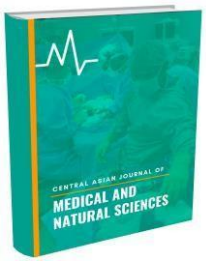

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Age-Related Differences in Physical Activity Among Patients with Osteochondrosis: A Clinical Assessment Using Woman and Lequesne Scales

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Abstract: Osteochondrosis is among the most prevalent degenerative-dystrophic conditions of the musculoskeletal system. Its impact on physical activity and quality of life varies significantly with age; however, comparative data for middle-aged and elderly populations in Central Asia remain scarce. To assess age-related differences in physical activity levels and quality of life among patients with osteochondrosis using validated clinical instruments (WOMAC, Lequesne, EQ-5D). A cross-sectional survey-based study of 60 patients aged 40–75 years with confirmed osteochondrosis was conducted. Participants were divided into two groups: middle-aged (46–60 years, n=32) and elderly (61–75 years, n=28). Physical activity was evaluated using the Western Ontario and McMaster Universities Arthritis Index (WOMAC), Lequesne Index, and EQ-5D quality-of-life scale, supplemented by a structured questionnaire on lifestyle and daily activity. Elderly patients demonstrated significantly higher total WOMAC scores (35.2 ± 4.2 vs. 22.9 ± 3.8, $p < 0.001$) and Lequesne Index values (11.0 ± 1.8 vs. 7.4 ± 1.2, $p < 0.001$). Daily physical activity levels below 30 minutes were reported by 50% of elderly patients versus 25% of middle-aged patients. EQ-5D scores revealed greater impairment in all five dimensions among the elderly group. Age-related decline in physical activity is pronounced among osteochondrosis patients and correlates with higher pain intensity and functional limitations. Individualized, age-stratified rehabilitation programs are essential for improving patient outcomes.

Keywords: Osteochondrosis, Physical Activity, WOMAC, Lequesne Index, Quality of Life, Aging, Functional Limitations, Rehabilitation, EQ-5D, Musculoskeletal Disorders.

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1. Introduction

Osteochondrosis, characterized by progressive degeneration of intervertebral discs and adjacent vertebral structures, is one of the most common musculoskeletal disorders globally, affecting an estimated 60–80% of adults at some point in their lives. The condition is particularly prevalent among elderly individuals, in whom it often coexists with comorbidities such as arterial hypertension, type 2 diabetes mellitus, and cardiovascular disease, thereby amplifying functional decline [1].

Physical activity is a cornerstone of musculoskeletal health and plays a pivotal role in pain management, preservation of joint mobility, and maintenance of independent living. Nevertheless, osteochondrosis-related pain syndrome, stiffness, and neurological deficits frequently lead to significant reductions in daily movement, particularly in older adults [2]. According to the World Health Organization (WHO), adults aged 65 and over

who fail to meet recommended physical activity levels face substantially elevated risks of cardiovascular events, depression, and all-cause mortality [3].

Despite the clinical importance of this issue, comparative data on physical activity levels between middle-aged and elderly osteochondrosis patients in Central Asian populations remain limited. The WOMAC index and Lequesne scale are internationally validated instruments for assessing pain, stiffness, and physical function in patients with musculoskeletal disorders, while the EQ-5D instrument provides a standardized measure of health-related quality of life [4].

The present study was designed to quantify age-related differences in physical activity and quality of life among osteochondrosis patients using these validated tools, and to generate data that can inform the development of individualized rehabilitation protocols in Uzbekistan [5].

2. Materials and Methods

Study design and setting. A cross-sectional, survey-based clinical study was conducted at the Department of Medical Rehabilitation, Sports Medicine, Traditional Medicine and Physical Education, Tashkent State Medical University, from September 2024 to January 2025. The study protocol was approved by the Institutional Ethics Committee and complied with the Declaration of Helsinki [6].

