



ECHO

Environmental influences
on Child Health Outcomes

A program supported by the NIH

Study Summary

How do mothers' demographic characteristics and health during pregnancy affect the behavior and health of newborns?

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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, and a career development award from the National Institute of Mental Health.

What were the study results?

ECHO researchers used the neurobehavioral scores to classify babies into one of six groups based on different patterns of behavior. While each group exhibited different characteristics, 4 of these groups contained infants with normal patterns of behavior. Only two of the six groups were characterized as poorly regulated. The first of these groups was hyper-aroused, or too excitable. The other group was hypo-aroused, or slow to respond.

Babies with poorly regulated behavior were more likely to be male, have younger mothers, and have mothers who were depressed or used tobacco during pregnancy. Babies born at all different gestational ages were found in each of the six groups.

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?

This study describes a possible link between demographic and health characteristics of mothers and babies with patterns of behavior in newborns. Previous studies conducted in single cohorts have described similar patterns of poorly regulated behavior in infants. The current study replicated those findings using a larger and more diverse population. If these patterns of behavior continue to be found in other large studies, this might suggest that these patterns could generalize to babies outside these studies. This information could be used to identify babies at risk for poorly regulated behavior who might benefit from early interventions and prevention services to help promote positive health outcomes for children.

Why was this study needed?

Behavior patterns in newborns can be used as indicators of long-term developmental outcomes. Previous studies have looked at the link between demographic and medical characteristics of mothers

and their infant's behavior shortly after birth, but these studies were conducted with smaller groups of babies who were very similar to one another (e.g., studies with babies who were all born full term). There is a need for studies that include a larger sample representing more diverse pairs of mothers and their babies, including babies who were born all across the gestational age spectrum.

Who was involved?

This study included 1,112 mother-infant pairs from 5 ECHO cohorts across the United States. Infants were born at gestational ages from 22 to 42 weeks.

What happened during the study?

The babies received a neurobehavioral exam shortly after they were born to test their responses to objects and people, their reflexes, and their movement. Either mothers reported information about their own and their babies' demographic characteristics and health information or it was collected from their medical records. ECHO researchers looked at how the mothers' demographic characteristics and health during pregnancy were related to their newborns' behavior patterns.

What happens next?

More research is needed to determine which of the characteristics studied are stronger predictors of babies' neurobehavior patterns, and whether the impact of these factors changes in babies born at different gestational ages. Further research is also needed to learn more about how babies' neurobehavior shortly after birth is related to their health and development later in childhood.

Where can I learn more?

Access the full journal article, titled "Prenatal and perinatal factors associated with neonatal neurobehavioral profiles in the ECHO Program," in [Pediatric Research](#).

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