

Disaster makes people with depression less healthy

October 23 2017



Chris Fagundes. Credit: Jeff Fitlow/Rice University

People who exhibit even a few depressive symptoms before a major life stressor, such as a disaster, may experience an increase in inflammation—a major risk factor for heart disease and other negative

health conditions—after the event, according to new research from Rice University.

The findings have important implications for survivors of crisis situations, according to Chris Fagundes, an assistant professor of psychology at Rice and one of the study's authors. "An Evaluation of Perceived Health Risk and Depressive Symptoms Before a Disaster in Predicting Post-Disaster Inflammation" will appear in an upcoming edition of *Psychosomatic Medicine*.

The study followed 124 people (38 males and 86 females, including whites, Hispanics and African-Americans) who lived in Texas City, Texas, before and after a petrochemical refinery in the city exploded March 23, 2005. The explosion killed 15 workers, injured more than 170 others and shook buildings as far as 10 miles away.

The researchers found that after the disaster, study participants who beforehand exhibited even minor [depressive symptoms](#) (such as a feeling of fatigue or sadness) and identified concern for their [physical health](#) had a 75 percent increase in their blood of C-reactive protein, Tumor necrosis factor receptor 1 and Interleukin 6, all of which are immune markers that signal inflammation in the body. Participants who did not display depressive symptoms or identify concern for their physical health beforehand saw no increase in the immune markers after the disaster.

"We found that people who are slightly depressed and stressed out about their health risks prior to a disaster had a negative response to the actual disaster in the form of these immune markers showing up in their bloodstream," Fagundes said. "If you're already above the baseline for mental and physical health, your immune system is primed to have a much more dramatic effect. This could explain other researchers' findings demonstrating increased cardiovascular events (any event that

can damage the heart muscle) following natural disasters."

Before the explosion, participants had completed the Concern About Petrochemical Health Risk Scale, a four-item measure of one's subjective risk of health problems due to living near a petrochemical plant. The four items focused on concerns of [health risks](#) stemming from pollution, accidents, stored waste and generally living near oil and chemical industries. Participants indicated their degree of concern for each item on a scale ranging from 1 (not at all concerned) to 5 (extremely concerned).

Also before the explosion, participants completed a 20-item Center for Epidemiologic Studies Depression Scale survey and indicated symptoms of depression they had experienced during the previous two weeks on a scale ranging from 0 (rarely) to 3 (most or all of the time). Collection of follow-up information took place between May and August 2005 (two to six months after the explosion). Participants also gave samples of their blood both before and after the explosion.

The pre-disaster data used in this study was initially being collected for another study, Fagundes said. The researchers put together the resources to implement a study after the disaster to assess changes, which is similar to what Fagundes is doing now following Hurricane Harvey.

Fagundes said the study is especially timely following Hurricane Harvey in Houston.

"It is certainly possible that we will see these same health patterns in the aftermath of Hurricane Harvey," he said.

Fagundes hopes the study will encourage future work focusing on exposure to [disasters](#) and the related negative mental and physical health outcomes.

Provided by Rice University

Citation: Disaster makes people with depression less healthy (2017, October 23) retrieved 24 April 2024 from

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