgesics by OA patients, showed that the purchase of these preparations decreased significantly in 2015 compared with 2013 and 2014. The number of purchased non-prescription analgesics was significantly higher in 2015 compared with 2013 and 2014, and in 2014 was significantly higher than in 2013. The general purchase of prescription and non-prescription analgesics was significantly higher in 2015 compared with 2013 and 2014, and in 2014 was significantly higher than in 2013. The number of analgesics purchased in Ars Medica Pharmacies by patients with OA compared with the total purchase volume of these products was significantly higher in 2015 compared with 2013 and 2014, and in 2014 was significantly higher than in 2013 (Table 6).

In addition, we noted a negative correlation ($p=0.0001$, $r=-0.511$) between the amount of analgesics purchased by OA patients (number of packages/month/person) and their quality of life.

DISCUSSION

The problem of osteoarthritis is not only an issue in Europe [14]. The problem for people with OA is eliminating pain. Because articular cartilage is not innervated, pain associated with inflammation comes from periarticular tissues (tendon and muscle attachments, joint capsule, ligaments, synovial membrane inflammation, or increased intra-articular pressure resulting from intra-articular exudate) [15].

In nonpharmacological anti-inflammatory treat-ment, cryotherapy, iontophoresis with the use of NSAIDs, treatments using ultrasounds with gels containing NSAIDs, using variable magnetic field and laser therapy are of great importance. Heat therapy is aimed at the elimination of restrictions in movement and contracture of capsules before kinesiotherapy. Kinesiotherapy for osteoarthritis uses various types of exercises [16].

Polypharmacy (latin: *polypragmasia*, *polypharmacia*) is excessive intake of medicinal products [17]. Polypharmacy with the use of analgesics is a phenomenon leading to numerous interactions and adverse effects. It is connected with a much greater availability of medicinal products that can be purchased without a prescription as well as with the availability of analgesics at gas stations and beauty stores. Often patients buying analgesics do not adjust their strength to the level of pain intensity. This results in the intake of too high doses. The Lublin survey showed a dangerous phenomenon, namely that the patients did not read the leaflets of the purchased medicines. As many as 38% of the respondents admitted that they did not read the leaflet, and that they based their decision on information from the mass media and did not know what active substance the purchased medicinal products contained [18]. This is very dangerous due to the fact that such commonly occurring chemicals as ibuprofen or paracetamol can be found in many simple and complex preparations available without a prescription. These preparations differ only in their trade names [19]. Doubling the dose of the same drug is therefore very likely. However, it is difficult to control this phenomenon, as well as polypharmacy, with so many routes of access to OTC drugs. Thus, medicinal products should be bought in pharmacies, because during a visit to a pharmacy, a pharmacist can provide comprehensive information on the medicine purchased and prevent the above-mentioned phenomena [20]. Patients who read about medicines on the Internet and in leaflets are often concerned about the side effects described there. This results in failure to fulfill the prescription. Side effects that are unpleasant for patients often result in pharmacotherapy discontinuation, without providing feedback to the attending physician [21]. According to the guidelines of the Nationwide Section of Pharmaceutical Care of the Polish Pharmaceutical Society of March 25, 2015, pharmacists have sufficient knowledge of the effects of drugs or their action in the body. The role of a pharmacist is not only (as it is commonly believed) the sale of medicines, but also ensuring patient health and the safety of the applied pharmacotherapy [22].

In 2013, the purchase of medicines was a common phenomenon in households. Members of 98.5% of households bought drugs or dietary supplements at least once in 2013; 92.3% of the buyers in this group purchased prescription drugs; 48.1% drugs recommended, but not prescribed, by a doctor; and 90.4% bought medications of their own initiative. For 55.1% of households buying medicines prescribed or recommended by a doctor, the purchase of drugs and medical items was a financial burden. In 2013, 17% of households described the money spent on drugs as very large, 25% as large, and 36% as average [23].

Our research shows that almost all people with OA had pain problems requiring the administration of analgesics. 3/4 patients took analgesics that can be purchased without a prescription. For all analgesics taken by patients with OA, almost half were pills, over 1/3 ointments, and more than 1/10 suppositories and patches, each.

Statistical analysis showed that in the years 2013-2015 the purchase of prescription analgesics and available without a prescription systematically, significantly increased. Analysis of the general consumption of OTC analgesics as well as all OTC and prescription drugs increased significantly from year to year (10.6% in 2013, 12.3% in 2014, and 14% in 2015). These data show that the sales of analgesics to people with OA in the examined period increased, but OA patients were not the main recipients of the analgesics sold overall.

Analgesics were most often bought by respondents aged 35-44, with a secondary education, and with low incomes. Skilled and agricultural workers bought analgesics much more often than management and the upper class elite respondents [24]. The above data obtained by other researchers confirm our results that there is a problem of increasing analgesics consumption in general in society as well as in patients with OA.

The last research question posed for the purposes of this study was whether the use of analgesics affects the health-related quality of life of patients with OA. Pain is the first, the main, and sometimes the only symptom of changes occurring in joints and periarticular tissues in the course of osteoarthritis. The results obtained in this study showed that the occurrence of pain in a group of healthy people who occasionally take analgesics (C+A) significantly reduced their quality of life. Whereas, in the group of people with OA receiving analgesics, despite the pain relief, the disease significantly reduced the quality of life of patients in all three studied domains, compared with the reference group (C+A). To achieve the same effect of pain relief one patient requires the administration of drugs every 12 hours, the second every 8 hours, while another every 6 hours. The high correlation between the number of analgesics purchased by patients and their health-related quality of life indicates that with an increasing number of purchased analgesics patient quality of life increases. Despite the fact that the amount of purchased preparations may not reflect the treatment process, it should be noted that in the case of the studied patients, the results indicate an increase in the quality of life with the increase of purchased analgesics. The patients use the purchased medicinal products and achieve greater satisfaction with their health situation. The study by Klimaszewska *et al.* described an increase in the quality of life of patients with lumbar spine pain syndromes after analgesic treatment [25]. Similar results were published by Leppert and Forycka in relation to patients suffering from cancer pains [26]. Kulig *et al.*, on the other hand, explored this subject in their study on Graves' disease. The results obtained by these researchers also confirm an increase in the quality of life of patients after use of analgesic pharmacotherapy [27].

Obtaining answers to the research questions posed for the purposes of the study allows the pharmacist to better understand the problems of patients associated with chronic disease, such as osteoarthritis, and enable indicating the directions of cooperation development between the patient, doctor, and pharmacist.

CONCLUSIONS

There is a relationship between the quality of life of patients diagnosed with OA taking analgesics and the quality of life of patients diagnosed with OA taking analgesics and having implemented rehabilitation, because implementating rehabilitation results in a reduction in the amount of taken analgesics. Patients using analgesics unknowingly practice polypharmacy. Patients with OA increase the purchase of analgesics from year to year, but they are not the main consumers of these preparations. The use of analgesics by patients with OA raises their health-related quality of life.

Conflicts of Interest

The authors declare that there are no conflicts of interests regarding the publication of this study.

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