DOI: https://doi.org/10.2298/SARH171020009J
UDC: 613-056.2:616.728.3-002

ORIGINAL ARTICLE / ОРИГИНАЛНИ РАД

The impact of pain on functionality and health related quality of life in patients with knee osteoarthritis

Aleksandra Jurišić-Škevin[1,2], Vesna Grbović[1,2], Ivana Stanković[3], Aleksandar Radunović[4], Jasmin Nurković[5], Bojan Milošević[6,2], Aleksandar Cvetković[6,2], Ana Divjak[1], Maja Vulović[7]

[1]University of Kragujevac, Faculty of Medical Sciences, Department of Physical medicine and rehabilitation, Kragujevac, Serbia;
[2]Clinical center Kragujevac, Kragujevac, Serbia;
[3]University of Defence in Belgrade, Military Medical Academy, Institute for Medical Research, Belgrade, Serbia;
[4]Military medical academy, Clinic for orthopedic surgery and traumatology, Belgrade, Serbia;
[5]State University of Novi Pazar, Department of Biomedical Sciences, Novi Pazar, Serbia;
[6]University of Kragujevac, Faculty of Medical Sciences, Department of Surgery, Kragujevac, Serbia;
[7]University of Kragujevac, Faculty of Medical Sciences, Department of Anatomy, Kragujevac, Serbia;

SUMMARY

Introduction/Objective Pain, stiffness and limited mobility are the main factors that lead to difficulties in performing daily activities and are also responsible for the decline in the quality of life in people with knee osteoarthritis (OA). The aim of this study was to evaluate the functional capacity and health related quality of life (HRQoL) compared to pain in patients with knee OA, as well as to determine the correlation between these three clinical variables.

Methods The study involved 931 patients diagnosed with knee OA. In all patients, pain was evaluated by a short form of the McGill pain questionnaire (SF-MPQ), functional status was assessed using the Western Ontario and McMaster Universities Arthritis Index (WOMAC), while life quality was evaluated using the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36).

Results The average age of patients was 61.21 ± 4.62 years, while 71.3% of them were women. The quality of life in patients with knee OA and all pain parameters contained in the SF-MPQ were highly statistically positively associated ($p \leq 0.01$). In addition, the physical functioning was mostly affected by emotional pain (rho = -0.585). A high statistical correlation ($p \leq 0.01$) was noted between stiffness and physical functioning from the WOMAC questionnaire and all of the parameters from the SF-MPQ. The physical functioning from the WOMAC questionnaire had the strongest correlation with total pain incorporated into the McGill questionnaire (rho = 0.530).

Conclusion Knee pain has a significant impact on functional capacity and HRQoL in patients with knee OA. Therefore, one of the main therapy goals for OA of the knee should be to reduce the pain in the affected knee, which can help to improve the functionality and HRQoL of these patients.

Keywords: knee osteoarthritis; pain; functional capacity; health related quality of life

INTRODUCTION

Osteoarthritis (OA) of the knee is a chronic degenerative disease of the knee joint accompanied by chronic pain, stiffness and limited mobility that lead to difficulties in performing daily activities [1] and are responsible for the life quality decline in people with OA of the knee [1, 2]. It usually occurs after the age of 40 in both genders, with a slightly higher incidence in women, and it is 22.8% in women and 14.1% in men. Epidemiological studies done in the US and Europe have shown that the incidence of knee OA increases with age [3]. Pain is the dominant symptom and occurs due to the increased pressure in the subchondral bone, articular capsule stretching or synovitis. Pain may also arise as a result of bursitis or secondary ligament and tendon enthesopathies caused by pathological mechanical functions of the joint. It has a mechanical character, i.e. it is mainly associated with the movement and load, and relieves with rest. The course of the disease is variable, often progressive and leads to the intensification of pain and even greater disability, making it difficult to carry out daily activities, and thus consequently impairing the quality of life [4].

There are a number of clinical scales and questionnaires that are used for the assessment of pain: visual analogue scale (VAS), numerical rating scale, verbal scale rating, faces pain scale, McGill pain questionnaire, etc. Each of these measurements is actually a self-assessment of the patient, where pain is ranked on a scale and expressed through numerical or descriptive units [5].

The most frequently used validated and disease-specific questionnaires that are designed to evaluate the functional abilities of patients with knee OA are Western Ontario and McMaster Universities Arthritis Index (WOMAC) and the Lequesne index [6].

Received • Примљено: October 20, 2017
Revised • Ревизија: January 22, 2018
Accepted • Прихваћено: January 23, 2018
Online first: February 6, 2018

Correspondence to:
Ana DIVJAK
Svetozara Markovica Street, 69
34000 Kragujevac, Serbia
ana.divjak@gmail.com

The term "Health Related Quality of Life" (HRQoL) was created to underline the importance of health for a good quality of life. In order to obtain a complete picture of the patient's health status, besides standard clinical measurements, it is necessary to measure the quality of life related to health [2]. The assessment should not be focused solely on the diseased organ or organ system, but must also include functional disorders (physical, emotional, social) which patients may experience as a result of their illness. Instruments for measuring the quality of life are intended to evaluate the changes in patients' health status in a given period of time and to evaluate the effects of the applied therapy [7].

