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IDOSR JOURNAL OF SCIENTIFIC RESEARCH 11(2):1-6, 2026. ISSN: 2550-794X

https://doi.org/10.59298/IDOSRJSR/2026/11.2.16 IDOSRJSR11106

Epidemiology of Arthritis in Nigeria and Uganda: A Comparative Analysis

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ABSTRACT

Arthritis is an important, often under-recognized public health problem in Sub-Saharan Africa (SSA), contributing to pain, disability, reduced productivity, and increased health-system use. Nigeria and Uganda, two populous SSA countries with differing demographic structures, urbanization patterns, health-system capacities, and infectious disease burdens, offer a useful lens for comparing arthritis epidemiology. This review synthesizes available evidence on the burden, patterns, determinants, and health-system implications of arthritis in Nigeria and Uganda. We compare prevalence estimates, subtype distribution (osteoarthritis, rheumatoid arthritis, spondyloarthropathies, gout, juvenile idiopathic arthritis), risk-factor profiles, urban–rural gradients, gender and age distributions, and diagnostic/treatment gaps. We also highlight key methodological limitations (case definitions, sampling frames, under-diagnosis, limited imaging/laboratory access) and propose a pragmatic research and surveillance agenda. Overall, osteoarthritis appears to be the most commonly reported arthritis subtype in both settings, with higher burden among women and older adults, while inflammatory arthritis remains underdiagnosed and underreported due to limited specialist access and diagnostic capacity. Context-specific prevention strategies (obesity control, injury prevention, occupational ergonomics), improved case detection (validated screening tools, primary-care training), and registry-based surveillance are priorities.

Keywords: Arthritis, osteoarthritis, rheumatoid arthritis, gout, spondyloarthritis, epidemiology, Nigeria, Uganda, Sub-Saharan Africa

INTRODUCTION

Arthritis refers to a broad and heterogeneous group of musculoskeletal disorders unified by a common clinical footprint joint pain, swelling, stiffness, reduced range of motion, and progressive functional limitation. While frequently perceived as a single condition, arthritis actually spans multiple disease entities with distinct etiologies, trajectories, and management needs [1]. These include degenerative joint disease (particularly osteoarthritis), chronic inflammatory autoimmune disorders such as rheumatoid arthritis (RA), crystal-induced arthropathies (notably gout), seronegative spondyloarthropathies (e.g., ankylosing spondylitis and psoriatic arthritis), infectious arthritis, as well as post-traumatic and occupationally mediated joint disorders. The heterogeneity matters because the determinants, diagnostic pathways, and preventive strategies differ across phenotypes. For example, osteoarthritis is strongly linked to age, obesity, mechanical loading, prior joint injury, and occupational stressors; RA is shaped by genetic predisposition, immune dysregulation, and environmental triggers; gout reflects hyperuricemia influenced by diet, alcohol intake, kidney function, and cardiometabolic comorbidity; and septic arthritis is closely tied to infection risk, delayed healthcare seeking, and health-system responsiveness [2].

Globally, arthritis is a leading contributor to years lived with disability (YLDs), imposing long-term pain, limitations in daily activities, reduced productivity, and psychosocial distress. The disability burden extends beyond the joint itself: arthritis often coexists with obesity, hypertension, diabetes, chronic kidney disease, and depression, generating a cycle in which reduced mobility worsens cardiometabolic risk, and comorbidities aggravate inflammation, pain perception, and health-service use [3]. At household level, arthritis can increase out-of-pocket expenditure, reduce income due to missed work, and shift caregiving responsibilities to family members—effects that are amplified in low- and middle-income settings where social protection systems are limited. At the health-system level, arthritis

increases demand for diagnostics (imaging, inflammatory markers, uric acid assays), long-term pharmacotherapy (analgesics, NSAIDs, disease-modifying antirheumatic drugs), rehabilitation services, and sometimes surgical care (joint replacement, synovectomy), all of which compete with other priorities [4].

In Sub-Saharan Africa (SSA), the burden of arthritis is frequently underestimated. Several factors contribute to this under-recognition. First, diagnostic gaps are common: limited access to rheumatology specialists, constrained laboratory capacity, reduced availability of imaging, and variable clinical training in musculoskeletal medicine lead to under-diagnosis or misclassification. Second, population-based epidemiologic data are sparse; many estimates rely on facility-based studies that reflect care-seeking patterns rather than true community prevalence [5]. Third, competing health priorities, particularly infectious diseases and maternal-child health, may crowd out systematic surveillance and chronic care investment for musculoskeletal disorders. Fourth, cultural interpretations of chronic pain, reliance on self-medication, and use of traditional remedies may delay presentation, meaning many cases remain "invisible" to formal health records [6]. Consequently, the true prevalence, phenotype distribution, risk-factor architecture, and disability impact of arthritis in SSA can remain unclear, limiting evidence-informed policy and resource allocation.

