ECHO
Environmental influences on Child Health Outcomes
A program supported by the NIH

Study Summary

Early Life Growth and Age of Puberty Onset in US children

Author(s): Izzuddin M. Aris, et al.

Who sponsored this study?

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

Why was this study needed?

Puberty is a key stage during child development. Previous research indicates that children in the United States are entering puberty at younger ages. These children may be in danger of developing certain diseases, such as type 2 diabetes, later in life. A better understanding of how early life factors affect puberty development is important for combating earlier puberty onset.

Who was involved?

This study included almost 7,500 children from 36 birth cohorts. All participating cohorts had documented at least one measure of weight and height in the first five years of the child's life and at least one measure of puberty development.

What happened during the study?

The researchers used participants' weight and height data to look at the following signs of puberty: age when the child experienced the most growth due to puberty; age of their first period (in female children only); puberty development score; and pubic hair development. The team then examined how gains in weight, height, and body mass index at different stages between birth and age 5 were related to puberty development, controlling for maternal and child characteristics.

What were the study results?

In male children, gaining weight or growing faster than their peers in the first five years of life was associated with entering puberty at a younger age. The researchers found similar results in female children, but only among those with faster weight gains during early childhood (two to five years of age). Female children with faster weight gains during infancy (six months to two years of age) and early childhood started their periods earlier and had more advanced pubic hair development.

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 has a direct clinical impact. As pediatricians regularly measure weight and height during routine visits and use growth curves to identify abnormal growth predictions, they could closely monitor children who have faster weight and height gains in the first five years of life for earlier onset of puberty. These study results may also inform future studies that aim to develop and/or test interventions to potentially help prevent earlier onset of puberty, such as good nutrition, environmental exposures, physical activity, and other behaviors related to growth during the first five years of life.

What happens next?

The team's planned follow-up studies that will aim to identify the mechanisms behind these initial observations. They also aim to identify the role of puberty in explaining the relationship between early life factors and longer-term chronic diseases, such as type 2 diabetes.

Where can I learn more?

Access the full journal article, titled "Analysis of early life growth and age at pubertal onset in US children" in *JAMA Network Open*.

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