Impact of knee pain on quality of life and functionality are the subject of numerous studies, but we have not conducted a similar study of a large number of respondents until now. The aim of this study was to assess the functional capacity and HRQoL compared to pain in patients with knee OA, as well as to determine the correlation between these three clinical variables.

METHODS

This was a cross-sectional study conducted on a cohort of 931 patients with OA of the knee. Patients were selected at the Department of Physical Medicine and Rehabilitation, Clinical Center of Kragujevac. From January 2014 to December 2016, all patients with knee OA, who were referred for outpatient rehabilitation, were invited to participate in the study. The study was approved by the Ethics Committee of the Clinical Center Kragujevac. The purpose, risks and benefits of the study were explained to all of the patients who gave their written consent to participate in the study.

The diagnosis of knee joint OA was based on the criteria established by the American College of Rheumatology (ACR) [8]. The including criteria were: women and men aged 40–70 years; unilateral OA of the knee joint by the clinical criteria of the ACR; KL radiographic osteoarthritis grade 2 and 3 (mild to moderate radiographic osteoarthritis); Body Mass Index (BMI) less than 30 kg/m^2; pain in the knee (duration 3 months or more); signed consent for participation in the study. Participants were excluded from the study if any of the following was present: participation in parallel interventional studies; dominant patellofemoral OA of the knee; severe OA of the knee joint according to KL classification (level 4); BMI ≥ 30 kg/m^2; surgeries during the last six months; injuries of the knee joint during the last six months; secondary rheumatoid or septic arthrosis or systemic disease that affects the knee joint; active OA of the knee with intra-articular effusion; analgesic therapy with steroidal or non-steroidal drugs at the moment of examination; intra-articular application of corticosteroids in the previous three months; physical therapy management of lower limbs during the past six weeks; presence of an endoprosthesis on the lower extremities; increased biochemical markers of inflammation.

During the initial examination of all patients the following protocol was applied: Upon admission to the Physical Medicine Clinic at the Clinical Center of Kragujevac, the patients were informed about the study from their physician and their signed consent for voluntary participation was obtained. The patients included in the study were interviewed by the same doctor. Socio-demographic data such as gender, age, occupation, body height and weight were collected during individual interviews. BMI was calculated using patients' height and body weight.

The following segment of the protocol included the evaluation of pain, functional status and quality of life. Pain was evaluated using a short form of the McGill pain questionnaire (SF-MPQ), which consists of three parts. The main component of the questionnaire gives three scores, and includes 11 sensory and four affective adjectives, making a total of 15 descriptive adjectives, that are by rated by patients on a four-point Likert scale (0 = no, 1 = weak, 2 = medium, 3 = strong).

By adding the individual values, sensory and affective score are thus obtained, and their sum represents the total score (T-PRI, total pain rating index). VAS represents the second part of the questionnaire; it is a 10 cm long horizontal line with clearly defined boundaries that range from "no pain" to "worst possible pain". The intensity of pain is measured in centimeters from zero to the place marked by the patient, and indicates the intensity of pain at the time of completing the questionnaire. The third part of the questionnaire represents the current pain intensity (PPI) on a six-degree verbal scale where a patient chooses one of six words, ranging from "no pain" to "intolerable" which best describes his pain at the time of completing the questionnaire [9, 10].

Western Ontario and McMaster Universities Arthritis Index (WOMAC) was used to evaluate the functional status, which showed high reliability (interclass correlation coefficient was 0.92–0.97) in patients with knee OA. It is a tridimensional, disease-specific instrument used in patients with knee or hip OA and which measures pain, stiffness and physical functioning in typical daily activities. WOMAC questionnaire consists of three subscales: pain (5 questions, a score of 0–20), stiffness (two questions, a score of 0–8) and physical functioning (17 questions, a score of 0–68). Questions were related to the patients' condition during the last 48 hours. The patients filled the WOMAC questionnaire by selecting one of the possible answers (by marking it with "X") where 0 indicates none, 1 mild, 2 moderate, 3 serious and 4 hard. Each subscale is added separately, where higher scores indicate poorer health and physical functioning [11].

The patients' life quality was evaluated by the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36), which consists of 36 questions divided into eight domains. Physical health is assessed by four domains: physical functioning, physical limitation, bodily pain and general health perception, while mental health is evaluated by other four domains such as vitality, social functioning, emotional restraint and mental health, the. Each subscale has a score of 0 ("strong symptoms/poor health") to 100 ("asymptomatic/excellent health"), with lower scores indicating worse quality of life [12].