Nigeria and Uganda provide an informative comparative lens for understanding arthritis epidemiology within SSA. Nigeria, with its large and diverse population and rapidly urbanizing environments, represents a setting where lifestyle transitions, dietary changes, obesity, and sedentary behavior are increasing alongside continued occupational exposures (manual labor, informal-sector work, farming, artisanal trades) [7]. Uganda, while smaller in population, is also experiencing urban growth and shifting work patterns, but differs in socioeconomic gradients, health-workforce density, referral systems, and regional access to diagnostics and specialty care. In both countries, occupational exposures may be substantial; agricultural labor, load carrying, repetitive joint stress, and unprotected manual work can accelerate degenerative changes and increase risk of post-traumatic arthritis. Simultaneously, cardiometabolic disease is rising across SSA, which may influence gout frequency, osteoarthritis severity, and systemic inflammation [8].

Comparing arthritis epidemiology across Nigeria and Uganda can therefore yield practical insights into both shared drivers and context-specific determinants. Shared drivers may include demographic aging, obesity trends, physical workload patterns, delayed diagnosis, and limited access to rehabilitation. Country-specific determinants may emerge from differences in urbanization rates, diet composition, alcohol use patterns, infection burden, patterns of healthcare seeking, workforce availability, and affordability of chronic medicines [9]. Importantly, cross-country comparison can help disentangle what is "structural" (health-system constraints common across SSA) from what is "contextual" (local exposures and social determinants). This distinction is crucial for designing interventions: structural constraints may demand regional investment in workforce training, diagnostics, and chronic care models, while contextual determinants may require tailored prevention (workplace ergonomics, road-safety injury prevention, obesity and diet interventions, or gout risk reduction) [10].

In addition, a comparative focus supports better surveillance and measurement. Harmonizing definitions of arthritis phenotypes, standardizing symptom and disability assessment tools, and comparing risk-factor prevalence across Nigeria and Uganda can improve the credibility and usability of findings. Such work can also inform clinical pathways, identifying where most diagnostic delays occur, which phenotypes are frequently misclassified, and which patient groups experience the highest disability [11]. Ultimately, producing clearer epidemiologic profiles helps support targeted prevention, early detection, and cost-effective management models suited to resource-limited environments.

Despite arthritis being a leading cause of chronic pain, functional limitation, and long-term disability globally, its epidemiology and disability burden in Sub-Saharan Africa (SSA), particularly in Nigeria and Uganda, remain poorly defined. Available data are largely fragmented, hospital-based, and constrained by limited diagnostic capacity, resulting in likely underestimation of true prevalence and inadequate characterization of arthritis phenotypes such as osteoarthritis, rheumatoid arthritis, and gout. In both countries, health systems face competing communicable and non-communicable disease priorities, shortages of trained rheumatology and musculoskeletal specialists, limited imaging and laboratory support, and underdeveloped rehabilitation services. Consequently, arthritis is frequently diagnosed late, managed sub-optimally, and complicated by avoidable functional decline and reduced productivity. Moreover, the relative contribution of shared risk factors such as obesity, aging, occupational joint loading, and trauma versus context-specific socioeconomic and health-system determinants remains unclear. This study therefore aims to compare the epidemiology of arthritis in Nigeria and Uganda by describing differences and similarities in prevalence, phenotype distribution, and associated demographic, occupational, socioeconomic, and system-level determinants. By generating comparative evidence, the study will strengthen burden estimation, inform targeted prevention strategies, guide investments in diagnostics, workforce training, and rehabilitation services, and promote equity-focused policies that address arthritis as a significant but under-recognized cause of disability in SSA.

Methods and Scope of the Review

This narrative comparative review examines the epidemiology of arthritis in Nigeria and Uganda, treating "epidemiology" in a broad, policy- and practice-relevant sense. Specifically, it synthesizes evidence on prevalence and, where available, incidence; the distribution of arthritis subtypes; demographic patterning by age, sex, and setting; and key determinants such as occupational, metabolic, infectious, and lifestyle-related risk factors. The review also summarizes common comorbidities, patterns of health-care utilization (including clinic attendance, hospital admissions, diagnostic pathways, and treatment access), and downstream consequences such as functional limitation, disability, and quality-of-life outcomes. Evidence is drawn from complementary sources, including community-based surveys, hospital and rheumatology clinic series, and regional or global burden estimates that report data for both countries. Given substantial heterogeneity in study design, sampling frames, case definitions, and measurement tools, the analysis prioritizes cross-study patterns, internal consistency, and convergence of findings rather than pooled quantitative estimates. A central methodological challenge is that many Sub-Saharan African studies rely on symptom-based definitions (e.g., "joint pain" or "musculoskeletal pain") instead of standardized diagnostic criteria such as ACR/EULAR, reducing comparability across settings and often inflating or misclassifying arthritis-specific burden.

