

# Childhood Obesity and the Brain: What a Landmark Study Reveals About Kids' Health



## The State of Childhood Obesity

- Approximately **1 in 5 U.S. children and adolescents have obesity**. Since 2020, the number of youth with obesity has increased by more than 1 million.
- Medical costs for children with obesity are higher than for children with healthy weight.
- Childhood obesity is linked to:
  - Mental health problems such as anxiety and depression
  - Bullying and being bullied
  - Stigma
  - Low self-esteem
  - Obesity as adults



*The United States spends more than \$1.9 billion in additional medical costs per year to treat children and adolescents with obesity.*



Obesity is a complex condition. Childhood obesity is not caused by one, easily modifiable risk factor. Things that contribute to risk include biology (such as genetic factors), habits, and the environments where children live, learn and play.

### Research Drives Decisions

- ▶ Obesity is a chronic disease that involves changes to the brain and is affected by a child's genetics and environment. Preventing childhood obesity offers lifelong health benefits.
- ▶ Brain changes may lead to weight gain—and poverty increases the risk of weight gain.
- ▶ Children's and adolescents' habits do not entirely account for weight gain. Therefore, lifestyle interventions alone, such as consuming fewer calories or increasing exercise, have a limited impact on helping children lose excess weight.
- ▶ Take action: Investments in community resources like parks and playgrounds, and access to healthy foods, can create the conditions to help young people thrive. This includes reducing the risk of obesity and supporting families and communities in promoting children's and adolescents' health and development.

## Early Life Factors Raise Children's Obesity Risk

The federally funded, long-term Adolescent Brain Cognitive Development (ABCD) Study sheds light on how children's and adolescents' environments and brain development interact to contribute to childhood obesity. A child's environment influences both brain development and body weight. **Lack of resources at home or in a community can impact children's brain development in ways that raise their risk for obesity.**

- Access to community resources supports healthy brain development:



Affordable, healthy foods



Green spaces



Clean air



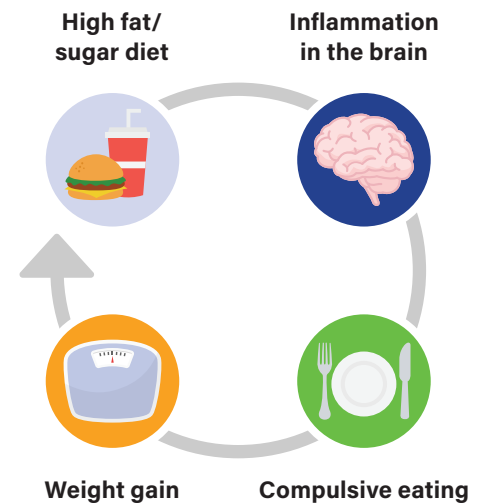
Walkable neighborhoods

- Neighborhoods with fewer of these community resources add risk for obesity even after accounting for family income. Gaps in these resources can alter brain development in ways that promote excess weight.

# Brain Changes May Be Associated With Childhood Obesity

Obesity is associated with differences in the brain and its ability to make decisions. These differences may occur prior to weight gain. **Scientists have shown that differences in the brain can predict which kids will experience unhealthy weight gain.**

- Childhood obesity is associated with smaller volume in brain areas involved in decision-making and regulating food intake, which may contribute to kids overeating.
- Children and adolescents who initially had a healthy weight and acted impulsively were more likely to consume increased saturated fat and sugar two years later.
- A high fat and sugar diet is linked to inflammation in the brain regions involved in the reward system, which can contribute to food cravings and weight gain.
- For some children, genes may influence weight gain by affecting parts of the brain involved in making choices.
- Kids living in communities with stress, trauma, or limited resources had smaller brain regions involved in hunger and reward. Kids with these brain changes gained more weight—even when they initially had a healthy weight.



**Adverse childhood experiences, like being exposed to violence or discrimination, are also linked to increased body weight and brain changes in children—which can make impulsive, risk-taking, or aggressive behaviors more likely. For some kids, having strong coping skills and parental support can reduce the harmful effects of adverse childhood experiences on weight.**

## About the ABCD Study

The Adolescent Brain Cognitive Development (ABCD) Study is the largest long-term study of brain development and child and adolescent health in the United States. The National Institutes of Health (NIH) funds leading researchers in the fields of adolescent development and neuroscience to conduct this ambitious project. The ABCD Study® has 21 research sites across the country, which recruited 11,880 families, starting when youth were 9 or 10 years old. Researchers are following their development through adolescence and into young adulthood.

ABCD Study data are widely used by researchers across the country. As of Spring 2026, ABCD Study data have resulted in more than 1,800 published studies on child and adolescent health.

## Continued Research Helps Kids Thrive

These studies show connections between children’s environment and obesity. **Continued long-term research, like the ABCD Study, is needed to understand young people’s development.**

Outstanding questions include:

- What are the relationships between diet, brain changes, and weight?
- How can changes to a child’s environment support healthy weight in childhood and beyond?



Read news articles about these study findings.



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