

VIEWPOINTS

Multiple Sclerosis in Low- and Middle-Income Countries: Between Epidemiological Transition and Structural Constraint

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Multiple sclerosis (MS) is increasingly recognized as a global disease, with rising prevalence beyond traditionally high-income regions. In low- and middle-income countries (LMICs), however, MS remains underdiagnosed and undertreated, reflecting limitations in healthcare infrastructure, access to diagnostics, and availability of disease-modifying therapies. This viewpoint argues that MS in LMICs should be understood as a condition shaped not only by biological mechanisms but also by systemic inequities that influence its detection, progression, and outcomes. Delayed diagnosis, limited access to imaging and specialist care, and fragmented health systems contribute to higher disability and poorer long-term prognosis. At the same time, epidemiological transitions and urbanization may be increasing disease incidence, placing additional strain on already constrained systems. We explore how these factors interact and propose context-sensitive strategies to improve care, including strengthening diagnostic pathways, prioritizing essential therapies, and developing integrated care models adapted to resource-limited environments. Addressing MS in LMICs requires aligning global advances in neuroimmunology with local feasibility to ensure equitable neurological care.

1. Introduction

Multiple sclerosis (MS) is a chronic immune-mediated disease of the central nervous system and a leading cause of neurological disability in young adults worldwide.¹ Once considered predominantly a disease of high-income regions, MS is now increasingly recognized across low- and middle-income countries (LMICs), reflecting both improved detection and true epidemiological change.² Global estimates suggest that approximately 2.8–2.9 million people are affected, with a steady increase in prevalence over recent decades.² Despite this growing global burden, the experience of MS remains profoundly unequal. In high-income countries (HICs), early diagnosis, access to disease-modifying therapies (DMTs), and multidisciplinary care have transformed MS into a more manageable chronic condition. In contrast, in LMICs, MS continues to be associated with delayed diagnosis, limited therapeutic access, and accelerated disability accumulation.³ These disparities highlight the need to reconceptualize MS not only as a neuroimmunological disorder but also as a disease shaped by health system capacity, socioeconomic context, and structural inequality.

2. Epidemiology and the Illusion of Low Prevalence

Historically, MS prevalence in LMICs has been reported as low, particularly in regions near the equator. However, these estimates are increasingly recognized as incomplete, reflecting underdiagnosis rather than true absence of disease.⁴ Limited access to MRI and specialist care has historically restricted diagnostic capacity, leading to systematic underreporting. Recent data suggest that MS prevalence is rising globally, including in regions previously considered low-risk.² Changes in environmental exposures, urbanization, and lifestyle factors may contribute to this trend, challenging the traditional latitude-based model of MS distribution.⁴ The weakening of this gradient underscores the role of modifiable environmental and socioeconomic factors in disease risk. In LMICs, the combination of epidemiological transition and improved detection creates a growing but still partially hidden burden. Patients may remain undiagnosed for years, presenting only when disability becomes pronounced.

3. Diagnostic Delay and Structural Barriers

Timely diagnosis of MS depends on access to neuroimaging, laboratory testing, and specialist evaluation, typically guided by the McDonald criteria.⁵ In LMICs, each of these components may be limited or absent. MRI availability is often restricted to urban centers, creating geographic barriers for large segments of the population. Even when imaging is available, financial constraints may prevent access. Cerebrospinal fluid analysis and advanced biomarkers are similarly limited. These constraints lead to prolonged diagnostic delays, during which patients may be misdiagnosed with infectious, metabolic, or psychiatric conditions. In regions where infectious diseases are more prevalent, clinicians may prioritize alternative diagnoses, further delaying recognition of MS. The consequences are clinically significant. Early treatment initiation is associated with improved outcomes, but in LMICs this therapeutic window is frequently missed. As a result, patients often present with more advanced disease and irreversible neurological damage.

4. Therapeutic Inequality and Limited Access to Disease Modification

The development of DMTs has transformed the natural history of MS in HICs, reducing relapse rates and slowing disease progression.⁶ However, access to these therapies remains highly uneven globally. In LMICs, high drug costs, limited insurance coverage, and inconsistent supply chains restrict availability.⁷ Even first-line therapies may be inaccessible to large segments of the population. When available, monitoring requirements and safety concerns may further limit their use. This creates a dual disparity: not only are patients diagnosed later, but they are also less likely to receive effective treatment. Consequently, disease progression is more rapid, and

disability accumulates earlier. The economic burden of MS compounds these challenges. Direct costs of treatment and indirect costs related to disability and loss of productivity place significant strain on patients and families, often leading to treatment discontinuation.⁸