The program SPSS Statistics version 20 for Windows (SPSS Inc.) was used for all statistical analyses. Socio-demographic and clinical characteristics of the patients were analyzed by methods of descriptive statistics (mean, standard deviation, minimal, maximal). Spearman correlation coefficient was used to investigate the association between the McGill subscale, WOMAC and SF-36 questionnaires. The level of statistical significance was set at $p \leq 0.01$.

RESULTS

Our study included 931 patients with knee OA, whereby the majority was composed of women (71.3%). The average age was 61.21 ± 4.62 (range 48 to 70), while the average duration of symptoms was 3.12 ± 2.89 years. The involvement of the left and right knee was similar: 526 participants (56.5%) had left-sided gonarthrosis and 405 (43.5%) participants had right-sided gonarthrosis. The mean value of BMI was 26.02 ± 2.29. Most of the patients with knee OA were manual workers (59.2%), followed by retirees (29.9%), while the smallest number of participants performed desk (sedentary) jobs (11%). Table 1 shows average value, standard deviation, minimum and maximum scores for all subscales of McGill, WOMAC and SF-36 questionnaires.

The results of our study showed that the quality of life in patients with knee OA and all of the pain parameters contained in SF-MPQ are highly significantly positively associated ($p \leq 0.01$). In addition, the physical functioning in these patients was mostly affected by emotional pain (rho = -0.585). By comparing the general health, as well as the impact of emotion evaluated through SF-36 questionnaire and the average values for most of the pain parameters from McGill's questionnaire, correlation had a negative linear trend and a statistical significance at the level of $p \leq 0.01$ (Table 2).

We have also examined the association between stiffness and physical functioning contained in the WOMAC questionnaire and all of the pain parameters from the SF-MPQ. As shown in Table 3, there is a high significant correlation ($p \leq 0.01$) between stiffness and physical functioning of WOMAC questionnaire and all the parameters from the SF-MPQ. The correlation showed a positive linear trend in all of the tested parameters. In addition, in patients with knee OA physical functioning from the WOMAC questionnaire had the strongest correlation with total pain incorporated into the SF-MPQ (rho = 0.530).

Table 1. Descriptive statistics of patients with knee osteoarthritis

Demographic characteristics	
Age (years), mean ± SD (min–max)	61.21 ± 4.62 (48–70)
Men/Women, n (%)	267 (28.7) / 664 (71.3)
Body Mass Index (BMI) (kg/m^2), mean ± SD (min–max)	26.02 ± 2.29 (20.07–29.76)
Duration of illness (months), mean±SD (min–max)	3.12 ± 2.89 (3–180)
Left knee/Right knee, n (%)	526 (56.5) / 405 (43.5)
Retiree/Physical worker/Desk job, n (%)	278 (29.9) / 551 (59.2) / 102 (11)
McGill Pain Questionnaire subscale scores, mean±SD (min–max)	
Sensory Pain Rating Index (S-PRI)	17.59 ± 6.72 (3–29)
Affective Pain Rating Index (A-PRI)	5.20 ± 4.14 (0–13)
Total Pain Rating Index (T-PRI)	22.85 ± 9.98 (3–41)
Present Pain Intensity-Visual Analogue Scale (PPI-VAS)	57.93 ± 13.19 (24–90)
Overall intensity of total pain experience (PPI score)	3.02 ± 0.86 (1–6)
WOMAC subscale scores, mean ±S D (min–max)	
Pain	9.17 ± 3.64 (1–19)
Stiffness	3.59 ± 1.95 (0–8)
Physical Function	35.86 ± 12.42 (9–62)
SF-36 subscale scores, mean ± SD (min–max)	
Physical Function (PF)	25.05 ± 17.81 (0–80)
Physical Role (RP)	24.83 ± 25.32 (0–100)
Bodily Pain (BP)	33.35 ± 17.82 (0–67.5)
General Health perceptions (GH)	38.14 ± 18.83 (5–85)
Vitality (VT)	38.66 ± 20.21 (0–90)
Social Function (SF)	23.68 ± 13.73 (0–50)
Emotional Role (RE)	49.03 ± 36.94 (0–100)
Mental Health (MH)	43.31 ± 20.48 (0–88)

WOMAC – The Western Ontario and McMaster Universities Osteoarthritis Index; SF-36 - 36-Item Short-Form Health Survey

Table 2. Spearman's correlation coefficient for the SF-MPQ and SF-36 subscale scores in patients with osteoarthritis of the knee

