

How floods kill, long after the water has gone: Sobering data from a global decade-long study

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With New York's declared state of emergency following flash flooding, there is increasing concern such events will become more common

globally.

Now a study led by Monash University scientists in Australia has found that people impacted by a flooding event are at significantly increased risk of dying in a crucial window between three and six weeks after the event, even after the flooding has dissipated.

The study, published today in *The BMJ*, found that the risk of dying increased and persisted for up to 60 days (50 days for [cardiovascular mortality](#)) after a flooded day—increasing by for 2.1% for all-cause deaths, 2.6% for [cardiovascular deaths](#), and 4.9% for respiratory deaths.

Flood events make up almost half (43%) of all [natural disasters](#), and they are projected to increase in severity, duration, and frequency in the background of climate change. Twenty-three percent of people are directly exposed to inundation depths of over 0.15 meters every decade.

The study, led by Professors Shanshan Li and Yuming Guo from Monash University School of Public Health and Preventive Medicine, in collaboration with London School of Hygiene and Tropical Medicine, provides the first timeline of the health impacts of flooding, giving local health authorities and [policy makers](#) a blueprint as to when they should actively monitor flood-affected communities.

The researchers studied 761 communities from 34 countries that had experienced at least one flood event during the decade from 2000-2019, reviewing a total of 47.6 million all-cause deaths including 11.1 million cardiovascular deaths, and 4.9 million respiratory deaths in the study time period.

According to Professor Guo, these flood-mortality associations varied with local climate type and were stronger in populations with [low socioeconomic status](#) or high proportions of older population.

"We know now that to the question: Do mortality risks change after floods in the general population? The answer is yes, and this needs to be factored into policy responses to flooding events," he said.

According to Monash University's Professor Li, a co-lead author on the paper, "our study suggests that all-causes, cardiovascular, and respiratory mortality risks reach a peak at around 25 days and last for up to 60 days after exposure to floods," she said.

In the aftermath of a flood, deaths from natural causes may be triggered by contamination of food and water, exposure to pathogens (i.e., fungi, bacteria, and virus), impaired access to health services, and psychological impairment.

According to Professor Guo, health care providers should be aware of the increased health risks following floods, particularly in vulnerable communities and when there are persistent floods, since the health impacts will accumulate.

"They should incorporate this knowledge into their practice and be prepared for the suddenly elevated demands of [health services](#) to reduce avoidable deaths from natural causes," he said.

"Public health institutions should monitor the changes in mortality rate in the 25 days following floods to enable prompt interventions. Policymakers should prioritize comprehensive disaster preparedness, [early warning](#)/detecting systems, and efficient disaster response protocols to reduce the attributable deaths due to floods—including climate change adaptation measures because of projected increases in floods globally."

More information: Mortality risks associated with floods in 761 communities across the world: a multi-country time series study, *The*

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Provided by Monash University

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