



ECHO

Environmental influences
on Child Health Outcomes

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Study Summary

How do neighborhood environmental and social conditions affect pregnancy and infant health?

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Who sponsored this study?

This research was supported by the Environmental influences on Child Health Outcomes (ECHO) Program, Office of The Director, National Institutes of Health.

Why was this study needed?

Previous studies have found that neighborhood conditions can influence pregnancy and infant health, but few have examined the effects of exposure to a combination of environmental and social stressors. It is important to look at multiple exposures simultaneously because this more closely mirrors real-world experiences on people's health outcomes.

Existing tools for looking at combined exposures to environmental and social conditions in neighborhoods do not have national coverage or they do not extend across the time frames needed. To address this issue, researchers developed an exposure index to examine the relationship between combined environmental and social exposures at the neighborhood level and pregnancy and infant health in ECHO cohorts.

Who was involved?

This study included more than 13,000 infants born between 2010 and 2019. The participants were from 41 ECHO cohorts located throughout the United States.

What happened during the study?

ECHO researchers developed an exposure index that combined data on multiple environmental hazards and social circumstances into a single measure of neighborhood conditions. The index included factors such as air pollutants, vehicle traffic, poverty, and crowded housing. Pregnant people were assigned an index score based on where they lived during their pregnancy. Then, the researchers looked at how this index score was associated with birthweight, length of pregnancy, and other pregnancy outcomes.

What were the study results?

In this study, ECHO researchers found that pregnant people living in neighborhoods with higher exposure index scores, which reflect worse neighborhood conditions, had shorter pregnancies and smaller babies. For Black pregnant people, there was a higher risk of preterm birth linked to increased combined exposures during pregnancy compared to White pregnant people. The researchers also found

that pregnant people living in rural areas had shorter pregnancies and smaller babies compared to pregnant people living in urban areas who had similar scores on the combined exposure index.

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 study provides additional support suggesting that neighborhood conditions can impact pregnancy and infant health. The effects of combined neighborhood-level exposures on childhood health can have notable effects on a national scale. Lower birthweight and shorter pregnancies are associated with health challenges later in life, including asthma and developmental delays.

What happens next?

More research is needed to determine which of the exposures in the index are most important to child health outcomes. Some members of the research team are studying data from two ECHO cohorts to see how these neighborhood-level exposures might interact to influence obesity later in life.

Where can I learn more?

Access the full journal article, titled “Associations between combined exposure to environmental hazards and social stressors at the neighborhood level and individual perinatal outcomes in the ECHO-wide cohort,” in [Health & Place](#).

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