	SF-36						
SF-MPQ	PF	RP	GH	VT	SF	RE	MH
S-PRI	-0.339† 0.000	-0.057 0.084	-0.273† 0.000	-0.174† 0.000	-0.187† 0.000	-0.164† 0.000	-0.166† 0.000
A-PRI	-0.585† 0.000	-0.190† 0.000	-0.526† 0.000	-0.377† 0.000	-0.312† 0.000	-0.278† 0.000	-0.308† 0.000
T-PRI	-0.462† 0.000	-0.115† 0.000	-0.482† 0.000	-0.394† 0.000	-0.259† 0.000	-0.244† 0.000	-0.231† 0.000
PPI-VAS	-0.338† 0.000	-0.077* 0.019	-0.274† 0.000	-0.246† 0.000	-0.137† 0.000	-0.200† 0.000	-0.123† 0.000
PPI score	-0.212† 0.000	-0.051 0.118	-0.144† 0.000	-0.037 0.261	-0.010 0.764	-0.075* 0.022	0.023 0.475

SF-MPQ – Short-Form McGill Pain Questionnaire; S-PRI – Sensory Pain Rating Index; A-PRI – Affective Pain Rating Index; T-PRI – Total Pain Rating Index; PPI-VAS – Present Pain Intensity-Visual Analogue Scale; PPI score – Overall intensity of total pain experience; SF-36 - 36-Item Short-Form Health Survey; PF – Physical Functioning; RP – Physical Role; GH – General Health perceptions; VT – Vitality; SF – Social Functioning; RE – Emotional Role; MH – Mental Health; *$p \leq 0.05$ †$p \leq 0.01$

Table 3. Spearman's correlation coefficient for the SF-MPQ and WOMAC subscale scores in patients with osteoarthritis of the knee

	WOMAC	
SF-MPQ	Stiffness	Physical function
S-PRI	0.356† 0.000	0.509† 0.000
A-PRI	0.447† 0.000	0.479† 0.000
T-PRI	0.417† 0.000	0.530† 0.000
PPI-VAS	0.428† 0.000	0.481† 0.000
PPI score	0.408† 0.000	0.383† 0.000

SF-MPQ – Short-Form McGill Pain Questionnaire; S-PRI – Sensory Pain Rating Index; A-PRI – Affective Pain Rating Index; T-PRI – Total Pain Rating Index; PPI-VAS – Present Pain Intensity-Visual Analogue Scale; PPI score – Overall intensity of total pain experience; WOMAC – The Western Ontario and McMaster Universities Osteoarthritis Index;
†p ≤ 0.01

DISCUSSION

In our study, the majority of patients with OA of the knee were women (71.3%), and the average age of patients was 61.21 ± 4.62 years, which corresponds to the work of Boutron et al. [13], who did an extensive research on disability and quality of life in 2,540 people with knee OA. Similar results were shown in a study by Axford et al. [14] (65% were women; mean age of 63 years), as well as in the study of Tonelli et al. [15] (66.3% were women; mean age of 61.92 years). In a study that examined the impact of pain level on the HRQoL in Chinese people with knee OA in 2015, 82% of respondents were women [16], as it was the case in the study by Kawano et al. [17] conducted in the same year, where 74.19% of participants were women, while the average age was 61.2 years. Study by Northon et al. [18] has shown that women after the age of 50 are especially at risk, which is associated with the beginning of menopause.

The average value of Body Mass Index (kg/m^2) was 26.02 ± 2.29, which is in accordance with other studies [16, 19, 20], while the average duration of knee OA in our group of patients was 3.12 ± 2.89 years, which also corresponds to the results from certain published studies [16, 21].

Patients included in our study were mainly involved in jobs requiring physical labor (59.2%), in contrast to other studies in which a smaller percentage of patients performed jobs that required physical effort or hard physical labor [19]. Also, in our study retired people were underrepresented in relation to employees, while in another study, the majority of participants consisted of retirees [17]. In the surveyed population collected by the random selection method, the most common form of work was physical work.

The main clinical manifestations of knee OA are pain, joint stiffness and reduction in the range of joint motion [22]. Most of the studies conducted so far cite pain as the main symptom of OA, which causes the dysfunction of the affected joint [21]. In this study, pain was evaluated by SF-MPQ, while the WOMAC questionnaire was used to assess the stiffness and physical functioning in patients with knee OA. Pain contains a nociceptive, sensory, emotional, and behavioral component and can be measured only indirectly. McGill pain questionnaire measures three components of pain: sensory, affective, and evaluation (cognitive - experience based on previous experience). A visual analogue scale is incorporated into this questionnaire. There are several studies that analyze McGill own questionnaire itself (SF-MPQ) [23, 24, 25].

Using this questionnaire, cognitive aspects are compared with the experiences that have already happened in the past, and also how the pain affects the activities of daily life. In the study of Gandhi et al. [26], 100 patients with knee osteoarthritis and 100 patients with hip osteoarthritis were involved. For the evaluation of the pain, the WOMAC questionnaire, SF-36, and SF-MPQ were used. The study, similarly as in our study, showed that the posture of a strong correlation between pain measurements through the WOMAC and SF-36, also a post (weaker) correlation with the results of a pain assessment with SF-MPQ. The conclusion is that all three scales adequately qualify pain in patients with osteoarthritis (knee and hip), which is necessary for the purpose of making an optimal therapeutic program.

