

COMPARATIVE EPIDEMIOLOGICAL BURDEN OF OSTEOARTHRITIS IN EASTERN, CENTRAL, AND WESTERN EUROPE BASED ON THE GLOBAL BURDEN OF DISEASE STUDY 2021

Kajos LF^{1,2}, Molics B³, Pónusz-Kovács D^{1,2,4}, Kovács B^{1,4}, Boncz I^{1,2}

1. Institute for Health Insurance, Faculty of Health Sciences, University of Pécs, Pécs, Hungary
2. National Laboratory on Human Reproduction, University of Pécs, Pécs, Hungary
3. Institute of Physiotherapy and Sport Science, Faculty of Health Sciences, University of Pécs, Pécs, Hungary
4. Doctoral School of Health Sciences, Faculty of Health Sciences, University of Pécs, Pécs, Hungary



OBJECTIVES

Osteoarthritis is one of the leading causes of chronic pain and disability worldwide, with substantial regional differences in its epidemiological burden across Eastern, Central, and Western Europe. The aim of our study was to compare the epidemiological burden of osteoarthritis in these three European regions using data from the Global Burden of Disease Study.

METHODS

The epidemiological disease burden of osteoarthritis was analysed using the Global Burden of Disease Study (GBD) Institute for Health Metrics and Evaluation (IHME) database for the year 2021. We compared prevalence, incidence, disability-adjusted life years (DALYs), and years lived with disability (YLDs) related to osteoarthritis across Eastern (EE), Central (CE), and Western Europe (WE) (*Table 1*), disaggregated by sex, age group, and osteoarthritis type.

RESULTS

In 2021, the prevalence of osteoarthritis was 12,596.71 per 100,000 population in CE, 13,110.86 in EE, and 13,618.85 in WE, accounting for 13.00%, 13.64%, and 14.27% of the total regional prevalence, respectively. Age-standardized prevalence was highest in EE (7,906.11 per 100,000; 8.45%), followed by WE (7,113.44; 7.74%) and CE (6,948.51; 7.36%). Incidence was also highest in WE (895.97 per 100,000), followed by EE (886.56) and CE (833.00). The DALY rate was similarly distributed, with the highest burden in WE (487.28 per 100,000; 1.54% of total DALYs), followed by EE (467.01; 0.9%) and CE (446.32; 1.01%). YLDs accounted for 3.36% in WE, 3.27% in EE, and 3.18% in CE (*Table 2*). In all regions, prevalence was higher among women (*Table 3*) and increased with age (*Figure 1*). While the knee joint was most commonly affected in CE and WE, hand osteoarthritis was more prevalent in EE (*Table 4*).

CONCLUSIONS

Osteoarthritis presents a significant epidemiological burden across Europe, with notable regional differences. In 2021, Western Europe had the highest incidence and DALY/YLD rates, while Eastern Europe had the highest age-standardized prevalence. These findings emphasize the need for region-specific public health strategies.

Central Europe	Eastern Europe	Western Europe
Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia	Belarus, Estonia, Latvia, Lithuania, Moldova, Russia, Ukraine	Andorra, Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, the Netherlands, Norway, Portugal, San Marino, Spain, Sweden, Switzerland, United Kingdom

Table 1 List of Central, Eastern and Western Europe countries included in the analysis

	Central Europe	Eastern Europe	Western Europe
Prevalence per 100,000 (%)	12,596.71 (13.00)	13,110.86 (13.64)	13,618.85 (14.27)
Age-standardized prevalence per 100,000 (%)	6,948.51 (7.36)	7,906.11 (8.45)	7,113.44 (7.74)
Incidence per 100,000 (%)	833.0 (0.22)	886.56 (0.19)	895.97 (0.21)
DALY per 100,000 (%)	446.32 (1.01)	467.01 (0.9)	487.28 (1.54)
YLD %	3.18	3.27	3.36

Table 2 Trends in epidemiological disease burden indicators in Central, Eastern, and Western Europe in 2021

	Central Europe		Eastern Europe		Western Europe	
	Male	Female	Male	Female	Male	Female
Prevalence per 100,000 (%)	9,818.06 (10.21)	15,237.28 (15.61)	9,723.94 (10.26)	16,057.6 (16.5)	10,561.01 (11.26)	16,573.61 (17.09)
Age-standardized prevalence per 100,000 (%)	5,999.8 (6.41)	7,730.97 (8.11)	6,952.17 (7.53)	8,546.91 (9.01)	5,882.4 (6.56)	8,222.18 (8.73)

