



ECHO

Environmental influences
on Child Health Outcomes

A program supported by the NIH

Study Summary

ECHO Researchers Develop a National Exposure Index for Combined Environmental Hazards and Social Stressors

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Who sponsored this study?

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

Why was this study needed?

There is growing interest in understanding the combined effect of environmental hazards and social stressors on the health and development of children. While there are a number of tools for assessing the impact of environmental and social stressors, these tools can be limiting in the number of indicators they measure, the geographical area they cover, or the period of time they include for their observations. In this study, researchers developed a combined exposure index with national coverage that compiled available data on several environmental and social indicators during prenatal and early-life periods. This index is now being used to facilitate ECHO-wide analyses that consider multiple neighborhood-level exposures at the same time.

What were the study results?

The combined exposure index, which summarized exposures to multiple environmental hazards and social stressors at the neighborhood level, differed by region. The level of combined exposures were highest in the western and northeastern regions of the United States. Researchers also found that pregnant people who identified as Black and Hispanic had higher exposures compared to White and non-Hispanic participants. Exposure values were also higher for pregnant people with lower educational attainment.

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.

What was the study's impact?

The study analyzed how the combined exposure to several environmental hazards and social stressors during pregnancy may impact health. Researchers found that pregnant participants from minority groups were more likely to have higher exposures to these hazards. These results support findings from similar studies that suggest that neighborhood quality might influence maternal and child health outcomes, and may contribute to health disparities.

Who was involved?

This study included data from 14,072 pregnancies from 46 different ECHO research sites across the United States.

What happened during the study?

Researchers developed a combined exposure index using publicly available data on environmental hazards and social stressors. The data included variables such as air pollution, features of the built environment, and neighborhood socioeconomic status, and then estimated the likelihood of exposure to these variables for participants in the study, based on where they lived.

What happens next?

Researchers can use this exposure index in future studies to look at how neighborhood features influence child health outcomes. Future studies would benefit from national datasets for key environmental health concerns, such as water contaminants and pesticides, and social stressors that may disproportionately affect certain groups.

Where can I learn more?

Access the full journal article, titled “Developing a National-Scale Exposure Index for Combined Environmental Hazards and Social Stressors and Applications to the Environmental Influences on Child Health Outcomes (ECHO) Cohort,” in the [International Journal of Environmental Research and Public Health](#).

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