According to the results obtained in our study, pain was significantly associated with greater rigidity and poor physical functioning. Alburquerque-Garcia et al. [27] also found that greater intensity of pain was associated with worse physical functioning in patients with bilateral knee OA. Also, the same study demonstrated that women with bilateral knee OA in comparison with healthy women have worse physical functioning shown by the WOMAC and SF-36 questionnaires, as well as greater stiffness measured by the WOMAC questionnaire, while correlation between pain and both the WOMAC (r = 0.608) and SF-36 (r = -0654) questionnaires was statistically significant, which is consistent with our results [27]. Similar results were obtained in the research by Stratford and Kennedy [28], which showed that WOMAC physical functioning scale highly correlates with pain, and that pain was the most influential determinant of physical functioning. The result of our study is also confirmed by the work of Maly et al. [29], which proved a strong correlation coefficient between pain and the WOMAC and SF-36 questionnaires. A significant connection between pain, stiffness and self-reported measurements in patients with knee OA was also noted, whereby this relationship is stronger than the relationship between pain, stiffness and performances in the same patients. The results of this study also found a strong correlation between the WOMAC-PF subscales and pain and knee strength, while the SF-36 questionnaire was strongly associated with pain, strength and depression [29]. In a study of 81 patients with knee OA, Mohajjel-Aghdam et al. [21] confirmed that pain, stiffness and duration of disease were significantly associated with physical functioning. Perrot et al. [30] have shown in a national study that stronger pain was associated with greater functional loss. Zvekić-Svorcan et al. [31] reported that an increase in pain was followed by a decreased tolerance to vertical load, as well as the tolerance to walk, followed by a reduced

mobility in the affected knee. In addition, a correlation between pain and functional limitations has also been demonstrated [31]. The results obtained in our study concur with the results by Creamer et al. [32], who showed that even after adjusting for confounding variables, there was a significant correlation between pain intensity measured by the WOMAC pain scale or MPQ and incompetence measured by the WOMAC questionnaire. Similarly, functional disability declined as pain threshold was higher [32]. The results of a study which included 2,252 patients with knee OA found a growing trend of functional limitations with increasing levels of pain and stiffness. Also, the strongest connection was found with the highest categories of pain after adjusting for age, gender and socio-economic status [33]. In a work by Riddle and Stratford [34] which involved 852 patients with knee OA (449 of them had unilateral OA) revealed that the strongest connection was between the WOMAC physical functioning subscale and pain intensity in patients with unilateral versus bilateral knee OA [34].

Knee OA may have an impact on the quality of life in these patients [35, 36]. Therefore, we used the generic SF-36 questionnaire in our study to evaluate the quality of life. According to the results of our study, a highly significant correlation was discovered ($p \leq 0.01$) between life quality in patients with knee OA and all of the pain parameters from the SF-MPQ questionnaire. In addition, the physical functioning in these patients was mostly influenced by the overall pain (rho = 0.530). Similar results were reported by Van der Waal et al. [37] in their systematic review, which included 40 observational studies that analyzed the quality of life related to health in patients with non-traumatic disorders of the hip and knee, where it was shown that these disorders had a significant impact on life quality related to health. Also, it was shown that these patients had high pain scores that limited both physical and social functioning [37]. According to the survey by Boutron et al. [38], which was done in the primary health care setting on 4,121 patients with hip or knee OA (knee OA was present in 2,540 patients), a similarly high level of incompetence (measured by the WOMAC and Lequesne questionnaires) and significantly lower HRQoL (measured by the MOS-SF-36 questionnaire) was determined, which is consistent with our study results. Also, the results shown in our study are in accordance with the work of Pang et al. [16] (466 patients with knee OA in China). They concluded that pain intensity was significantly associated with poorer HRQoL scores, as well as that pain intensity had a greater impact on HRQoL, than patient characteristics, other joint symptoms and radiographic findings. They found that WOMAC pain score, age and duration of disease are the factors that have the greatest impact on the SF-36 Physical Component Summary (PSC) in Chinese people with OA of the knee [16].

A study by Kim et al. [19], which included 504 patients showed that subjects with knee pain compared to those without knee pain, even after adjusting for age, sex and the presence of knee OA, had worse scores in all of the WOMAC and SF-12 subscales. Thus, the present study has confirmed the results of previous studies, in which knee pain was associated with worse quality of life [7, 19, 33] and worse physical functioning [19, 33]. Kawano et al. [17] analyzed life quality in patients with knee OA and concluded that their perception of life quality was low, particularly in the domains of functional capacity, functional limitations and pain measured by the SF-36 questionnaire.