Table 3 Prevalence by sex in Central, Eastern, and Western Europe in 2021

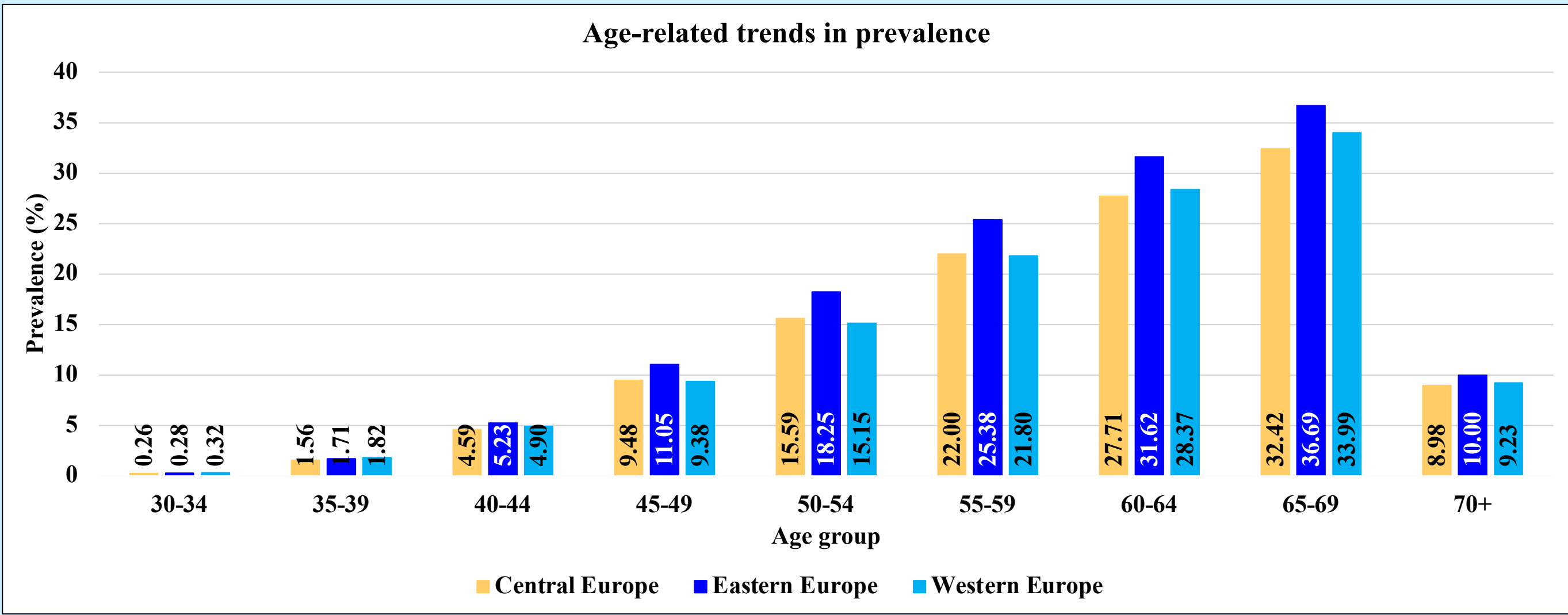


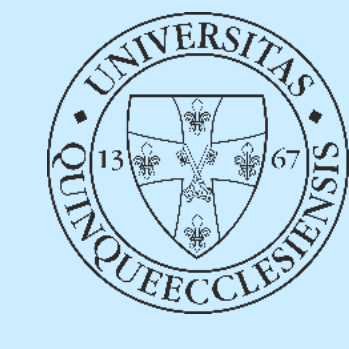
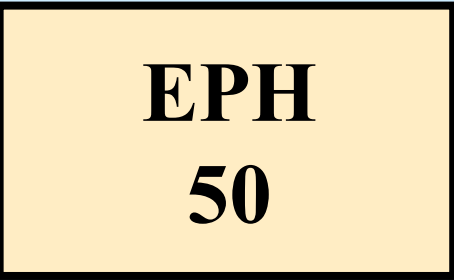
Figure 1 Prevalence by age group in Central, Eastern, and Western Europe in 2021

Prevalence (%)	Central Europe	Eastern Europe	Western Europe
Hand	6.01	7.21	4.62
Hip	1.0	0.91	1.53
Knee	6.07	5.92	8.43
Other	1.46	1.33	1.51

Table 4 Prevalence by type of osteoarthritis in Central, Eastern, and Western Europe in 2021

Financial support:

This research was financed by the Thematic Excellence Program 2021 Health Sub-Programme of the Ministry for Innovation and Technology in Hungary within the framework of the EGA-10 project of the University of Pécs. Project no. RRF-2.3.1-21-2022-00012, titled National Laboratory on Human Reproduction has been implemented with the support provided by the Recovery and Resilience Facility of the European Union within the framework of Programme Széchenyi Plan Plus. Supported by the EKÖP-25-4-II-PTE-644 University Excellence Scholarship Program of the Ministry for Culture and Innovation from the source of the National Research, Development and Innovation Fund.



Corresponding author:

Dr. Luca SÁNTICS-KAJOS, PhD
University of Pécs, Faculty of Health Sciences, Hungary
Institute for Health Insurance
E-mail: kajos.luca@pte.hu