

# Diabetes, Obesity, and the Metabolic Drivers of Peripheral Artery Disease: Lessons from Recent Forecasts

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**Abstract:** Peripheral artery disease (PAD) is rapidly emerging as a global health priority, with projections indicating a dramatic rise in prevalence, mortality, and disability by 2050. Recent forecasts project an approximately 220% increase in PAD prevalence, with more than 360 million individuals affected globally by mid-century, largely driven by metabolic diseases—particularly diabetes and obesity. A recent population-based study forecasting the global burden of PAD provides compelling evidence that metabolic disease is the dominant driver of this alarming trend. This commentary highlights the critical interplay between metabolic risk factors and PAD progression, underscores the disproportionate burden expected in low- and middle-income countries, and calls for urgent, integrated strategies targeting metabolic health. Without decisive action to reduce diabetes, obesity, and related metabolic disorders, the looming global PAD crisis will further strain healthcare systems and deepen health inequities worldwide.

**Keywords:** diabetes, obesity, peripheral artery disease, PAD

Peripheral artery disease (PAD) is increasingly recognized as one of the fastest-growing vascular diseases worldwide. The recently published study, “Forecasting the Global Burden of Peripheral Artery Disease from 2021 to 2050”, projects a staggering 220% rise in PAD prevalence, with more than 360 million individuals affected globally by mid-century.<sup>1</sup> Recent Global Burden of Disease analyses underscore that cardiovascular disease remains the leading global cause of death and disability, with adverse risk-factor trends including rising obesity and diabetes—factors that also shape the evolving burden of PAD.<sup>2</sup> These PAD forecasts underscore the need for integrated strategies that prioritize metabolic health in PAD prevention and earlier recognition. While aging populations contribute to this trajectory, the accelerating epidemics of diabetes, obesity, and other metabolic disorders are poised to become the dominant forces driving this crisis. As a commentary, this article synthesizes previously published evidence and recent forecasts; no original statistical analyses were performed.

## Metabolic Diseases: The Core Drivers of PAD

The association between diabetes and PAD is well established, with hyperglycemia accelerating atherosclerotic progression, impairing vascular repair, and leading to higher rates of limb ischemia and amputation.<sup>3</sup> Obesity further amplifies this risk through its effects on insulin resistance, dyslipidemia, hypertension, and systemic inflammation. Together, these metabolic factors create a pathophysiological cascade that substantially elevates PAD risk, particularly in younger populations and women, where prevalence is projected to rise disproportionately.

Importantly, the study modelled a counterfactual risk-reduction scenario in which major metabolic risk factors, including diabetes and obesity, were assumed to be effectively controlled, and projected that age-standardised PAD

prevalence could decrease by up to 36%, mortality by 17%, and disability-adjusted life years by 10%.<sup>1</sup> These findings highlight metabolic health as the most actionable target in altering the trajectory of PAD worldwide.

## The Emerging Challenge in Low- and Middle-Income Countries

More than half of the projected global burden of PAD will fall on low- and middle-income countries (LMICs) by 2050. These regions, already facing constrained healthcare resources, are experiencing a rapid rise in diabetes and obesity due to urbanization, dietary transitions, and sedentary lifestyles. The convergence of rising metabolic disease prevalence and limited healthcare infrastructure will amplify PAD-related morbidity and mortality, creating a widening gap in health outcomes between LMICs and high-income countries.

## A Call for Integrated Prevention Strategies

The escalating PAD burden underscores the urgent need for integrated public health strategies that focus on metabolic disease prevention and management.<sup>4</sup> Effective interventions include: First, early detection and aggressive management of diabetes and obesity through routine screening and treatment. Second, population-level interventions targeting unhealthy diets, physical inactivity, and obesity prevention. Third, health system strengthening in LMICs, ensuring access to essential medicines, vascular diagnostics, and revascularization therapies. Finally, public health campaigns raising awareness about the vascular complications of metabolic diseases. These strategies not only address PAD but also reduce the burden of other metabolic-related complications, including myocardial infarction, diabetic wound, stroke, and chronic kidney disease.<sup>5</sup>

## Conclusion

The projected surge in PAD cases by 2050 should be interpreted as a warning sign of the unchecked global epidemics of diabetes and obesity. Metabolic health is the most powerful lever to alter the trajectory of PAD and its associated morbidity and mortality.<sup>6,7</sup> However, forecasts are unlikely to shift without stronger translation of prevention into practice, including earlier recognition of PAD and sustained implementation of diabetes and obesity prevention and control at scale. Pragmatic metabolic risk modification, through population-level weight management and effective diabetes prevention and treatment strategies, could plausibly attenuate future PAD burden, particularly in resource-constrained health systems. Addressing the intertwined epidemics of diabetes, obesity, and PAD requires coordinated global action, with a special focus on LMICs where the challenge is greatest. For clinicians, this reinforces the importance of earlier identification of PAD in high-risk patients and sustained metabolic risk management, particularly diabetes prevention and control and weight management. For policymakers, it supports integrating metabolic prevention and PAD case-finding into chronic disease pathways, especially in LMICs.

At the same time, projections remain sensitive to underlying about demographic and risk-factor trends, and further research is needed to identify the most effective and scalable metabolic interventions to reduce PAD incidence and related disability. Without stronger and sustained implementation of prevention, earlier PAD recognition, and effective metabolic risk management, the projected increase in PAD burden is likely to persist, placing growing demands on health systems and widening existing inequities.

## Author Contributions

Both authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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## Disclosure

The authors declare that they have no competing interests for this work.

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