In a study which had 101 subjects with knee OA and 15 patients with hip OA, conducted by Nadrian et al. [39], a significant correlation was shown between pain and physical functioning. In addition, moderate to strong correlation strength was observed between the WOMAC subscales and pain (VAS), while between the WOMAC subscales and all of the MOS-SF-20 subscales, correlation strength was weak to moderate [39]. The research of Kumar et al. [40] investigated the quality of life in relation to health in patients with knee OA, which found that pain and physical functioning had the greatest impact on HRQoL in these patients.

The results of our study should be interpreted taking into account several methodological limitations. Our research had cross-sectional design and, therefore, the longer follow-up period could provide more data on long-term consequences of osteoarthritis pain on quality of life in different circumstances relating to the patient's social and particularly, working environments. We used three clinical rating instruments, one for each of three primary study outcomes. As any evaluating tool has its strengths but also shortcomings the use of multiple assessment scales for a given study endpoint could significantly overcome such limitations particularly under double-blind design. We found no study in Serbia similar to our research and, therefore, our results should be considered a starting point for future, more comprehensive investigations in the field.

CONCLUSION

According to the results of our study, knee pain has a significant impact on functional capacity and life quality related to health in patients with knee osteoarthrits. Therefore, one of the main therapy goals for osteoarthrits of the knee should be the reduction of pain in the affected knee, which can help to improve the functionality and health related quality of life of these patients.

REFERENCES

1. McAlindon TE, Bannuru RR, Sullivan MC, Arden NK, Berenbaum F, Bierma-Zeinstra SM, et al. OARSI guidelines for the non-surgical management of knee osteoarthritis. Osteoarthritis Cartilage. 2014; 22(3):363–88.

2. Wysocka-Skurska I, Sierakowska M, Kułak W. Evaluation of quality of life in chronic, progressing rheumatic diseases based on the example of osteoarthritis and rheumatoid arthritis. Clin Interv Aging. 2016; 11:1741–50.

