

PROJECTING HEAT-RELATED MORTALITY UNDER CLIMATE CHANGE SCENARIOS: A SYSTEMATIC REVIEW

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Background and Aims: Heat-related mortality is a matter of great public health concern, especially in the light of climate change. Although many studies have found associations between high temperatures and mortality, more research is needed to project the future impacts of climate change on heat-related mortality. We conducted a systematic review of research and methods for projecting heat-related mortality under climate change scenarios.

Methods: A literature search was conducted in August 2010, using the electronic databases PubMed, Scopus, ScienceDirect, ProQuest, and Web of Science. The search was limited to peer-reviewed journal articles published in English up to 2010.

Results: Most projections showed that climate change would result in a substantial increase in heat-related mortality. Significant differences in projected mortality were found by different emissions scenarios, suggesting that a greenhouse gases mitigation policy is important to reduce the health risks of climate change. However, because different studies used different scenarios, time periods, temperature exposures and assumptions, it is not possible to conduct a meta-analysis to create a combined estimate of the impacts of climate change on heat-related mortality. Projecting heat-related mortality requires an estimation of the historical temperature-mortality relationship, and consideration of the future changes in climate, population and acclimatisation. Further research is needed to provide a stronger theoretical framework for projections, including a better understanding of socio-economic development, adaptation strategies, land-use patterns, air pollution and mortality displacement.

Conclusions: Climate change is projected to increase heat-related mortality. Although the methods used for projections are still in their early stages and have limitations, the need for evidence-based assessments of future health impacts of climate change is urgent. Such research will significantly contribute to assessing and managing the potential impacts of climate change on heat-related mortality.