Study suggests link between temperature increases and mental health-related emergency room visits

SACRAMENTO – A new study by the Office of Environmental Health Hazard Assessment (OEHHA), which is part of the California Environmental Protection Agency, suggests that short-term exposure to increased temperatures may lead to increased emergency room visits for mental health-related outcomes, including violence and self-harm.

While a significant body of research exists around temperature and physical health effects, little research to date has focused on the association between temperature and mental health-related outcomes. “This groundbreaking research provides an important contribution to quantifying the relationship between temperature and mental health-related outcomes in California,” said OEHHA Director Dr. Lauren Zeise. “Research in this area is critical to furthering our understanding of the potential impacts of temperature on adverse health outcomes in California.”

Lead author Dr. Rupa Basu, chief of OEHHA’s Air and Climate Epidemiology Section, said the study “suggests that females, Hispanics, and children 6 to 18 years old are most vulnerable to mental health-related emergency room visits as temperatures increase.” She added, “These findings can help guide future preventive efforts by identifying populations at greatest risk.”

The study, titled "Examining the Association Between Temperature and Emergency Room Visits from Mental Health-Related Outcomes in California," examined temperature, a combination of temperature and humidity, and daily counts of mental health-related emergency room visits in California, during both the warm season of May through October, and the cold season of November-April. Data from 2005-2013, covering 16 different California climate zones, were included in the analysis.

The study found that increasing temperatures affected mental health not only in the summer, but in the winter as well, showing that increases in temperature affect mental health throughout the year in California. Similar trends over both the warm and cold seasons were attributed to California’s mild temperatures, particularly in the coastal areas where the majority of Californians live. A 10-degree Fahrenheit increase in
temperature was associated with an increase in emergency room visits for overall mental health outcomes, intentional injury/homicide, and self-injury/suicide of 4.8, 7.9, and 5.8 percent, respectively, during the warm season.

Some researchers have linked heat exposure with increased stress, and have found that with extended periods of heat, irritability and psychological distress, including risky behaviors such as alcohol consumption, violence, and aggression, are more common. Those who are taking certain medications, such as anti-depressants or beta-blockers, may also be at greater risk of mental-health related illnesses during heat exposure.

OEHHA’s Dr. Basu co-authored the paper with other OEHHA scientists and a graduate student from the Yale University School of Public Health.


OEHHA is the primary state entity for the assessment of risks posed by chemical contaminants in the environment. Its mission is to protect and enhance public health and the environment by scientific evaluation of risks posed by hazardous substances.

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