

Risk factors developed after loss of spouse could increase likelihood of 'dying of a broken heart'

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Credit: Rice University

Widowed individuals are more likely to exhibit risk factors linked to cardiovascular illness and death in the three-month period following a spouse's death, according to a new study from Rice University. This could make a bereaved spouse more likely to "die of a broken heart," the researchers said.

"Spousal Bereavement Is Associated With More-pronounced ex Vivo Cytokine Production and Lower Heart Rate Variability: Mechanisms Underlying Cardiovascular Risk" will appear in an upcoming edition of *Psychoneuroendocrinology*.

The study found that individuals who have lost a spouse within the last three months have higher levels of pro-inflammatory cytokines (immune markers that indicate inflammation in the bloodstream) and lower [heart rate variability](#) (HRV) compared with non-bereaved individuals who share the sex, age, [body mass index](#), and educational level. Both are factors that increase an individual's [risk](#) for cardiac events, including death.

The study is the first to demonstrate that bereavement is associated with elevated levels of ex vivo cytokines and lower HRV.

"In the first six months after the loss of a spouse, widows/widowers are at a 41 percent increased risk of mortality," said Chris Fagundes, an assistant professor of psychology in Rice's School of Social Sciences and the study's lead author. "Importantly, 53 percent of this increased risk is due to cardiovascular disease. This study is an important step toward understanding why this is the case by identifying how bereavement gets under the skin to promote morbidity and mortality."

The 32 recently bereaved individuals who participated in the study exhibited 47 percent lower levels of HRV than the 33 people in the control group. The bereaved individuals exhibited 7 percent higher levels of TNF-alpha (one type of cytokine) and 5 percent higher levels of IL-6 (another type of cytokine) than the control group. Finally, the bereaved spouses reported 20 percent higher levels of depressive symptoms than the control group. Participants ranged in age from 51 to 80 (average 67.87) and included 22 percent men and 78 percent women. The sex and age of the [control group](#) was comparable, and the results were the same when accounting for slight differences in weight and health behaviors.

Fagundes said the study adds to a growing understanding of how bereavement can impact heart health. He hopes the research will help medical professionals better understand the biological mechanisms triggered by bereavement and allow for the creation of targeted psychological and/or pharmacological interventions to reduce or prevent the toll of a "broken heart."

"Although not every bereaved individual is at the

same risk for [cardiac events](#), it is important to point out that the risk exists," Fagundes said. "In our future work, we seek to identify which widows/widowers are at greatest risk, and which are resilient to the negative physiological consequences of [bereavement](#)."

More information: Christopher P. Fagundes et al. Spousal bereavement is associated with more pronounced ex vivo cytokine production and lower heart rate variability: Mechanisms underlying cardiovascular risk?, *Psychoneuroendocrinology* (2018). DOI: [10.1016/j.psyneuen.2018.04.010](https://doi.org/10.1016/j.psyneuen.2018.04.010)

Provided by Rice University

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