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Deaths from Cardiovascular Diseases Attributable to Heat and Cold Down 38% in Spain

Women are more vulnerable to heat, while cold-related deaths are more common among men

Barcelona, 21 June 2019. Temperature-related mortality has been decreasing in Spain over the past four decades, according to a new study led by the [Barcelona Institute for Global Health \(ISGlobal\)](#), a research centre supported by "la Caixa". The study analysed the **Spanish population's vulnerability to hot and cold temperatures** in the context of **global warming**.

The study, published in *The Lancet Planetary Health*, analysed temperatures and deaths related to cardiovascular diseases recorded in **48 Spanish provinces between 1980 and 2016**. Cardiovascular diseases are the leading cause of death in Spain and there is clear evidence of an association between temperature and cardiovascular mortality.

The findings show that temperature-related cardiovascular disease mortality was **38.2% lower in the period between 2002 and 2016 than for the period between 1980 and 1994**. Analysis of the data in 15-year periods revealed that temperature-related cardiovascular mortality decreased at a rate of **more than 17% per decade**.

Specifically, **heat-related cardiovascular mortality** for the period 2002-2016 was **more than 42% lower in men and more than 36% lower in women** than in 1980-1994, while **cold-related mortality** was **30% lower in women and nearly 45% lower in men**.

Notable differences were observed between the sexes: **heat-related mortality was much higher in women, while men were more vulnerable to cold temperatures**. In older people, the risk of death attributable to high temperatures was significantly higher for both sexes, but in the case of cold the increase was significant only for men.

"We observed two parallel phenomena," explained Hicham Achebak, a researcher at ISGlobal and the [Centre for Demographic Studies \(CED\)](#) and lead author of the study. "First, over the past four decades the **mean temperature has risen by nearly 1°C**. The trend is towards fewer days of moderate or extreme cold temperatures and more days of high temperatures. Second, **the Spanish population has adapted to both cold and warm temperatures**. The number of deaths at a given temperature is lower now than it was four decades ago."

The adaptation observed appears to be due to **socioeconomic development and structural improvements**—including improvements in housing conditions and health care systems. The authors highlighted a number of socioeconomic developments in Spain, including increases between 1991 and 2009 in per capita income (€8,700 to €22,880) and per capita health care spending (€605 to €2,182). In addition, between 1991 and 2011, the proportion of households with central heating went from 25.8% to 56.9% while the proportion of households with air conditioning rose from 4.16% in 1991 to 35.5% in 2008.

“The Spanish population has demonstrated a considerable capacity to adapt to rising temperatures,” commented Joan Ballester, ISGlobal researcher and coordinator of the study. “However, as this has **not necessarily been the result of a strategy to mitigate the consequences of climate change**, it is possible that this adaptive response is limited and will not be sustained at higher temperatures, as climate warming accelerates.”

Reference

Hicham Achebak, David Davolder, Joan Ballester. Trends in temperature-related age-specific and sex-specific mortality from cardiovascular diseases in Spain: a national time-series analysis. *The Lancet Planetary Health*. June 2019. [http://dx.doi.org/10.1016/S2542-5196\(19\)30090-7](http://dx.doi.org/10.1016/S2542-5196(19)30090-7)

About ISGlobal

The Barcelona Institute of Global Health (ISGlobal) is the result of an innovative alliance between “la Caixa” and academic and government institutions. The Institute was set up to contribute to the efforts of the international community to address health challenges in a globalised world. ISGlobal has consolidated a hub of excellence in research and medical care that has its roots in work first started in the world of health care by the Hospital Clínic and the Mar Health Park and in the academic sphere by the University of Barcelona and Pompeu Fabra University. The pivotal mechanism of its work model is the transfer of knowledge generated by scientific research to practice, a task undertaken by the Institute’s Education, Policy and Global Development departments. ISGlobal is a member of CERCA, the Catalan Government’s network of research centres.

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