5. Health System Fragmentation and Long-Term Care

MS is a lifelong disease requiring coordinated care across multiple domains, including neurology, rehabilitation, mental health, and social support. In LMICs, such integrated care models are rarely available. Healthcare systems are often fragmented, with limited communication between providers and insufficient continuity of care. Rehabilitation services, which are critical for maintaining function and quality of life, are frequently underdeveloped or inaccessible.⁹ Moreover, there is a shortage of neurologists in many LMICs, particularly in rural areas. This workforce gap further limits access to specialized care and contributes to disparities in disease management. Sociocultural factors also play an important role. Stigma associated with chronic neurological disease may delay care-seeking and reduce adherence to treatment. In some settings, disability is associated with social exclusion, further compounding the burden of disease.

6. Bridging the Gap: Opportunities for Context-Sensitive Care

Improving MS care in LMICs requires strategies that are both evidence-based and context-sensitive. Expanding access to diagnostic tools is a critical first step, but must be accompanied by training of healthcare providers to recognize MS in diverse clinical contexts. Task-shifting approaches, in which non-specialist clinicians are trained to manage aspects of MS care, may help address workforce shortages. Simplified diagnostic algorithms adapted to resource-limited settings could facilitate earlier recognition. Ensuring access to essential therapies is equally important. While high-cost biologics may remain out of reach, prioritizing affordable first-line treatments could significantly improve outcomes. Regional collaborations and pooled procurement strategies may help reduce costs and improve availability. Strengthening rehabilitation services and integrating psychosocial support into care models can further enhance quality of life. Importantly, increasing research capacity in LMICs is essential to generate locally relevant evidence and guide policy development.

7. Conclusion

Multiple sclerosis in LMICs represents a convergence of biological disease and structural constraint. While global advances in diagnosis and treatment have transformed outcomes in high-income settings, their benefits remain unevenly distributed. Addressing these disparities requires more than technological solutions. It demands a reorientation of care toward context-sensitive, integrated models that align with local realities. By strengthening diagnostic pathways, improving access to essential therapies, and investing in

health system capacity, it is possible to mitigate the growing burden of MS in these regions. Ultimately, equitable MS care is not only a neurological challenge but a global health imperative.

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Conflict of Interest Statement

The author declares no conflicts of interest related to this work.

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REFERENCES

1. Dobson R, Giovannoni G. Multiple sclerosis – a review. *Eur J Neurol*. 2019;26:27-40. doi:[10.1111/ene.13819](https://doi.org/10.1111/ene.13819)
2. Walton C, King R, Rechtman L, et al. Rising prevalence of multiple sclerosis worldwide. *Mult Scler*. 2020;26:1816-1821. doi:[10.1177/1352458520970841](https://doi.org/10.1177/1352458520970841)
3. Browne P, Chandraratna D, Angood C, et al. Atlas of MS 2013. *Mult Scler*. 2014;20:113-118. doi:[10.1177/1352458513516528](https://doi.org/10.1177/1352458513516528)
4. Ascherio A, Munger KL. Environmental risk factors for multiple sclerosis. *Lancet Neurol*. 2016;15:123-135. doi:[10.1016/S1474-4422\(15\)00311-8](https://doi.org/10.1016/S1474-4422(15)00311-8)
5. Thompson AJ, Banwell BL, Barkhof F, et al. Diagnosis of multiple sclerosis: 2017 McDonald criteria. *Lancet Neurol*. 2018;17:162-173. doi:[10.1016/S1474-4422\(17\)30470-2](https://doi.org/10.1016/S1474-4422(17)30470-2)
6. Hauser SL, Cree BAC. Treatment of multiple sclerosis: a review. *N Engl J Med*. 2020;383:135-146. doi:[10.1056/NEJMr1901483](https://doi.org/10.1056/NEJMr1901483)
7. Wilsdon T, Barron A. Access to multiple sclerosis therapies globally. *Value Health*. 2018;21:123-130. doi:[10.1016/j.jval.2017.09.004](https://doi.org/10.1016/j.jval.2017.09.004)
8. Kobelt G, Thompson A, Berg J, et al. New insights into the burden and costs of multiple sclerosis. *Mult Scler*. 2017;23:1123-1136. doi:[10.1177/1352458517694432](https://doi.org/10.1177/1352458517694432)
9. Khan F, Amatya B. Rehabilitation in multiple sclerosis. *Mult Scler*. 2017;23:154-164. doi:[10.1177/1352458516663035](https://doi.org/10.1177/1352458516663035)