Sixty patients with clinically and radiologically confirmed osteochondrosis were enrolled. Inclusion criteria: (i) diagnosis of spinal osteochondrosis (ICD-10: M47); (ii) age 40–75 years; (iii) ability to complete self-report questionnaires. Exclusion criteria: recent spinal surgery, acute vertebral fracture, severe cognitive impairment, or inability to provide written informed consent. Participants were stratified into two groups: Group I — middle-aged (46–60 years, n=32) and Group II — elderly (61–75 years, n=28) [7].

The WOMAC questionnaire (24-item, 0–96 scale) assessed pain (0–20), stiffness (0–8), and physical function (0–68). The Lequesne Algofunctional Index (0–24) evaluated pain intensity and activity limitations. Health-related quality of life was measured using the EQ-5D descriptive system across five dimensions (mobility, self-care, usual activities, pain/discomfort, anxiety/depression), scored 1–3. A supplementary structured questionnaire captured daily physical activity duration, dietary habits, health literacy, and preferred health information modalities [8].

3. Results and Discussion

Demographic characteristics. The two groups were comparable in sex distribution (59.4% vs 57.1% female, p=0.857) but differed significantly in mean age (51.3 ± 5.8 vs 66.4 ± 4.2 years), disease duration (4.2 ± 2.1 vs 8.7 ± 3.4 years), BMI (26.8 ± 3.1 vs 28.4 ± 3.6 kg/m²), and comorbidity burden (34.4% vs 71.4%). Full baseline characteristics are presented in Table 1 [9].

Table 1. Baseline demographic and clinical characteristics of study participants.

Characteristic	Middle-aged (46–60 yrs, n=32)	Elderly (61–75 yrs, n=28)	p-value
Age (mean ± SD, yrs)	51.3 ± 5.8	66.4 ± 4.2	< 0.001
Sex: Female, n (%)	19 (59.4%)	16 (57.1%)	0.857
BMI (kg/m²)	26.8 ± 3.1	28.4 ± 3.6	0.048

Disease duration (yrs)	4.2 ± 2.1	8.7 ± 3.4	< 0.001
Comorbidities, n (%)	11 (34.4%)	20 (71.4%)	0.003
Current smoker, n (%)	8 (25.0%)	5 (17.9%)	0.490

SD: standard deviation; BMI: body mass index. p-values from an independent t-test or chi-square test.