Arthritis Classification and Case Definitions in SSA Studies

Arthritis epidemiology in Sub-Saharan Africa (SSA) is strongly shaped by how cases are defined and verified, making cross-study comparisons sensitive to diagnostic capacity. Osteoarthritis (OA) is commonly diagnosed clinically based on joint pain, stiffness, functional limitation, and sometimes reduced range of motion, with radiography used inconsistently; many African studies rely on clinical criteria because imaging is limited or unaffordable [12]. Rheumatoid arthritis (RA) ideally requires detailed clinical assessment plus serology (rheumatoid factor, anti-CCP) and inflammatory markers, yet these tests are often unavailable in district facilities, increasing misclassification and undercounting. Spondyloarthropathies are frequently overlooked without imaging for sacroiliitis and access to HLA-B27 testing, which is rarely routine in many settings. Gout is usually diagnosed clinically, while serum urate testing and definitive crystal confirmation via synovial fluid microscopy are uncommon. Infectious arthritis may be missed unless advanced, particularly where joint aspiration, culture, and sensitivity testing are not accessible [13]. For Nigeria–Uganda comparisons, apparent differences in arthritis burden may therefore reflect variation in specialist availability, diagnostic infrastructure, and case ascertainment intensity rather than true epidemiologic divergence.

Burden of Arthritis: Prevalence and Patterns

Across sub-Saharan Africa (SSA), osteoarthritis (OA) is consistently the most common arthritis subtype reported in community studies, with gout next and inflammatory arthritis (e.g., rheumatoid arthritis and spondyloarthritis) much lower yet probably underestimated because many surveys rely on symptom screening, limited imaging, or non-specialist diagnosis. In Nigeria and Uganda, prevalence estimates vary widely, driven by urban–rural sampling differences, the age structure of participants, and the criteria used to define arthritis. Nigeria has a larger (though still insufficient) body of hospital and community musculoskeletal research, repeatedly showing knee OA clustering among older adults and women [14]. Risk may rise in urban cohorts through obesity, sedentary behavior, and urbanization, while rural manual labor can add biomechanical stress. Uganda's evidence base is smaller, and arthritis is often grouped within broader musculoskeletal disorders, obscuring subtype-specific rates; OA still predominates in older adults, whereas inflammatory conditions may be missed outside referral settings. Facility-based patterns reflect referral bias and greater severity: Nigerian tertiary centers with more rheumatology services detect more inflammatory arthritis, while Uganda's fewer specialist clinics concentrate such cases in national referral hospitals [15]. Overall, OA dominates, but gout and inflammatory arthritis remain underdiagnosed, especially in Ugandan primary care.

Subtype-Specific Epidemiology: Nigeria vs Uganda

Across Nigeria and Uganda, osteoarthritis (OA) shows the clearest age gradient, rising steeply in later life and disproportionately affecting women. Knee OA is most frequently described, while hip involvement appears contingent on biomechanics, occupational loading, and possibly genetic susceptibility. In both settings, obesity, prior joint injury, repetitive squatting/kneeling, load carrying, and physically demanding livelihoods remain dominant risk pathways. Nigeria may be experiencing faster growth in obesity-related OA due to rapid urbanization and dietary transition, and road traffic injuries could be adding post-traumatic OA in younger adults [16]. In Uganda, agricultural labor and head-load carrying likely substantially amplify occupational OA, yet the burden is poorly quantified, and limited radiographic confirmation in peripheral facilities can reduce diagnostic certainty and subtype specificity. Rheumatoid arthritis (RA) is reported less often than in high-income settings, but underdiagnosis is probable: restricted RF/anti-CCP testing and misclassification as "chronic joint pain" are common, with Nigeria's stronger tertiary capacity yielding higher clinic-based rates than Uganda, where delays may heighten disability at presentation. Gout is likely increasing alongside hypertension, CKD, and metabolic risk, but under-testing,

especially in Uganda, suppresses estimates. Spondyloarthropathies and juvenile idiopathic arthritis are similarly underrecognized without imaging and specialist care.

