EXPERT VOICES

This article is 3 months old

Researching the health effects of high temperatures goes beyond estimating deaths

Counting deaths attributable to the effects of high temperatures is basic as a public health surveillance tool, but it should not become the only research objective. It is necessary to know why the population in some places adapts better than others to heat waves, what variables influence them, and to modify them when possible.

Cristina Linares, Jesús de la Osa, Julio Díaz 22/08/2023 - 08:00 CEST

Versión en castellano

A worker walks through a farm in the Cordoba town of Montalbán with a pair of jugs in hand. EFE/Rafa Alcaide.

Throughout the summer, we have experienced successive heatwaves with record temperatures in Europe and Spain, to the point that last July, global average temperatures reached more than 1.5°C above pre-industrial levels. This should be a significant wake-up call about the urgency of implementing adaptation measures that minimize the impacts high temperatures have on health.

The counting of deaths attributed to the effects of high temperatures, usually in terms of increased mortality, is fundamental as a tool for public health surveillance. However, this should not become the sole research objective. Just as with the health impact of air pollution, the effects of extreme heat on mortality are well established. We believe it is time to shift research focus towards other objectives that generate efficient improvements in public health.

Measures aimed at emissions reduction (mitigation) are extremely important concerning the health impacts of climate change, but they are insufficient to keep the planet's average temperature below the safety thresholds proposed in the Paris Agreement. Therefore, adaptation and risk management are the essential tools to work on, in order to decrease population vulnerability to high temperatures.

Rehabilitating Homes and Creating Green Spaces

From the perspective of adaptation processes, local factors are crucial in reducing the impact on morbidity and mortality. It is necessary to understand why the population in some areas adapts better to heatwaves than others, which variables influence this, and modify, as far as possible, those that can be changed.

It is known that climate adaptation of homes and making them better suited to withstand high temperatures decrease the impact of heatwaves. Also, the presence of green and blue zones in cities presents a significant opportunity to reduce the impact of heat on health.

The focus should be on researching urban and social factors that can improve life within cities and how to implement them to achieve their renaturalization.

Improving Prevention Plans

Another crucial factor in our country for reducing the impact of heatwaves on mortality has been the High-Temperature Prevention Plans, both at the national and regional or municipal levels, which need continuous improvement.

To achieve this, it is necessary to narrow down their geographical resolution. In other words, to move from the provincial scale to the scale of isoclimatic areas (geographical zones with similar meteorological behavior). Moreover, the threshold temperatures triggering heatwave mortality need to be determined for implementation at this scale, which goes beyond administrative boundaries. This involves assessing health impacts at the local level as well. It is not effective to overlook local factors in the analysis of impacts if these factors are crucial, as the World Health Organization (WHO) reminds us.

It is known that the climatic rehabilitation of homes and their better adaptation to withstand high temperatures reduce the impact of heat waves

Furthermore, there is a need to enhance understanding of the meteorological conditions that generate heatwaves. Depending on their origin, the risks of exposure and impacts vary. For instance, Saharan-origin heatwaves are associated with significant increases in particulate matter, which sometimes has a greater effect on morbidity and mortality than temperature itself. Conversely, heatwaves generated by anticyclonic blocking typically lead to increases in tropospheric ozone concentrations, with significant health effects.

Therefore, research is needed to design prevention plans that protect health and integrate atmospheric pollution and heatwaves. Additionally, these plans should consider the simultaneous occurrence of forest fires, exacerbation of droughts, vector-borne diseases (such as mosquitoes and ticks), and delve into the understanding of water and foodborne diseases. All these are risk factors exacerbated during periods of high temperatures.

Outdoor Workers Are Also Vulnerable

Furthermore, expanding knowledge about groups especially vulnerable to heatwaves is essential. Traditionally, this focus has been on the elderly and those with chronic diseases, but research should extend to other population groups. This includes outdoor workers and people with disabilities, who can be differently affected in high-temperature situations. Pregnant women are also a particularly vulnerable group during heatwaves.

Knowledge of groups of people especially vulnerable to heat waves, traditionally focused on the elderly and those with chronic diseases, should be expanded

It is necessary to determine which diseases are particularly exacerbated by heat and are therefore susceptible to increased hospital admissions and mortality. Majorly affected are chronic respiratory and circulatory diseases, neurological and renal diseases, as well as endocrine and metabolic diseases. Investigating the varying impact of heat on different age groups (especially implementing prevention measures for school-age population) is also crucial.

Nevertheless, further analysis is needed, and protocols for action at the care level should be defined to optimize risk management and resources to minimize health effects, including mental health.

The Importance of Communicating to the Population

Lastly, research is necessary on how to effectively convey this information to the population by unifying alerts and messages, as well as training professionals to respond to these risks. Environmental education, health education, training of social and healthcare personnel, community health networks, health literacy for patients, family members, and caregivers, and the role of media play a decisive role.

In other words, there are many lines of action to continue working and researching, to pursue a positive adaptation to high temperatures. Although it might not be intuitively apparent, the impact of heatwaves measured through attributable risks to mortality in Spain decreased between 2004-2013 compared to 1983-2003. This decrease is closely related to several factors, including the implementation of public health prevention plans, socio-economic, sanitary, infrastructural improvements, mainly in urban areas and households. Nonetheless, the most important aspect is the proper transmission of information about associated risks and their transformation into positive action for health.

About the author: Cristina Linares

Co-director of the Reference Unit on Climate Change, Health and Urban Environment of the Carlos III Health Institute

About the author: Jesús de la Osa

Co-coordinator of the Itinerary in Global Health of the Aragonese Institute of Health Sciences IACS.

About the author: Julio Díaz

Co-director of the Reference Unit on Climate Change, Health and Urban Environment of the Carlos III Health Institute

TOPICS HEAT | PUBLIC HEALTH | CLIMATE CHANGE

You may be interested in

Is a heat wave in health the same as a heat wave in meteorology?

"Blame it on climate change": what attribution studies tell us and what they don't

Reactions: record heat in summer 2022 caused more than 61,000 deaths in Europe, more than 11,000 of them in Spain

The 5Ws +1

Publish it

FAQ

Contact

Science Media Centre Spain

What is the SMC Spain

Statute

Advisory Board

CC Licence

FAQ

Contact the SMC

Do you have any questions or suggestions?

Write to us