Losing a parent early in life impacts a person's immune system as they age, study finds

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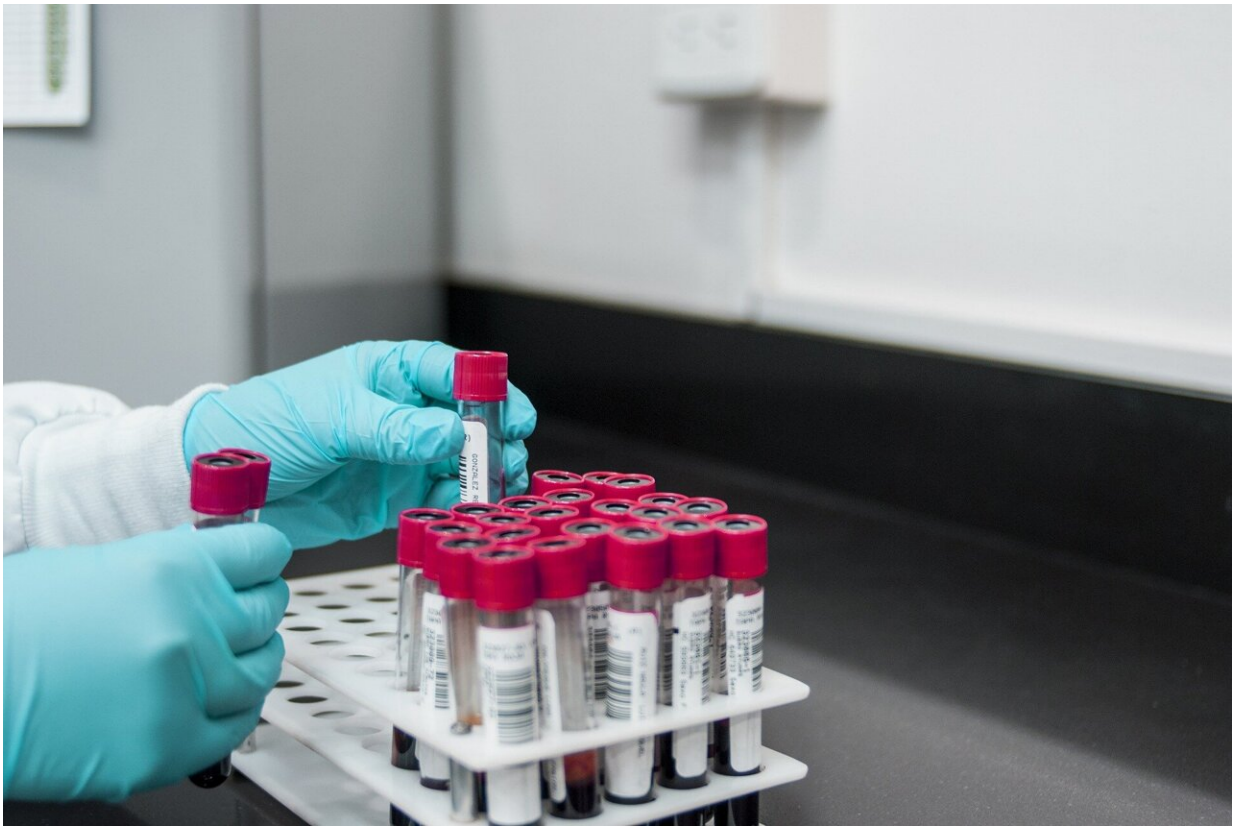

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When a person loses a parent or a caregiver at a young age, their immune system suffers later in life, according to University of Michigan

research.

A group of researchers led by Grace Noppert found that if the parents or caregivers of a child under age 16 died, or they were separated for a period longer than six months, the child's immune function was negatively impacted in late life. Their findings are published in *PLOS One*.

To determine the impact to immune health, the researchers examined a virus called cytomegalovirus. Part of the herpesvirus family, CMV is a virus that afflicts about 80% of those who live in Europe and North America and 100% of those who live in Asia or Africa, according to the National Institutes of Health. It's also a virus that tells a story about how a person's immune system is functioning.

"What's interesting about this virus is how your body deals with it. Your body doesn't clear it, but it gets reactivated over the life course when you experience stress, or other circumstances that strain the body, like malnutrition. Trauma, you could imagine, likely reactivates it," said Noppert, a social epidemiologist at the Survey Research Center in the U-M Institute for Social Research. "And so, every time it reactivates, it forces your immune system to expend all of these resources to try to get it to a latent state.

"It's costly to the immune system in that way. When you see somebody with high levels of antibodies to CMV, that tells us that your immune system is not dealing with that virus well anymore."

For the study, the researchers used data from nearly 6,000 people, drawn from the Health and Retirement Study. The HRS is an ongoing, nationally representative longitudinal survey of adult Americans which began in 1992 and includes more than 20,000 people over age 50. Cohorts are added to the survey every two years, and follow-up survey

waves also occur every two years.

In 2016, the HRS rolled out a new biological substudy, the Venous Blood Study. From the Venous Blood Study, the research team was able to measure four indicators of immune function in late life, past age 65. These include C-reactive Protein, Interleukin-6, soluble Tumor Necrosis Factor and CMV Immunoglobulin G.

They found consistent associations between participants who experienced parental or caregiver loss and separation and poor immune function across all race and ethnicity subgroups. But racialized minority groups fared more poorly than whites. Specifically, the researchers found that non-Hispanic Black people who experienced caregiver or parental loss before age 16 had a 26% increase in CMV IgG antibodies in late life. Non-Hispanic white people experienced a 3% increase in such antibodies.

"Who experiences parental loss and separation, and who has poor immune function is not distributed equitably at all," Noppert said. "One of our main findings was that racialized minority populations, particularly non-Hispanic Black populations and Hispanics had a much higher prevalence of experiencing parental death or parental loss and had worse immune function.

"Kids in these populations are more likely to experience parental loss in the first place and then they have to have all the long-term consequences associated with it. This is just one of the ways that we continue to perpetuate health inequities."

These outcomes were controlled for age, gender and parental education. The association also remained when the researchers controlled for other indicators of health.

"Losing a parent or being separated from a parent could be associated with poorer educational outcomes, poor wealth when you're an adult, worse health behaviors such as smoking and other chronic conditions," Noppert said. "So we put all of those into a model just to see if we could wash away the effects we were seeing. But we still really saw a durable association between the loss or separation of a parent before the age of 16 and this indicator of cytomegalovirus."

Noppert says she has been considering this research in light of the ongoing COVID pandemic. About 148,000 children in the United States have been orphaned or have experienced caregiver loss because of the COVID pandemic. Internationally, about 10.5 million children have experienced COVID-associated orphanhood or caregiver death, according to recent research.

"This current estimate is through fall of 2021, so this is going to be an underestimate," Noppert said. "And this isn't even considering all the kids who have lost grandparents, aunts, uncles, and neighbors and people who are actually providing care for them, and whose loss would be traumatic."

Noppert says the ripple effects of COVID may disrupt population health for decades.

"This work tells us something about what we have in store from COVID. We don't know what's coming in terms of population health, and this work starts to paint that picture a bit," she said. "These losses are not equitable. COVID losses are not equitable either. And I think we need to pay attention to how we're caring for children and how we're thinking about the other consequences of COVID other than the number of cases and the number of COVID deaths."

More information: Grace A. Noppert et al, Biological expressions of

early life trauma in the immune system of older adults, *PLOS ONE* (2023). DOI: 10.1371/journal.pone.0286141