

Science for Environment Policy

Public health risks of hot Mediterranean summers vary by region

Elderly people are at particular risk from the damaging health effects of hot summers in European Mediterranean cities, such as Athens, Barcelona and Lisbon, but in North African and Middle-Eastern Mediterranean cities, such as Tunis and Tel-Aviv, younger people are more vulnerable, a recent study concludes. This is particularly concerning, the researchers suggest, given the insufficient resources available to deal with this public health problem in some countries.

Higher temperatures and more intense heat waves are expected under future [climate change](#) in the Mediterranean region, which will affect human [health](#), resulting in more premature deaths. As part of the EU-funded CIRCE¹ project, researchers investigated the consequences of hotter weather on the death rates of people living in Mediterranean cities, in Europe, North Africa and the Middle East.

Hot weather particularly affects the elderly, the young and people with long-term health problems, such as respiratory and heart conditions. Previous studies suggest, however, that local climate can affect how people respond to summer heat, with those regularly exposed to extreme temperatures able to withstand hotter conditions. Socio-economic conditions can also affect heat-related death rates, in terms of resources for adapting to hotter conditions, for improved housing or warning systems, for example.

Using mortality records from local registries, the researchers analysed daily deaths in the summer season from all natural causes, between 1991 and 2007, for four age groups (0-14, 15-64, 65-74, and 75+) in 10 Mediterranean cities: Athens, Barcelona, Bari, Istanbul, Lisbon, Palermo, Rome, Tel-Aviv, Tunis and Valencia. The maximum apparent temperature ('Tappmax'), which reflects the heat stress caused by both temperature and humidity, was calculated for all the cities. The risk of dying from temperature increases above a certain threshold was calculated for all age groups, with the threshold being the Tappmax above which death rates begin to increase.

Across all age groups, the effects of hot summers on death rates was lower in the North African and Middle Eastern cities, which experience longer and hotter summers, than in the European cities where the summers are shorter and slightly milder. The highest Tappmax thresholds were 35.5°C in Tunis and 32.8°C in Tel-Aviv, compared with 26.7°C in Barcelona and 28.4°C in Lisbon.

The results suggest that local climate plays an important role in the differences in heat thresholds and in the effect above the threshold, and that populations in the hotter regions might have adapted to the more extreme summer conditions, whereas people living in the slightly milder and less variable climates are more vulnerable to extremely high temperatures. The death rate associated to increases in temperature above the threshold was higher among the elderly (65-74 and 75+ age groups) in European cities (except for Bari), whereas the young were more affected in Eastern and Southern Mediterranean cities. The 0-14 age group in Tunis and the 15-64 age groups in Tel Aviv and Istanbul were particularly affected by higher summer temperatures.

There are comparatively more elderly people in the European cities in this study and more young people in the North African and Middle Eastern cities, while the latter have lower socio-economic conditions than the other cities. Both the young and the elderly may have difficulty in regulating their body temperature and are less able to care for themselves. Children in North African and Middle Eastern countries may also be exposed to more infectious diseases owing to the hotter climate and less expenditure on public health in some countries.

The study highlights concerns around the insufficient resources to deal with climate change impacts in some Eastern and Southern Mediterranean countries, and calls for more attention on research and healthcare to reduce future heat-related public health problems.



17 October 2013
Issue 346

Subscribe to free
weekly News Alert

Source: Leone, M., D'Ippoliti, D., De Sario, M. *et al.* (2013) A time series study on the effects of heat on mortality and evaluation of heterogeneity into European and Eastern-Southern Mediterranean cities: results of EU CIRCE project. *Environmental Health*. 12:55.

Doi:10.1186/1476-069X-12-55 This study is free to view at:

www.ehjournal.net/content/12/1/55#B7

Contact:
m.leone@deplazio.it

Read more about:
[Climate change and energy](#), [Environment and health](#)

The contents and views included in *Science for Environment Policy* are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this article/service: "[Science for Environment Policy](#)": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

1. CIRCE (Climate Change and Impact Research: the Mediterranean Environment). <http://www.circeproject.eu/>