

# Researchers associate early life stress with pro-inflammatory processes later in life during pregnancy

March 29 2023, by John Pastor

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Sharon Ramey (left), research professor and distinguished research scholar of the Fralin Biomedical Research Institute at VTC, was part of a study with corresponding author Adriana Méndez Leal of UCLA that showed early life stress during childhood and adolescence may preset women for higher levels of inflammation factors during maternity. Credit: Virginia Tech

Women who experienced high stress during childhood and adolescence may have increased risk for inflammation during pregnancy, according to a study by researchers with the Eunice Kennedy Shriver National Institute of Child Health and Human Development's Community Child Health Network.

The findings, published in the March issue of the journal *Brain, Behavior, and Immunity*, provide more evidence that early life stress may affect [women's health](#) through pathways that involve immune responses and [inflammation](#).

Furthermore, high levels of maternal inflammation may have [health consequences](#) that extend to the children of the expectant mothers.

"Children who experience stress have higher levels of inflammation factors when they go on to have babies," said Sharon Ramey, research professor and distinguished research scholar of the Fralin Biomedical Research Institute at VTC, who also holds an appointment in the Department of Psychology of the Virginia Tech College of Science.

"The increased maternal prenatal inflammation may be the pathway that leads to observed cross-generational transmission of mental and physical health effects on children."

Inflammation is the body's way of protecting itself from injuries, infections, or other diseases. But if inflammation lasts too long or becomes chronic, it can be harmful.

The study, with corresponding author Adriana Méndez Leal of UCLA, examined molecular markers of inflammation alongside assessments of early life stress.

"Pregnancy is a unique period characterized by impactful social, psychological, and biological changes," Méndez Leal said.

"Understanding how stressful childhood experiences that are prevalent in the United States and worldwide impact [biological processes](#) during pregnancy can help us think about additional ways to support healthy outcomes for parents and their children."

The 89 [women](#) in the study were in approximately their third trimester of pregnancy and were a subset of the Community Child Health Network, a long-term research project exploring health risks of new mothers.

Approximately half of the women in the final sample identified as Latina, a quarter as white, and a quarter as Black, and participants were on average 28–29 years old.

Stress levels were determined by a standardized tool called the Risky Families Questionnaire, which collects data about the extent to which participants felt loved and cared for, experienced abuse or neglect, or had a household member go to prison, struggle with [substance abuse](#), or experience severe mental illness.

Researchers looked at the activity of pro-inflammatory genes and [transcription factors](#) that allow for unique expression of the genes, revealing that mothers who experienced higher levels of early life stress had significantly increased pro-inflammatory factors but decreased factors that regulate immune cell development and responses to pathogens.

Additionally, researchers found early life stress was not associated with C-reactive protein, a substance that is produced in the liver and may indicate a health condition that causes inflammation.

According to the researchers, the findings provide preliminary evidence for an association between early life stress and pro-inflammatory processes during [pregnancy](#) that may serve as a pathway for cross-generational transmission of the effects of early life stress on mental and physical health.

**More information:** Adriana S. Méndez Leal et al, Maternal early life stress is associated with pro-inflammatory processes during pregnancy, *Brain, Behavior, and Immunity* (2022). [DOI: 10.1016/j.bbi.2022.10.012](https://doi.org/10.1016/j.bbi.2022.10.012)

Provided by Virginia Tech

Citation: Researchers associate early life stress with pro-inflammatory processes later in life during pregnancy (2023, March 29) retrieved 3 July 2023 from <https://medicalxpress.com/news/2023-03-associate-early-life-stress-pro-inflammatory.html>

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