Limiting warming to 2 C may avoid 80% of heat-related deaths in Middle East and North Africa

April 3 2023

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Over 80% of predicted heat-related deaths in the Middle East and North Africa (MENA) by the end of the century could be prevented if global

warming is limited to 2°C, according to a modeling study published in *The Lancet Planetary Health*.

Under high-emissions scenarios, approximately 123 people per 100,000 in MENA are predicted to die annually from heat-related causes by the end of the century—approximately 60-fold greater than current figures and much higher than predictions under similar scenarios worldwide.

However, if global warming is instead limited to 2°C, over 80% of these deaths could be avoided, highlighting the urgent need for better adaption policies and a switch to renewable technologies.

The findings come as the world prepares for COP28 in Dubai in November.

MENA is one of the most climate-vulnerable regions of the world, with maximum temperatures predicted to rise to almost 50°C by the end of the century, potentially making some areas unlivable. Despite this vulnerability, the impact of heat stress in this region, which is worsening due to climate change, remains underexplored.

In the current study, an international team of researchers, including from the London School of Hygiene & Tropical Medicine (LSHTM), modeled current (2001 to 2020) and future (2021 to 2100) trends in heat-related mortality in 19 countries in the MENA region. In their analyses, the team considered variations in the levels of potential greenhouse gas emissions over time and different socioeconomic scenarios.

Under high-emissions scenarios (defined by the Intergovernmental Panel on Climate Change Shared Socioeconomic Pathways (SSP) 5-8.5), most of the MENA region will experience substantial levels of warming by the 2060s.

Indeed, under SSP5-8.5, annual heat-related deaths will rise from approximately two per 100,000 currently to 123 per 100,000 by the period between 2081 and 2100. Although current heat-related deaths in MENA are relatively low compared to other regions (two per 100,000 compared to 17 per 100,000 in Western Europe or 10 per 100,000 in Australasia, for example), this rise is expected to be much higher than other regions of the world under similar climate change scenarios. The UK, for example, is expected to see a rise from current figures of three per 100,000 to nine per 100,000 by the 2080s.

Iran is expected to have the highest annual death rate in MENA under SSP5-8.5 (423 per 100,000), with other countries such as Palestine, Iraq and Israel also predicted to have high rates (186, 169 and 163 per 100,000, respectively). Smaller Gulf states, such as Qatar and the United Arab Emirates, will see the greatest relative increases in heat-related deaths.

However, for the MENA region as a whole, if global warming can be limited to 2°C as defined by SSP1-2.6, the team estimates that over 80% of the total 123 annual predicted heat-related deaths per 100,000 people could be avoided.

With COP28 on the horizon, the authors conclude that there is an even greater urgency for stronger mitigation and adaptation policies to be agreed upon, both at the conference and beyond, if MENA is to avoid the worst possible impacts of future warming.

Reliance on traditional heat-adaption solutions such as air conditioning will not be enough, they warn. Air conditioning, for example, is used to a relatively high extent in countries where rates of heat-related mortality are higher than the regional average, such as in Israel and Cyprus.

As population growth in MENA will be a substantial driver of predicted

heat-related deaths, demographic policies and healthy aging will also be vital if MENA is to successfully adapt to a changing climate.

Shakoor Hajat, lead author and Professor of Global Environmental Health at LSHTM, said, "Global warming will need to be limited to 2°C to avoid the catastrophic health impacts estimated in our study. Even with stronger action, countries in the region need to develop ways other than air conditioning to protect their citizens from the dangers of extreme heat.

"Strengthening health systems and better coordination between MENA countries will be key in tackling the health impacts of climate change in the region. With COP28 coming up, discussions are needed to consider how countries in the region can better work together to improve resilience in the face of climate change."

More information: Current and future trends in heat-related mortality in the MENA region: a health impact assessment with bias-adjusted statistically downscaled CMIP6 (SSP-based) data and Bayesian inference, *The Lancet Planetary Health* (2023). DOI: 10.1016/S2542-5196(23)00045-1 , www.thelancet.com/journals/lan … (23)00045-1/fulltext

Provided by London School of Hygiene & Tropical Medicine