Risk Factors and Determinants: Comparative Lens

Across Nigeria and Uganda, arthritis risk is shaped by overlapping demographic, metabolic, occupational, and health-system determinants. Both countries are ageing, and as life expectancy rises, osteoarthritis (OA) expands, with Nigeria carrying larger absolute numbers given its population size. Women consistently experience higher OA and rheumatoid arthritis (RA) burden, plausibly linked to hormonal influences, biomechanics, and gendered exposure to caregiving and labor. Rapid NCD transitions obesity, hypertension, diabetes, and chronic kidney disease intensify OA (through mechanical loading and inflammation) and gout (via disrupted urate metabolism); Nigeria's larger urban footprint may amplify obesity-driven patterns, while Uganda's urban growth shows sharper regional and socio-economic gradients [17]. Biomechanical stress from farming, informal work, mining, and repetitive joint loading remains central: Nigeria's exposures are diverse across regions, whereas Uganda's agriculture dominance, load-carrying, and prolonged squatting/kneeling may be especially relevant. Trauma, particularly road traffic injuries, likely fuels under-measured post-traumatic OA; rehabilitation gaps in both settings worsen disability. Infection-related arthropathies and reactive arthritis may also contribute, influenced by enteric/urogenital infections and HIV epidemiology, yet documentation outside referral centers is limited. These risks compound comorbidity, pain-related mental distress, productivity losses, and catastrophic health expenditure amid major diagnostic and treatment gaps [18].

Methodological Limitations in the Evidence Base

Methodological weaknesses in the current evidence base complicate direct Nigeria–Uganda comparisons of arthritis burden. Studies often use heterogeneous case definitions, ranging from symptom-based reports to strict criteria-based diagnoses, making prevalence estimates non-equivalent across settings. Facility-based sampling, especially tertiary clinic case series introduces referral and severity bias and should not be interpreted as population-level burden. Differences in age structure further distort comparisons: younger study samples systematically underestimate osteoarthritis (OA), which rises steeply with age. In addition, inflammatory arthritis and spondyloarthritis are frequently underdiagnosed because of limited specialist access, constrained laboratory capacity, and low clinical suspicion, leading to misclassification as "chronic pain" or OA [19]. Evidence is also dominated by cross-sectional designs, with sparse longitudinal or incidence data, limiting causal inference and trend tracking. Finally, rural surveillance is limited, with hard-to-reach populations underrepresented, despite high occupational exposure and injury risks. A pragmatic research and policy agenda should therefore prioritize integrating arthritis modules into national NCD surveys (including WHO STEPS extensions), establishing sentinel musculoskeletal surveillance sites, and building standardized referral-hospital registries for rheumatoid arthritis, gout, and spondyloarthritis. Methods should pair validated screening tools with clinician confirmation, incorporate ACR/EULAR criteria where feasible, and include disability metrics such as WOMAC and HAQ-DI [20]. Prevention must address obesity, inactivity, injuries, and ergonomics, alongside patient education on early referral and safe NSAID use. Health systems need primary-care training, basic diagnostics, district-level rehabilitation, and reliable access to essential medicines, including DMARDs with monitoring.

CONCLUSION

Overall, the current evidence base is too methodologically uneven to support clean Nigeria Uganda comparisons of arthritis burden. Non-standard case definitions, heavy reliance on facility-based samples, and limited age stratification produce prevalence estimates that are not directly comparable and often underestimate osteoarthritis in older populations. Under-recognition of inflammatory arthritis and spondyloarthritis driven by specialist scarcity, constrained diagnostics, and low clinical suspicion further skews patterns toward "chronic pain" labels and misclassified OA. The dominance of cross-sectional designs and the scarcity of incidence or longitudinal data also restrict understanding of drivers, trajectories, and trends, while weak rural surveillance leaves high-risk occupational groups underrepresented. Closing these gaps requires harmonized measurement embedded within national NCD surveys, sentinel musculoskeletal surveillance sites, and standardized referral-hospital registries for rheumatoid arthritis, gout, and spondyloarthritis. Future studies should use validated screening plus clinician confirmation, apply ACR/EULAR criteria where feasible, and routinely capture disability (WOMAC, HAQ-DI). Parallel health-system action primary-care training, basic diagnostics, district rehabilitation, safe NSAID counseling, and consistent DMARD access with monitoring can reduce disability and improve equity.

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CITE AS: Masika Anna Mahinda (2026). Epidemiology of Arthritis in Nigeria and Uganda: A Comparative Analysis. IDOSR JOURNAL OF SCIENTIFIC RESEARCH 11(2):1-6. https://doi.org/10.59298/IDOSRJSR/2026/11.2.16