



ECHO

Environmental influences
on Child Health Outcomes

A program supported by the NIH

Study Summary

The Effect of Maternal PFAS Exposure on Prenatal Growth in Black Women

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Who sponsored this study?

This work was supported by the Environmental Influences on Child Health Outcomes (ECHO) program Opportunities and Infrastructure Fund, Office of the Director, National Institutes of Health, and the Environmental Protection Agency (USEPA).

Footnote: The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Why was this study needed?

Per- and polyfluoroalkyl substances (PFAS) are called “forever chemicals” because they stay in the environment a long time. PFAS exposures have been linked to adverse pregnancy and birth outcomes, such as lower birth weights, but there is little information on why this relationship exists and how PFAS exposures affect the body. Also, African American women and children are exposed to higher levels of environmental pollutants and have a higher risk of negative birth outcomes, so studies focusing on this population are very important for reducing health disparities.

Who was involved?

This study included 313 participants enrolled in the Atlanta African American Maternal-Child ECHO cohort between March 2014 and May 2018.

What happened during the study?

Researchers collected blood samples from participants and measured the levels of PFAS and small molecules essential to a baby’s development. Using this information, the researchers calculated how the levels of the molecules changed in response to PFAS exposures and how these exposures affected the birth weight of babies.

What were the study results?

Some PFAS exposures were linked to a greater risk of low birth weight for babies that African American women delivered. PFAS exposures were also associated with the changes in the levels of small molecules needed for the baby’s development. These molecules included including amino acids, lipid/fatty acids, bile acids, and sex hormones.

Footnote: Results reported here are for a single study. Other or future studies may provide new information or different results. You should not make changes to your health without first consulting your healthcare professional.

Impact

This is one of the first studies researching the connections and relationships between exposures to PFAS, metabolomic changes during the baby's development, and the baby's growth. The chemical analysis showed that changes in the levels of the molecules may be responsible for the effects on birth weight. Future studies may target the important chemical mechanisms of the molecules, which may help develop early detection and intervention strategies for babies with low birth weight due to PFAS.

What happens next?

The research team is working on additional analyses on the impact of exposures to PFAS before birth and the levels of essential small molecules in newborns. They are also planning to conduct larger analyses in order to get a more holistic view of the connection between PFAS exposures and adverse birth outcomes.

Where can I learn more?

For research updates, follow them on Twitter @donghai_liang, @chejung_chang, @EmoryRollins, and @EmoryHERCULES, and [check out the Environmental Metabolomics Research Group's website](#).

[Access the full journal article](#), titled "Per- and polyfluoroalkyl substance (PFAS) exposure, maternal metabolomic perturbation, and fetal growth in African American women: A meet-in-the-middle approach" in *Environment International*.

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