

Global Inequality of Ambient Temperature
Effects on Mortality: A Meta-Regression

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GLOBAL VARIABILITY OF AMBIENT TEMPERATURE

Abstract

Concerns on rapidly progressing climate change and its impact to health has increased, with efforts directed towards improving measures of adaptation especially for the vulnerable population. This paper reviews published epidemiologic researches on the relationship of daily ambient temperature and its effect on mortality across various countries around the world. Time-series or case-over studies comprising all-cause, non-accidental mortality due to daily ambient temperature were pooled to obtain a percent change in risk for temperature exposure. Random-effects meta-regression analysis was then used to see how other standardized country-level characteristics of economic status, population, and level of inequality are associated with the mortality risk due to increase or decrease of daily ambient temperature. In the heat study, mortality risk was observed both in areas acclimatized to warm temperatures and with relatively cooler summer; and increased risk was found with higher heat threshold. Country income level and GINI index was found to be independently associated with increasing mortality risk. In the cold study, mortality risk was not found to be associated with temperature threshold and other country-level predictors. Public health measures to improve care for elderly population, financial risk protection, urban planning measures, and energy-efficient community buildings play a role in the population adaptation and slowing down of climate change progression.

Keywords: Climate Change, Ambient Temperature, Mortality, Meta-Regression