3. Johnson VL, Hunter DJ. The epidemiology of osteoarthritis. Best Pract Res Clin Rheumatol. 2014; 28(1):5–15.
4. Santos JP, Andraus R, Pires-Oliveira D, Fernandes M, Francica M, Poli-Frederico R, et al. Analysis of functional status of elderly with osteoarthritis. Fisioter Pesq. 2015; 22(2):161–8.
5. Wang D, Jones MH, Khair MM, Miniaci A. Patient-reported outcome measures for the knee. J Knee Surg. 2010; 23(3):137–51.
6. Konstantinidis GA, Aletras VH, Kanakari KA, Natsis K, Bellamy N, Niakas D. Comparative validation of the WOMAC osteoarthritis and Lequesne algofunctional indices in Greek patients with hip or knee osteoarthritis. Qual Life Res. 2014; 23(2):539–48.
7. Aksekili M, Fidan F, Alkan BM. Quality of life in knee osteoarthritis; correlation with clinical measures and the knee injury and osteoarthritis outcome score. Acta Med Anatol. 2016; 4(1):1–7.
8. Altman R, Asch E, Bloch D, Bole G, Borenstein D, Brandt K, et al. Development of criteria for the classification and reporting of osteoarthritis. Classification of osteoarthritis of the knee. Diagnostic and Therapeutic Criteria Committee of the American Rheumatism Association. Arthritis Rheum. 1986; 29(8):1039–49.
9. Melzack R. The short-form McGill Pain Questionnaire. Pain 1987; 30(2):191–7.
10. Melzack R, Katz J. McGill Pain Questionnaire. In: Schmidt RF, Willis WD, editors. Encyclopedia of Pain, 1th edition. Berlin, Heidelberg: Springer-Verlag; 2007. p. 1102–4.
11. White DK, Master H. Patient-reported measures of physical function in knee osteoarthritis. Rheum Dis Clin North Am. 2016; 42(2):239–52.
12. Araujo ILA, Castro MC, Daltro C, Matos MA. Quality of Life and Functional Independence in Patients with Osteoarthritis of the Knee. Knee Surg Relat Res. 2016; 28(3):219–24.
13. Boutron I, Rannou F, Jardinaud-Lopez M, Meric G, Revel M, Poiraudeau S. Disability and quality of life of patients with knee or hip osteoarthritis in the primary care setting and factors associated with general practitioners' indication for prosthetic replacement within 1 year. Osteoarthritis Cartilage. 2008; 16(9):1024–31.
14. Muraki S, Akune T, Oka H, Ishimoto Y, Nagata K, Yoshida M, et al. Incidence and risk factors for radiographic knee osteoarthritis and knee pain in Japanese men and women: a longitudinal population-based cohort study. Arthritis Rheum. 2012; 64(5):1447–56.
15. Tonelli SM, Rakel BA, Cooper NA, Angstom WL, Sluka KA. Women with knee osteoarthritis have more pain and poorer function than men, but similar physical activity prior to total knee replacement. Biol Sex Differ. 2011; 2:12.
16. Pang J, Cao YL, Zheng YX, Gao NY, Wang XZ, Chen B, et al. Influence of pain severity on health-related quality of life in Chinese knee osteoarthritis patients. Int J Clin Exp Med. 2015; 8(3):4472–9.
17. Kawano MM, Araújo IL, Castro MC, Matos MA. Assessment of quality of life in patients with knee osteoarthritis. Acta Ortop Bras. 2015; 23(6):307–10.
18. Northon S, Boivin K, Laurencelle L. Knee problems: prevalence and need for a better follow-up in akinesiology clinic. ResGate. 2016; Available from: https://www.researchgate.net/publication/. DOI: 10.13140/RG.2.1.2927.5921.
19. Kim IJ, Kim HA, Seo YI, Jung YO, Song YW, Jeong JY, et al. Prevalence of knee pain and its influence on quality of life and physical function in the Korean elderly population: a community based cross-sectional study. J Korean Med Sci. 2011; 26(9):1140–6.
20. Watanabe H, Urabe K, Takahira N, Ikeda N, Fujita M, Obara S, et al. Quality of life, knee function, and physical activity in Japanese elderly women with early-stage knee osteoarthritis. J Orthop Surg (Hong Kong). 2010; 18(1):31–4.
21. Mohajjel-Aghdam AR, Kolahi S, Hasankhani H, Behshid M, Varmaziar Z. The relationship between pain and physical function in adults with knee osteoarthritis. Intl Res J Appl Basic Sci. 2013; 4(5):1102–6.
22. Glyn-Jones S, Palmer AJ, Agricola R, Price AJ, Vincent TL, Weinans H, Carr AJ. Osteoarthritis. Lancet. 2015; 386(9991):376–87.
23. Salaffi F, Ciapetti A, Carotti M. Pain assessment strategies in patients with musculoskeletal conditions. Reumatismo. 2012; 64(4):216–29.
24. Kachooei AR, Ebrahimzadeh HM, Erfani-Sayyar R, Salehi M, Salimi E, Razi S, et al. Short Form-McGill Pain Questionnaire-2 (SF-MPQ-2): A Cross-Cultural Adaptation and Validation Study of the Persian Version in Patients with Knee Osteoarthritis. Arch Bone Jt Surg. 2015; 3(1):45–50.
25. Hawker GA, Mian S, Kendzerska T, French M. Measures of adult pain: Visual Analog Scale for Pain (VAS Pain), Numeric Rating Scale for Pain (NRS Pain), McGill Pain Questionnaire (MPQ), Short-Form McGill Pain Questionnaire (SF-MPQ), Chronic Pain Grade Scale (CPGS), Short Form-36 Bodily Pain Scale (SF-36 BPS), and Measure of Intermittent and Constant Osteoarthritis Pain (ICOAP). Arthritis Care Res (Hoboken). 2011; 63 Suppl 11:S240–52.
26. Gandhi R, Tsvetkov D, Dhottar H, Davey JR, Mahomed NN. Quantifying the pain experience in hip and knee osteoarthritis. Pain Res Manage. 2010; 15(4):224–8.
27. Alburquerque-García A, Rodrigues-de-Souza DP, Fernández-de-las-Peñas C, Alburquerque-Sendín F. Association between muscle trigger points, ongoing pain, function, and sleep quality in elderly women with bilateral painful knee osteoarthritis. J Manipulative Physiol Ther. 2015; 38(4):262–8.
28. Stratford PW, Kennedy DM. Performance measures were necessary to obtain a complete picture of osteoarthritic patients. J Clin Epidemiol. 2006; 59(2):160–7.
29. Maly MR, Costigan PA, Olney SJ. Determinants of self-report outcome measures in people with knee osteoarthritis. Arch Phys Med Rehabil. 2006; 87(1):96–104.
30. Perrot S, Poiraudeau S, Kabir-Ahmadi M, Rannou F. Correlates of pain intensity in men and women with hip and knee osteoarthritis. Results of a national survey: The French ARTHRIX study. Clin J Pain. 2009; 25(9):767–72.
31. Zvekić-Svorcan J, Mikov A, Mikov I, Filipović K, Subin-Teodosijević S. Uticaj bola na funkcionalnu sposobnost pacijenata sa osteoartrozom kolena. Timočki Medicinski Glasnik. 2012; 37(2):94–100.
32. Creamer P, Lethbridge-Cejku M, Hochberg MC. Factors associated with functional impairment in symptomatic knee osteoarthritis. Rheumatology (Oxford). 2000; 39(5):490–6.
33. Wilkie R, Peat G, Thomas E, Croft P. Factors associated with restricted mobility outside the home in community-dwelling adults ages fifty years and older with knee pain: an example of use of the International Classification of Functioning to investigate participation restriction. Arthritis Rheum. 2007; 57(8):1381–9.
34. Riddle DL, Stratford PW. Unilateral vs bilateral symptomatic knee osteoarthritis: associations between pain intensity and function. Rheumatology (Oxford). 2013; 52(12):2229–37.
35. Pells JJ, Shelby RA, Keefe FJ, Dixon KE, Blumenthal JA, Lacaille L, et al. Arthritis self-efficacy and self-efficacy for resisting eating: relationships to pain, disability, and eating behavior in overweight and obese individuals with osteoarthritic knee pain. Pain. 2008; 136(3):340–7.
36. Cook C, Pietrobon R, Hegedus E. Osteoarthritis and the impact on quality of life health indicators. Rheumatol Int. 2007; 27(4):315–21.
37. van der Waal JM, Terwee CB, van der Windt DA, Bouter LM, Dekker J. The impact of non-traumatic hip and knee disorders on health-related quality of life as measured with the SF-36 or SF-12. A systematic review. Qual Life Res. 2005; 14(4):1141–55.
38. Boutron I, Rannou F, Jardinaud-Lopez M, Meric G, Revel M, Poiraudeau S. Disability and quality of life of patients with knee or hip osteoarthritis in the primary care setting and factors associated with general practitioners' indication for prosthetic replacement within 1 year. Osteoarthritis Cartilage. 2008; 16(9):1024–31.
39. Nadrian H, Moghimi N, Nadrian E, Moradzadeh R, Bahmanpour K, Iranpour A, et al. Validity and reliability of the Persian versions of WOMAC Osteoarthritis Index and Lequesne Algofunctional Index. Clin Rheumatol. 2012; 31(7):1097–102.
40. Harsha Kumar HN, Nagaraj K, Luthra K, Gupta P, Sapar P, Gupta S, et al. Health-related quality of life among osteoarthritis patients attending primary care clinics of Mangalore city. Int J Med Public Health. 2015; 5:55–8.

