

## Extreme Temperatures May Increase Risk of Stroke



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Extreme heat and cold are linked to increased risk of death from ischaemic and haemorrhagic stroke, according to a new study led by Harvard T.H. Chan School of Public Health. The research indicates that this link is stronger in low-income countries compared to high-income countries. The study is published in *Stroke*.

Study findings highlight the effects of climate change on stroke. With rising temperatures, there could be a surge in fatal strokes and a growing disparity in stroke mortality between high- and low-income countries, with the latter likely bearing the greater burden of climate change.

Previous studies on the relationship between extreme temperatures and stroke mortality have been mixed or inconclusive, often limited to single cities or high-income countries and rarely distinguishing between stroke subtypes. To address these gaps, the researchers utilised the Multi-Country Multi-City Network, a global environmental health consortium, to create a comprehensive database of ischaemic and haemorrhagic stroke mortality. This database included over 3.4 million ischaemic stroke deaths and more than 2.4 million haemorrhagic stroke deaths reported between 1979 and 2019 across 522 cities in 25 countries.

The study found that for every 1,000 ischaemic or haemorrhagic stroke deaths, approximately 11 were due to extreme cold or hot days. Specifically, the coldest and hottest 2.5% of days contributed to 9.1 and 2.2 excess deaths, respectively, for ischaemic strokes. For haemorrhagic strokes, these extreme days contributed to 11.2 and 0.7 excess deaths, respectively. Additionally, low-income countries experienced a higher burden of heat-related haemorrhagic stroke mortality and potentially a higher burden of cold-related haemorrhagic stroke mortality, though this was not conclusive. No relationship was found between a country's GDP and the risk of temperature-related ischaemic stroke mortality.

The researchers suggest that disparities may be due to better indoor temperature control and lower rates of outdoor work in high-income countries and poorer quality healthcare in low-income countries. Further research is needed to identify the drivers behind the higher burden of temperature-related haemorrhagic stroke mortality in low-income countries and to find effective interventions.

Study researchers urge professional stroke societies to invest in more research, especially as climate change intensifies, and to focus on emerging environmental risk factors that could make strokes—already a significant cause of mortality worldwide—even deadlier.

Source: [Harvard T.H. Chan School of Public Health](#)

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