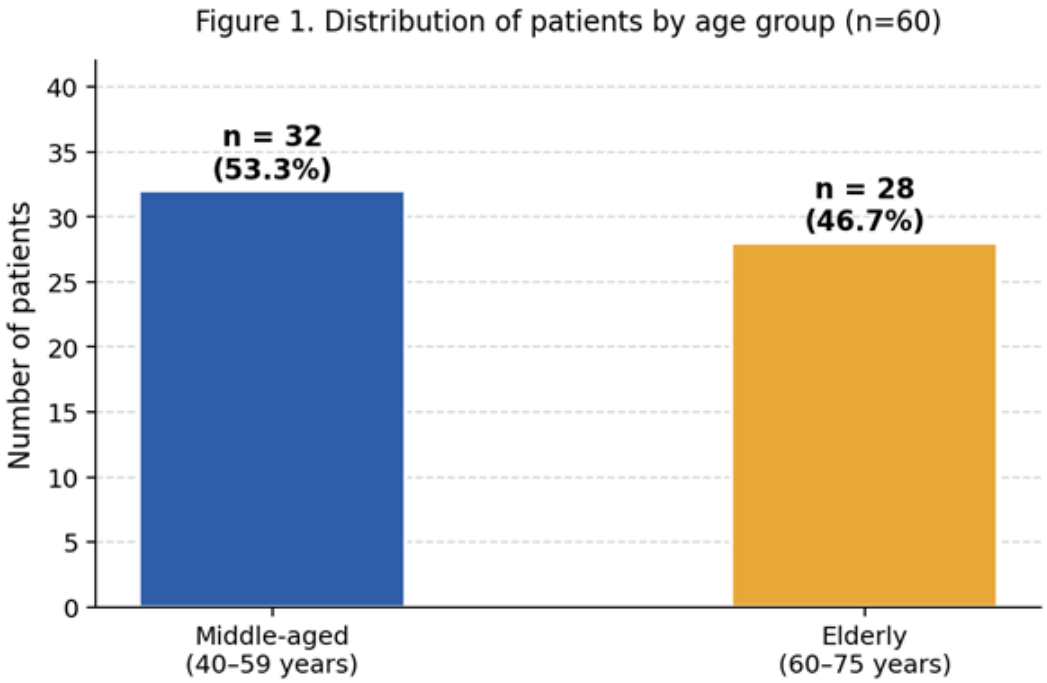

Figure 1. Illustrates the distribution of participants across age groups.

WOMAC and Lequesne scores. Elderly patients recorded significantly higher total WOMAC scores (35.2 ± 4.2 vs 22.9 ± 3.8 points, $p < 0.001$) and Lequesne Index values (11.0 ± 1.8 vs 7.4 ± 1.2, $p < 0.001$) compared to middle-aged patients. All WOMAC subscales — pain, stiffness, and physical function — were significantly elevated in the elderly group (all $p < 0.001$). These findings are detailed in Table 2 and visualized in Figures 2 and 3 [10].

Table 2. WOMAC subscale and Lequesne Index scores by age group (mean ± SD).

WOMAC Subscale	Middle-aged (mean ± SD)	Elderly (mean ± SD)	p-value
Pain	18.2 ± 3.4	24.7 ± 4.1	< 0.001
Stiffness	6.1 ± 1.5	8.3 ± 1.9	0.001
Physical function	28.4 ± 5.2	38.6 ± 6.3	< 0.001
Total WOMAC score	22.9 ± 3.8	35.2 ± 4.2	< 0.001
Lequesne Index	7.4 ± 1.2	11.0 ± 1.8	< 0.001

All between-group differences were statistically significant at $p < 0.05$ (independent t-test).

