

The health risks of extreme heat

Some cities are coping with an increasing public health challenge: extreme heat events.

Education and awareness for communities, and training for emergency care staff could help tackle the problem, but more systemic changes will likely be needed in future.

Coping with heat through education and awareness raising

This study, conducted in Karachi, Pakistan, evaluated the effectiveness of community awareness and emergency healthcare training programs in reducing heat-related sickness and deaths, and improving knowledge, attitude and practices of communities towards heat-related illnesses. The study team has helped produce a Heat Emergency Awareness and Treatment (HEAT) manual and a simplified algorithm for education and training of emergency health care professionals.

The study produced insights into how education and training interventions for communities and healthcare professionals can help to mitigate the health impacts of extreme heat events.

The research has generated ongoing interest from hospitals in Karachi to continue the HEAT training. Findings have implications for health agencies and policymakers in heat-affected cities globally.



Women from the community engaged in a HEAT informational session, Karachi 2017. Photo credit: Muhammad Waqas

Background

Extreme temperature, primarily in the form of heatwaves, cause 160,000 deaths annually worldwide, and these public health impacts are likely to increase as climate change impacts worsen. Heatwaves can have a devastating impact on people and communities in low resource settings, due to ill-equipped emergency care systems and a lack of knowledge about how to identify and manage heat-related illnesses.

There are limited locally informed, evidence-based interventions to support public health agencies to manage the health impacts of extreme heat. This study was conducted in Karachi, Pakistan, where temperatures can rise above 40°C, causing rising numbers of deaths and illnesses every year.

How the research was conducted

This two-armed study examined both hospitals and communities. A training protocol for recognizing and dealing with health impacts of extreme heat was delivered to doctors, nurses and paramedics at emergency departments in Karachi, and an awareness-raising program provided to communities. Four major hospitals and sixteen communities impacted by heat waves were surveyed to understand the changes in knowledge, behaviour and care seeking resulting from the intervention.

Key findings

- The community intervention-exposed clusters had fewer heat-related outcomes (death, hospital visit and admission). The ventilation of houses was associated with fewer outcomes.
- Communities viewed engagement of community health workers and other non-governmental organizations in a positive light and trusted the support received.
- However, changes in community knowledge, attitude and practices about heat-related illnesses showed mixed results. While knowledge and understanding were improved, this did not necessarily lead to changed behavior or care-seeking.
- Emergency physicians significantly improved their knowledge of diagnosis and management of heat-related illnesses after the intervention.

Implications for humanitarian practitioners and policymakers

- Educate populations in methods to protect themselves during extreme heat events, such as increasing water intake, avoiding outdoor activities during peak hours, eating light foods, taking rest in the shade, and paying attention to infants, young children, elderly and those with other illnesses.
- Strengthen and equip health care systems to manage the health impacts of extreme temperatures.
- Front line health care providers in emergency settings should consider the diagnosis of heat related illness and be aware of its management protocol when interacting with individuals who present with elevated temperatures, nausea and vomiting, unconsciousness, muscle cramping, weakness and altered mental status with positive heat exposure.
- The HEAT manual can be culturally attuned and translated to suit the needs of other regions in Pakistan as well as other low resource settings to provide physicians and nurses with the opportunity to educate themselves about heat related illnesses.
- Health care institutions and governments at various levels should work together to accelerate the development of heat management systems, given extreme temperature conditions are predicted to rise with climate change.

Recommendations for future research

Research which generates clearer clinical definitions and diagnostic criteria of heat illnesses in the civilian, non-athlete population would be valuable.

Longer observation periods in communities would help to more accurately evaluate the behavior changes resulting from education-based interventions, as well as examinations of whether the gender of the trainer/health worker delivering the intervention influences the results.



Women in the community carry out household tasks despite extreme heat. Karachi, 2017. Photo credit: Muhammad Waqas

About the study team

This research study was conducted in collaboration between the Faculty members at the Johns Hopkins School of Medicine, The Aga Khan University and The Aman Foundation. The local advisors for the project included Jinnah Postgraduate Medical Center, NED University of Engineering, Pakistan Met Department, Provincial Disaster Management Authority, and topical experts in the field of emergency medicine and climate change.

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Keywords

Heat related illness, extreme temperature, community sensitization, emergency-based management, community randomized trial, climate change, community awareness

Articles and further reading

<https://www.elrha.org/project/heat-heat-emergency-awareness-treatment-bundle-trial/>



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