

Climate change, neglected tropical diseases and malaria: an urgent call for further research and action

Background

In recent decades we have seen progressive changes to global climate patterns caused by anthropogenic impacts on the environment. **These are likely to directly and indirectly affect human health, and are projected to continue and potentially accelerate into the future.** Neglected tropical diseases (NTDs) and malaria are potentially particularly sensitive to these changes as they are prevalent amongst vulnerable populations in countries expected to experience the greatest environmental change in the coming decade.

Rising temperatures and changes in precipitation patterns are altering vector breeding habitats and pathogen development, changing the geographical distribution of diseases and transmission risks. The World Health Organization (WHO) is focusing on understanding these changes and encouraging development and implementation of mitigation and adaptation strategies.

The complex and diverse nature of NTDs and malaria, coupled with major research gaps, has led to this urgent call for multidisciplinary efforts to predict, prepare and respond to evolving epidemiological patterns under climate change.

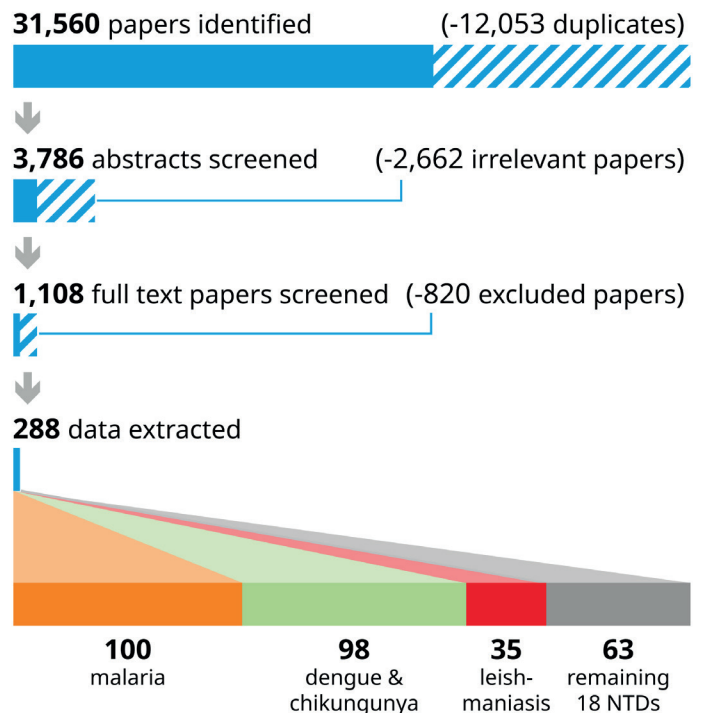


Fig. 1. Scoping review flow.

State-of-the-art scoping review

The WHO Task Team on Climate Change and NTDs undertook a comprehensive scoping review, in line with PRISMA-ScR guidelines.

A thorough search across industry-leading databases was conducted, on records dating from January 2010 to October 2023. The review combined automation and artificial intelligence tools to screen publications for papers addressing the effects of climate change on the dynamics of all 20 NTDs, malaria, and their associated vectors, as well as papers that explicitly address climate change mitigation and/or adaptation strategies.

The Task Team initially identified 19,597 separate papers. After abstract screening, 1,108 papers were selected for full text screening, and 288 for data extraction. Of these, 100 focused on malaria, 98 on dengue and chikungunya, 35 on leishmaniasis, and 63 on the remaining 18 NTDs.

Headline results of the review

Changes to the climate are leading to shifts in the behaviour, range, and intensity of lymphatic filariasis, dengue and malaria vectors. This is supported by growing evidence.

The ways in which climate change may impact all other NTDs are not well understood due to a lack of evidence. There is a critical need for further investigation.

In relation to NTDs and malaria, effective mitigation and adaptation strategies for climate change need to be built based on evidence.

Key messages and calls to action

The impact of climate change on global public health is increasingly evident, with profound implications for NTDs and malaria.

Adapting to these changes is not just a matter of future planning; there is an urgent need for immediate action to safeguard previous global health gains in a rapidly changing world.

Action: Urgently adapt our strategies to preserve global health gains and investments in this rapidly evolving climate landscape.

Growing evidence suggests that NTD dynamics are becoming less predictable even over shorter timescales.

Action: Existing surveillance systems and intervention strategies must be revisited and refined in order to effectively mitigate against or adapt to the immediate, short-term, and long-term effects of climate change.

To involve communities in the 'last mile', we need to re-evaluate existing surveillance systems and intervention strategies and refine them to ensure that they are effective in the face of changing NTD dynamics.

NTD lifecycles are complex, and pathogens are themselves part of complex ecosystems. There is a pressing need to understand how the effects of climate change directly and indirectly affect transmission.

Action: As a community, we must ensure a holistic approach to hazard assessment; engage in research that examines the links between hazards, vulnerability, and exposure to project the potential effects of climate change on NTD and malaria transmission.

Climate change is significantly impacting human behaviour and livelihoods, as a result of increased extreme weather events.

These disruptions are also limiting the capacity of health services to effectively respond to disease, effects of which are also being compounded by the displacement of populations.

Action: Integrating climate resilience into health systems is critical. It should involve enhancing existing health infrastructure, investing in research, fostering cross-sector collaboration, and adapting to the needs of displaced populations.

Involving affected communities is vital, especially for interventions targeting the 'last mile'.

Action: Engage communities in research and solution development to tackle NTDs effectively.

There is a gap in understanding how to optimally adapt to climate change in relation to NTDs and malaria.

Action: Invest in research to develop strategies, especially in low-transmission areas, and leverage new technologies for community engagement and data collection in order to safeguard progress.

The last 70 years have witnessed remarkable triumphs in global health, with infectious diseases being eliminated or controlled at unprecedented rates. However, these monumental achievements are now under threat.

The 2020s have emerged as a critical tipping point, with once-controlled diseases re-emerging and spreading to new geographies.

This alarming trend underscores an urgent call to action: we must mobilize now to protect and build upon our hard-won victories in health for everyone, everywhere.