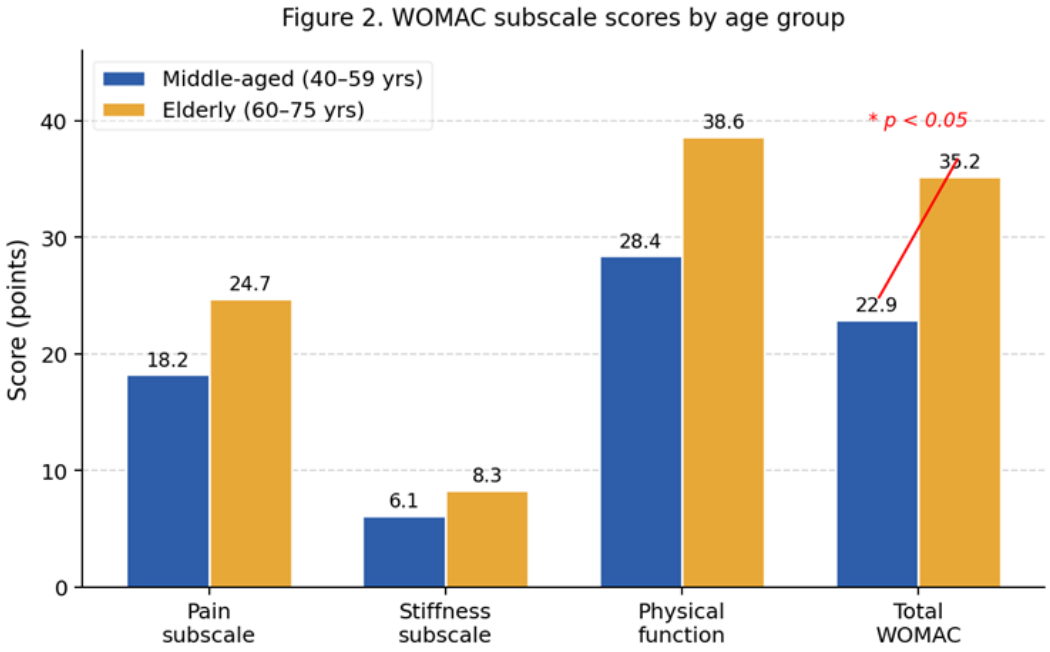

Figure 2. WOMAC subscale scores by age group (* $p < 0.05$).

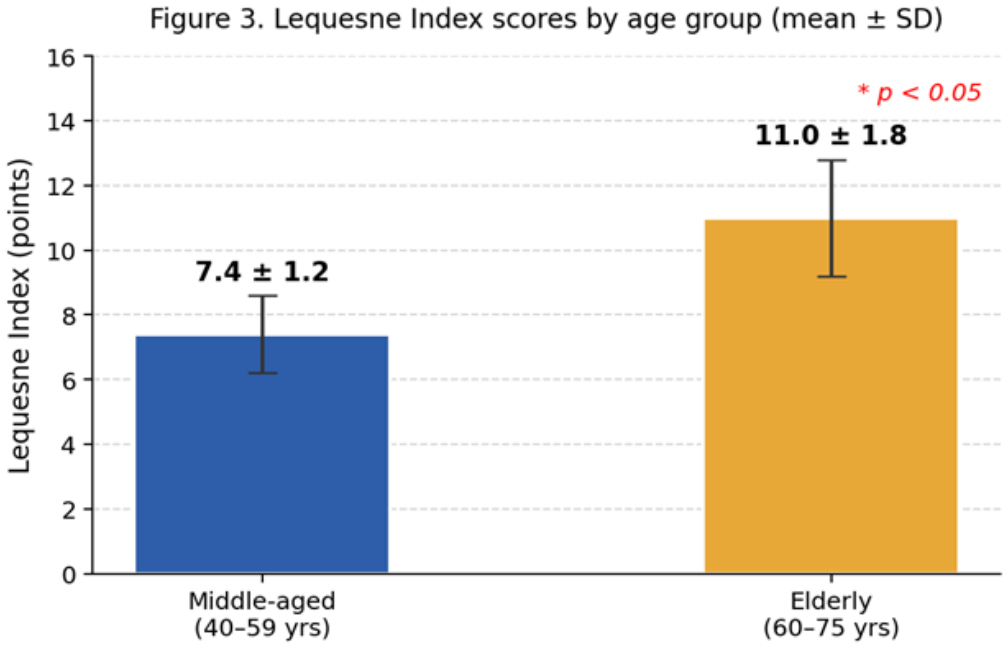

Figure 3. Lequesne Index scores by age group (mean ± SD, * $p < 0.05$).

Analysis of the structured questionnaire revealed that 50% of elderly patients reported less than 30 minutes of daily physical activity, compared to 25% in the middle-aged group. Conversely, only 5% of elderly patients reported more than 90 minutes of daily activity versus 12% in the younger cohort. The distribution of daily physical activity categories is shown in Figure 4 [11].

