



## Cognitive Function Assessment in Albanian Patients with Rheumatoid Arthritis and Osteoarthritis: A Cross-Sectional Study

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### Abstract

Chronic inflammatory conditions such as rheumatoid arthritis (RA) and osteoarthritis (OA) not only affect physical health but also have implications for cognitive function. This study aimed to assess cognitive impairment in patients with RA and OA compared to healthy controls. A total of 67 RA and OA patients and 30 healthy individuals were recruited, and cognitive function was evaluated using the Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA) scale. Results showed a high prevalence of cognitive impairment in both RA and OA patients, with older age and higher disease activity scores being significant factors associated with greater cognitive decline. Interestingly, no significant difference in cognitive function was observed between RA and OA patients. These findings underscore the importance of recognizing and addressing cognitive impairment in arthritis patients for comprehensive management and improved quality of life.

**Keywords:** Cognitive Impairment; Rheumatoid Arthritis; Osteoarthritis; MMSE; MoCA; Disease Activity

### Introduction

Osteoarthritis (OA) and rheumatoid arthritis (RA) are indeed prominent chronic inflammatory joint diseases globally, posing significant burdens on individuals and healthcare systems [1,2]. While these conditions primarily manifest as joint pain, swelling, and stiffness, emerging evidence suggests broader impacts, including on cognitive function [3].

Cognitive impairment, spanning deficits in memory, attention, executive function, and processing speed, is increasingly recognized as a potential comorbidity in various chronic diseases, including arthritis [4]. However, the precise nature and extent of cognitive impairment in OA and RA remain incompletely understood, with conflicting findings in existing literature [5,6].

Understanding the cognitive profile of individuals with OA and RA is crucial for several reasons. Firstly, cognitive impairment can significantly impact the quality of life, potentially leading to difficulties in managing arthritis symptoms, treatment adherence, and performing daily activities [7]. Secondly, it may influence clinical outcomes, such as treatment response, disease progression, and overall prognosis. Moreover, identifying cognitive impairment early in the disease course may facilitate timely interventions, including cognitive rehabilitation strategies, to mitigate its adverse effects [8].

To address these gaps in knowledge, the present study aims to investigate cognitive impairment in patients with OA and RA, focusing on individuals receiving care at Berat Hospital in Albania. We will employ two widely utilized screening tools, namely the

Mini-Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA) scale, to comprehensively evaluate various cognitive domains in our study population.

## Methodology

Sixty-seven patients aged 28 to 72 years old, diagnosed with either rheumatoid arthritis (RA) or osteoarthritis (OA) according to the American College of Rheumatology/European League Against Rheumatism (ACR/EULAR) criteria, were recruited from Berat Hospital between September 2023 and December 2023. Additionally, a control group consisting of 30 healthy individuals was recruited to provide comparative data.

Demographic and clinical data were collected from each participant, including age, gender, education level, disease duration, and severity of arthritis. Disease severity was assessed using standardized measures appropriate for each condition.

Cognitive function was evaluated using two widely recognized screening tools: the Mini-Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA) scale. These assessments were administered to both the patient group and the control group to compare cognitive function between individuals with arthritis and healthy controls.

Scores obtained from the MMSE and MoCA assessments were analysed to determine the prevalence and severity of cognitive impairment in patients with OA and RA, as well as to compare cognitive function between arthritis patients and healthy controls. Descriptive statistics were used to summarize demographic and clinical characteristics of the study population, while inferential statistics, such as t-tests or chi-square tests, were conducted to examine differences in cognitive function between groups.

## Results

The mean age of the participants was 47.57 years (SD 14.83), with a majority being female (65.67%, 44 out of 67).

Approximately 62.68% of the participants were classified as cognitively impaired based on the Montreal Cognitive Assessment (MoCA) score ( $\leq 26$ ) or Mini-Mental State Examination (MMSE) score ( $\leq 24$  out of 30). Older age was significantly associated with greater cognitive decline ( $p = 0.005$ ).

Furthermore, participants with higher disease activity scores ( $\text{DAS28} > 3.2$ ) demonstrated more pronounced cognitive impairment compared to those in remission or with low disease activity ( $\text{DAS28} \leq 3.2$ ).

There was no significant association between MMSE and MoCA scores and variables such as education level, type of medication administered, or gender ( $p > 0.05$ ).

No significant difference in MMSE and MoCA scores was observed between patients with osteoarthritis (OA) and rheumatoid arthritis (RA) ( $p > 0.01$ ), indicating a similar prevalence and severity of cognitive impairment in both groups.

Among the participants, 24 had completed primary education, 29 had completed secondary education, and 14 had completed tertiary education. Analysis revealed no significant association between cognitive function and education level ( $p > 0.005$ ).

Cognitive impairment was more common in patients with rheumatoid arthritis (62.68%) than in the control group (23.33%).

## Discussion

The prevalence of cognitive impairment observed in this study highlights the importance of considering cognitive function as part of the comprehensive assessment of patients with arthritis [1,2]. The association between older age and cognitive decline is consistent with previous research findings and underscores the need for targeted interventions to support cognitive health in aging populations with arthritis [3].

The correlation between disease activity and cognitive impairment suggests that effective management of arthritis symptoms may have broader implications for cognitive function [4]. Moreover, the absence of significant associations between cognitive function and education level, medication type, or gender suggests that cognitive impairment in arthritis may be influenced by multiple factors, including disease-related processes [5].

The lack of a significant difference in cognitive function between OA and RA patients suggests that cognitive impairment may be a shared feature of chronic inflammatory joint diseases, irrespective of disease etiology [6]. However, further research is needed to elucidate the specific mechanisms underlying neuropsychiatric impairment in rheumatoid arthritis compared to osteoarthritis.

The absence of a significant association between cognitive function and education level ( $p > 0.005$ ) suggests that within the studied population, educational attainment does not appear to influence the prevalence or severity of cognitive impairment. This finding contrasts with some previous studies that have suggested a potential link between higher education levels and better cognitive function. However, it is important to note that cognitive impairment is a complex multifactorial condition influenced by various factors beyond education alone. Additionally, the lack of significant differences in cognitive function between patients with osteoarthritis and rheumatoid arthritis further supports the notion that disease-related factors may have a more substantial impact on cognitive impairment than educational background. Further research is needed to explore the interplay between education, disease factors, and cognitive function in larger and more diverse populations.

## Conclusion

The findings of this study underscore the high prevalence of cognitive impairment in patients with osteoarthritis and rheumatoid arthritis and highlight the need for comprehensive assessment and management of cognitive function in these populations [7,8]. Future research should focus on identifying modifiable factors that may mitigate cognitive decline and neuropsychiatric impairment in arthritis patients, ultimately improving their quality of life and treatment outcomes.

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