

International Conference on Orthopedics and Musculoskeletal Disorders

November 13-14, 2025 | Lisbon, Portugal



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Temporal Trends and Regional Disparities in Knee Osteoarthritis Across the United Kingdom: Insights from the Global Burden of Disease Study 1990–2021

Background and Aim

Knee osteoarthritis (OA) is a major cause of pain, disability, and reduced quality of life, with its burden rising due to aging, obesity, and lifestyle changes. This study analyzed 1990–2021 trends in prevalence, incidence, YLDs, and DALYs for knee OA across the four UK nations using Global Burden of Disease data.

Methods

We extracted age-standardized and absolute estimates of prevalence, incidence, YLDs, and DALYs for knee OA in the UK and its four nations from the GBD 2021 database. Joinpoint regression analysis was applied to quantify annual percent change (APC) and average annual percent change (AAPC) in disease burden over time. Temporal patterns and inter-regional differences were assessed.

Results

From 1990 to 2021, the knee osteoarthritis burden increased across all UK nations. England had the highest absolute prevalence, rising from 3.02 million to 4.51 million cases (+49.2%), while Northern Ireland showed the largest relative increase (+76.4%). Females consistently had 30–40% higher rates than males, with 2021 prevalence reaching 5,226.8 per 100,000 in England versus 3,753.2 in males. YLD rates rose by 7.16% in England and 7.94% in Scotland. DALYs increased most in Scottish males (+11.0%), and Northern Ireland recorded the fastest prevalence growth. England's burden peaked around 2015 before stabilizing.

Conclusion

The burden of knee OA in the UK has risen markedly over the past three decades, with persistent regional disparities. These findings highlight the need for targeted prevention strategies, early diagnosis, and equitable access to joint-preserving interventions. Public health policies addressing obesity, promoting physical activity, and improving OA management could help mitigate future disease burden.

Keywords

Knee osteoarthritis; United Kingdom; Global Burden of Disease; temporal trends; regional disparities

Biography

Dr Muhammad Tayyab (MBBS, MRCS – UK) is a Senior Clinical Fellow in Trauma and Orthopaedics at Bradford Teaching Hospitals NHS Trust, United Kingdom. He has over four years of clinical experience in Trauma&Orthopaedics.

Dr Tayyab has authored fourteen publications in PubMed-indexed journals and remains actively involved in clinical research and audit aimed at improving patient outcomes. In addition to his clinical work, he is committed to medical education, regularly teaching and mentoring junior doctors and medical students.