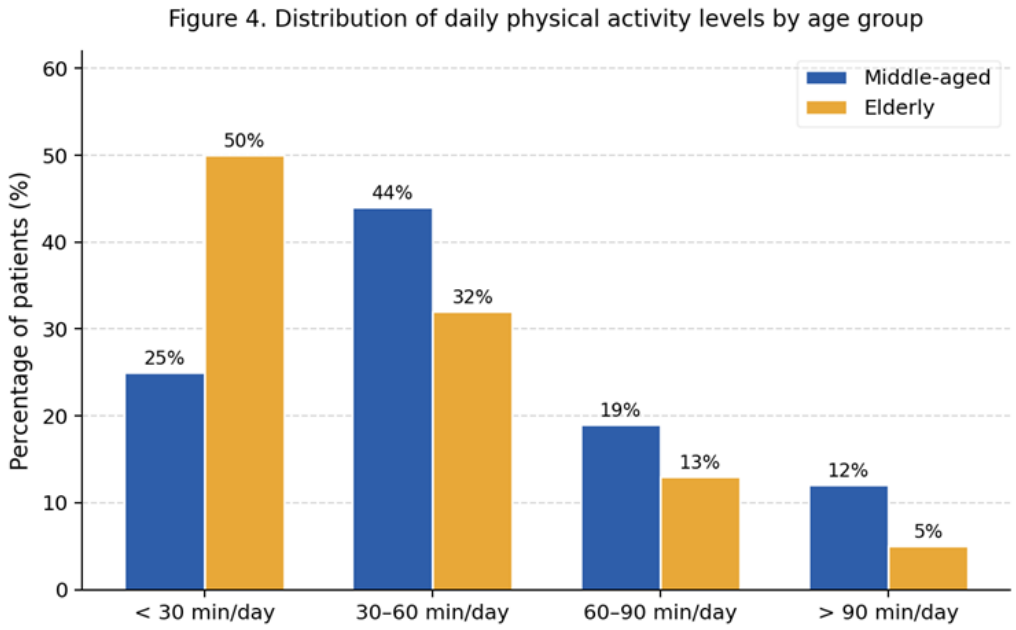

Figure 4. Distribution of daily physical activity levels by age group (%).

Elderly patients reported greater impairment across all five EQ-5D dimensions. The largest differences were observed in the "pain/discomfort" dimension (2.8 ± 0.4 vs 2.2 ± 0.3, $p < 0.001$) and "usual activities" (2.7 ± 0.5 vs 2.0 ± 0.4, $p < 0.001$). Results are presented in Figure 5 [12].

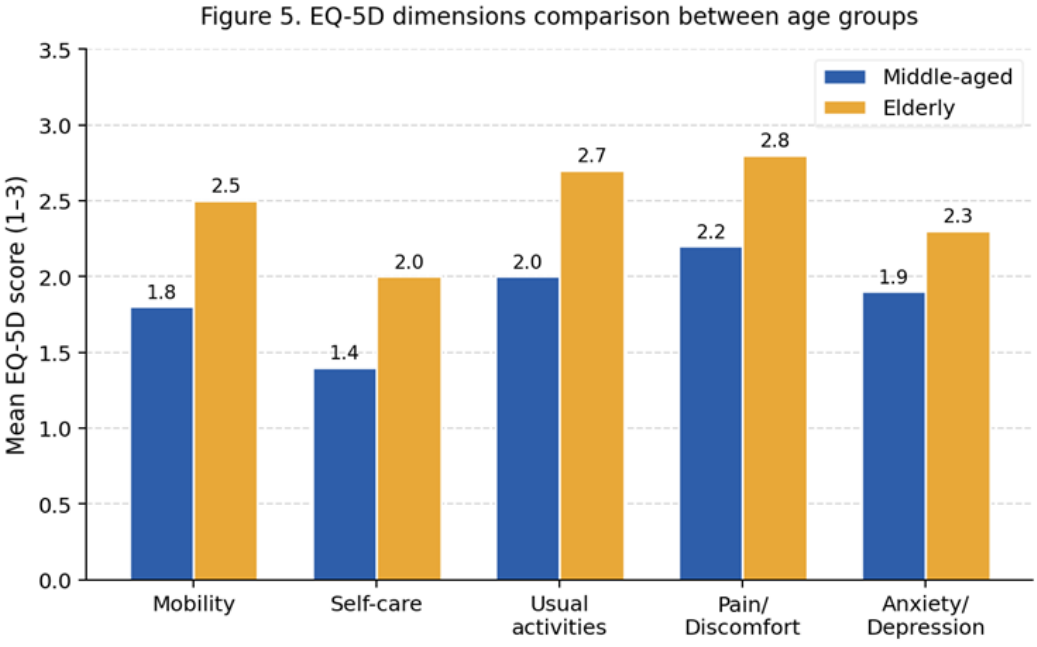

Figure 5. EQ-5D dimensions comparison between age groups (mean scores, 1=no problem, 3=extreme problems).

