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Climate Change and Tuberculosis – A Growing Global Health Threat

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As the global climate continues to shift in unprecedented ways, its far-reaching impacts are being felt not only in ecosystems and economies but also in public health. Among the growing concerns is the emerging link between climate change and tuberculosis (TB), a connection that is gaining increasing attention in global health discourse. Scientific research suggests that climate change may significantly influence the incidence, transmission, and control of TB by exacerbating environmental, social, and health-related risk factors.

Extreme weather events – such as heatwaves, floods, and droughts displace communities and drive people into overcrowded shelters and informal urban settlements. These conditions, marked by poor ventilation and limited healthcare access; provide fertile ground for TB transmission. Rural-to-urban migration, often climat e-induced; intensifies urban overcrowding and creates public health challenges in already strained environments.

Climate change also contributes to poverty and food insecurity, both of which are linked to higher TB risk. Crop failures and rising food prices reduce access to adequate nutrition, particularly in low-income communities. Malnutrition weakens immune defences, making individuals more vulnerable to TB infection and its complications. Alarming projections suggest that by 2050, an additional 24 million children may be malnourished due to climate-related disruptions, significantly amplifying TB susceptibility among the most vulnerable.

Moreover, climate-related challenges can deepen existing health disparities, particularly among vulnerable populations such as infants, the elderly, and women. Limited access to nutrition, healthcare, and adequate sunlight – factors increasingly affected by environmental changes – can weaken immunity and hinder TB recovery, making these groups especially susceptible.

These interconnected challenges present a major obstacle to achieving global TB elimination targets, including the WHO End TB Strategy. To effectively address TB in the era of climate change, we must adopt a multidisciplinary, forward-thinking approach. This includes climate-resilient public health strategies, targeted interventions for high-risk populations, and strengthened health systems capable of adapting to environmental change.

South Africa carries one of the highest burdens of TB globally, ranking among the top countries with the highest incidence rates. The epidemic is deeply intertwined with the country's socioeconomic challenges, including high levels of poverty, overcrowded living conditions, and a significant prevalence of HIV co-infection, which weakens immune systems and accelerates TB progression. The dual burden of HIV and TB has strained South Africa's healthcare infrastructure, despite considerable progress in treatment access and TB control programs. These interconnected health and environmental challenges highlight the urgent need for integrated, climate-resilient approaches to TB control in South Africa.

As climate change continues to reshape health outcomes globally, its intersection with TB demands urgent attention – especially in high-burden regions like South Africa. Vulnerable groups face increasing risks, while systemic challenges threaten to widen existing gaps in care. Within this context, dentistry cannot remain on the periphery. Oral health professionals are uniquely positioned to support early detection, patient education, and community-based interventions, particularly in underserved areas. Urgent investment in interdisciplinary research, robust surveillance systems, and responsive health policy is needed to better understand and mitigate the impact of climate change on TB. For South African dentistry, this is more than a medical obligation – it is a call to action rooted in equity, resilience, and the broader pursuit of sustainable healthcare.

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