

## Prevalence and Risk Factors of Foot and Ankle Osteoarthritis in an Aging Population

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### Abstract

Foot and ankle osteoarthritis (OA) is increasingly recognized as a significant health burden in aging populations worldwide. This systematic review aims to synthesize current literature on the prevalence and risk factors associated with foot and ankle OA among older adults. A comprehensive search of electronic databases identified studies published between 2000 and 2023 that reported on prevalence rates and risk factors for foot and ankle OA. The review included cross-sectional studies, cohort studies, and population-based surveys. Key findings indicate that foot and ankle OA prevalence rates vary widely across different populations, with higher rates observed in older age groups and among women. Common risk factors include age, obesity, previous joint injury, genetic predisposition, and occupational factors involving repetitive stress. The impact of foot and ankle OA on physical function, quality of life, and healthcare utilization underscores the need for effective prevention strategies and targeted interventions. Further research is needed to better understand the mechanisms underlying foot and ankle OA development in aging populations and to inform evidence-based management approaches.

### Introduction

Osteoarthritis (OA) is a prevalent musculoskeletal disorder characterized by progressive degeneration of articular cartilage and associated with pain, stiffness, and impaired joint function. While OA commonly affects weight-bearing joints such as the knees and hips, its impact on the foot and ankle is increasingly recognized as significant, particularly in aging populations. The foot and ankle complex plays a crucial role in mobility and daily activities, making osteoarthritis in these regions particularly debilitating.

As populations around the world age, the burden of foot and ankle OA is expected to rise, posing substantial challenges for healthcare systems and public health strategies. Understanding the prevalence and identifying risk factors associated with foot and ankle OA in older adults is essential for developing targeted prevention strategies and effective management approaches. This introduction provides an overview of the current understanding of foot and ankle OA in aging populations, highlighting key epidemiological trends and risk factors identified in recent research. By synthesizing existing literature, this review aims to contribute to a comprehensive understanding of the scope and impact of foot and ankle OA, guiding future research and clinical initiatives aimed at improving outcomes for affected individuals [1].

Osteoarthritis (OA) is the most common form of arthritis and a leading cause of disability worldwide, particularly affecting weight-bearing joints such as the knees, hips, and spine. However, the prevalence and impact of OA in the foot and ankle have garnered increasing attention, especially in aging populations where the burden of musculoskeletal disorders is pronounced. The foot and ankle are integral to maintaining balance, mobility, and independence in daily activities, making the development of OA in these regions particularly detrimental to quality of life.

The aging process itself predisposes individuals to an increased risk of developing OA due to cumulative wear and tear on joints, altered biomechanics, and potential declines in musculoskeletal strength and flexibility. Beyond aging, numerous risk factors contribute to the development and progression of foot and ankle OA. These include obesity, which increases mechanical stress on weight-bearing joints, previous joint injuries that may predispose to accelerated joint degeneration, genetic predisposition, and occupational factors

involving repetitive stress or trauma to the lower extremities [2].

Despite the growing recognition of foot and ankle OA, epidemiological data specific to these regions remain relatively sparse compared to larger joints. Understanding the prevalence rates and identifying modifiable risk factors associated with foot and ankle OA in older adults is crucial for developing preventive strategies and optimizing treatment interventions. Moreover, the impact of foot and ankle OA on physical function, pain levels, and overall health outcomes underscores the need for tailored management approaches that consider the unique biomechanics and functional demands of these joints.

This review synthesizes current knowledge on the prevalence and risk factors of foot and ankle OA in aging populations, drawing upon recent epidemiological studies, clinical research, and population-based surveys. By elucidating these factors, this review aims to provide a comprehensive overview of the scope and impact of foot and ankle OA, guiding future research directions and informing healthcare strategies aimed at improving outcomes for individuals affected by this debilitating condition [3].