Regarding health-related behaviors, 72% of all patients reported attempting to maintain recommended physical activity levels, while 38% cited work or occupational constraints as a barrier. When asked what health most depends on, 70% of respondents attributed it to personal lifestyle choices, while heredity (12%), environment (10%), and medical care (8%) were cited less frequently. Among women, 70% reported adequate

health knowledge, while 25% felt insufficiently informed. Preferred formats for health education included lectures (60%), interactive formats (30%), and organized events such as excursions and festivals (10%) [13].

The present study provides quantitative evidence that elderly osteochondrosis patients exhibit significantly greater functional limitations, pain burden, and physical inactivity compared to their middle-aged counterparts. These findings are consistent with international literature documenting the progressive nature of degenerative spinal disease with advancing age [14].

The mean WOMAC total score of 35.2 ± 4.2 in the elderly group exceeded the threshold commonly associated with moderate-to-severe functional disability, while the Lequesne Index value of 11.0 ± 1.8 indicated severe algofunctional impairment according to established cut-offs . These results are in agreement with F.M Ansiferova, who reported elevated WOMAC scores in elderly patients with comorbid osteochondrosis and hypertension, and with A.T Vasileva and D. NStarodubtseva, who demonstrated the impact of comorbidities on functional outcomes [15].

The finding that 50% of elderly patients perform less than 30 minutes of daily physical activity is clinically significant. WHO guidelines recommend a minimum of 150 minutes of moderate-intensity activity per week for older adults; our data suggest that the majority of elderly osteochondrosis patients in this cohort fall well below this threshold. This "physical activity gap" is attributable to the interplay of pain syndrome, fear of movement (kinesiophobia), and age-related sarcopenia, all of which require targeted rehabilitation strategies [16].

The EQ-5D results reinforce the WOMAC findings, highlighting the multidimensional nature of quality-of-life impairment in this population. The "pain/discomfort" and "usual activities" dimensions were most severely affected in the elderly group, underscoring the need for multimodal pain management and functional rehabilitation. These observations align with Izmozherova and Kaysinova, who similarly documented poor quality-of-life outcomes in elderly osteoarthritis patients with comorbid conditions [17].

A notable strength of this study is its use of three complementary validated instruments (WOMAC, Lequesne, EQ-5D) alongside a structured questionnaire, which enabled a multidimensional assessment of physical function and health behavior. The primary limitation is the relatively small sample size (n=60) and single-center design, which may limit generalizability. Future studies with larger, multicenter samples and longitudinal follow-up are warranted to confirm these findings and evaluate the efficacy of tailored rehabilitation interventions [18].

4. Conclusion

This study demonstrates statistically significant age-related differences in physical activity, functional capacity, and quality of life among patients with osteochondrosis. Elderly patients exhibited markedly higher WOMAC and Lequesne scores, lower daily physical activity, and greater EQ-5D impairment than their middle-aged counterparts. These findings underscore the urgent need for individualized, age-stratified rehabilitation programs that address the specific functional, psychological, and behavioral needs of elderly osteochondrosis patients. The combined use of WOMAC, Lequesne, and EQ-5D scales is recommended as a comprehensive assessment toolkit in clinical practice and research settings.

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Author contributions: D.M. Akhmedova: study design, data collection, manuscript preparation, data analysis, statistical processing. G.N. Sobirova: conceptualization, supervision, critical revision.

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