Утицај бола на функционалност и квалитет живота у вези са здрављем болесника са остеоартритисом колена

Александра Јуришић-Шкевин[1,2], Весна Грбовић[1,2], Ивана Станковић[3], Александар Радуновић[4], Јасмин Нурковић[5], Бојан Милошевић[6,2], Александар Цветковић[6,2], Ана Дивјак[1], Маја Вуловић[7]

[1]Универзитет у Крагујевцу, Факултет медицинских наука, Катедра за физикалну медицину и рехабилитацију, Крагујевац, Србија;
[2]Клинички центар Крагујевац, Крагујевац, Србија;
[3]Универзитет одбране у Београду, Војномедицинска академија, Институт за медицинска истраживања, Београд, Србија;
[4]Војномедицинска академија, Клиника за ортопедску хирургију и трауматологију, Београд, Србија;
[5]Државни универзитет у Новом Пазару, Департман за биомедицинске науке, Нови Пазар, Србија;
[6]Универзитет у Крагујевцу, Факултет медицинских наука, Катедра за хирургију, Крагујевац, Србија;
[7]Универзитет у Крагујевцу, Факултет медицинских наука, Катедра за анатомију, Крагујевац, Србија

САЖЕТАК

Увод/Циљ Бол, укоченост и ограничена покретљивост су главни елементи који доводе до отежаног обављања свакодневних активности и пада квалитета живота код особа са остеоартритисом (ОА) колена.

Циљ овог истраживања била је евалуација функционалне способности и квалитета живота у вези са здрављем (КЖЗ) у односу на бол код болесника са ОА колена, као и корелација ове три клиничке варијабле.

Методе У студију је био укључен 931 болесник са ОА колена. Код свих је извршена евалуација бола кратком формом Макгиловог упитника о болу (МУБ), евалуација функционалног статуса путем артритис-индекса универзитета Западни Онтарио и Макмастер (ЗОМАИ) и евалуација квалитета живота помоћу Кратке форме студије праћења здравља са 36 ставки (КФ-36).

Резултати Просечна старост је била 61,21 ± 4,62 година, а 71,3% болесника су биле жене. Квалитет живота болесника са ОА колена и сви параметри бола садржани у МУБ били су високо статистички значајно позитивно повезани ($p \leq 0,01$). Притом, на физичко функционисање најјаче је утицао емотивни бол (*rho* = -0,585). Доказана је и високо статистички значајна повезаност ($p \leq 0,01$) између укочености и физичког функционисања из упитника ЗОМАИ и свих параметара бола из МУБ. Физичко функционисање из упитника ЗОМАИ најјаче је корелирало са укупним болом инкорпорираним у МУБ (*rho* = 0,530).

Закључак Бол у колену има значајан утицај на функционалну способност и КЖЗ код болесника са ОА колена. Стога, један од главних циљева терапије код ОА колена треба да буде редукција бола у захваћеном колену, чиме се може побољшати функционалност и КЖЗ ових болесника.

Кључне речи: остеоартритис колена; бол; функционална способност; квалитет живота у вези са здрављем