Osteoarthritis (OA) is a chronic degenerative joint disease characterized by the breakdown of cartilage and subsequent changes in underlying bone and soft tissues. It is a major cause of pain and disability among older adults globally, impacting various weight-bearing joints such as the knees, hips, and spine. In recent years, there has been a growing recognition of the prevalence and clinical significance of OA

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affecting the foot and ankle, regions crucial for mobility and overall physical function.

The foot and ankle complex comprises numerous joints, ligaments, and tendons that facilitate dynamic movements and weight distribution. Despite their importance, the specific epidemiology of OA in these anatomical areas has received less attention compared to larger joints. However, emerging research indicates that foot and ankle OA prevalence rates vary widely across different populations, with estimates suggesting significant increases with advancing age [4].

Aging itself is a primary risk factor for OA due to cumulative joint wear and tear, altered biomechanics, and age-related changes in cartilage structure and function. Beyond aging, several modifiable and non-modifiable risk factors contribute to the development and progression of foot and ankle OA. These include obesity, which increases mechanical stress on joints, previous injuries or trauma, genetic predisposition, and occupational factors involving prolonged standing or repetitive motion [5].

Understanding the prevalence and identifying risk factors associated with foot and ankle OA in aging populations are crucial steps toward developing effective prevention strategies and optimizing management approaches. The impact of foot and ankle OA on mobility, pain levels, and quality of life necessitates targeted interventions tailored to the unique biomechanical demands of these joints. By synthesizing current evidence on prevalence trends and risk factors, this review aims to provide a comprehensive overview of foot and ankle OA in aging populations, highlighting gaps in knowledge and guiding future research and clinical efforts aimed at improving outcomes for affected individuals [6].

## Discussion

The discussion of foot and ankle osteoarthritis (OA) in aging populations encompasses several key themes derived from the synthesis of current literature on prevalence and risk factors. This review highlights the complexities and challenges in understanding the epidemiology of OA in these specific anatomical regions, emphasizing the need for targeted research and interventions. One of the primary findings from this review is the variability in prevalence rates of foot and ankle OA across different demographic groups and geographic regions. While precise global estimates remain elusive due to varying diagnostic criteria and study methodologies, it is evident that OA in the foot and ankle becomes increasingly prevalent with age. This aligns with broader trends observed in musculoskeletal health, where the cumulative effects of aging predispose individuals to joint degeneration and associated functional impairments [7].

The identification of risk factors associated with foot and ankle OA underscores the multifactorial nature of the disease. Age is a consistent non-modifiable risk factor, with older adults exhibiting higher rates of OA due to prolonged joint use and age-related changes in cartilage integrity. Obesity emerges as a significant modifiable risk factor, exacerbating mechanical stress on weight-bearing joints such as the foot and ankle. Moreover, previous joint injuries, genetic predisposition, and occupational factors contribute to the pathogenesis of OA in these regions, highlighting the interplay between biomechanical stressors and genetic susceptibility [8].

The impact of foot and ankle OA on physical function and quality of life is substantial, often resulting in pain, stiffness, and limitations in mobility that can impair activities of daily living. These functional

impairments can lead to decreased independence and increased healthcare utilization among older adults. Effective management strategies tailored to the unique biomechanical characteristics of the foot and ankle are therefore essential for optimizing treatment outcomes and improving patient well-being [9].

Future research directions should focus on elucidating the underlying mechanisms of foot and ankle OA development, including molecular pathways, genetic markers, and biomechanical factors that influence disease progression. Longitudinal studies are needed to better understand the natural history of foot and ankle OA in aging populations, as well as to evaluate the effectiveness of preventive measures and therapeutic interventions. Additionally, initiatives aimed at promoting early diagnosis, weight management, and lifestyle modifications could potentially mitigate the burden of foot and ankle OA in older adults [10].

## Conclusion

In conclusion, this discussion underscores the importance of addressing foot and ankle OA as a significant public health concern in aging populations. By integrating epidemiological insights with clinical perspectives, this review contributes to a broader understanding of the prevalence and risk factors associated with foot and ankle OA, guiding future research efforts and informing evidence-based approaches to enhance musculoskeletal health outcomes for older adults.

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## Conflict of Interest

None

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