

A baby's gut bacteria may predict future obesity

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New research into the growing problem of early childhood obesity

suggests the bacteria in a baby's gut may indicate weight problems in the years to come.

Researchers examined gut microbiota—bacteria and other microbes in the digestive system—of babies, as well as their body mass index, a common gauge of overweight and obesity. The study is being presented Friday at the American Heart Association's virtual Epidemiology, Prevention, Lifestyle & Cardiometabolic Health Conference.

Being able "to identify modifiable early life factors that are associated with early childhood weight gain is an opportunity for prevention of cardiovascular risk factors and [heart disease](#) later. That's why we zeroed in on microbiota in children," said Moira Differding, who led the study.

The latest statistics from the Centers for Disease Control and Prevention show obesity affected 13.4% of children ages 2-5 in 2017-18, with the figure rising to 20.3% among 6- to 11-year-olds.

Differding, a Ph.D. candidate at the Johns Hopkins Bloomberg School of Public Health in Baltimore, said past studies involving animals and older people have suggested disruption in [gut microbiota](#) can lead to low-level inflammation, which could contribute to weight gain and obesity.

To track that connection earlier in life, the researchers examined microbiota extracted from stool samples of more than 200 babies in New Hampshire, both at 6 weeks and 1 year old. Then they measured their BMI up to age 5.

A higher abundance of two types of bacteria—Klebsiella and Citrobacter—in the stool of 6-week-old babies was associated with higher BMIs as they got older. The same was true for the bacteria Prevotella found in the stool of 1-year-olds. The findings are considered preliminary until published in a peer-reviewed journal.

"It shows that the microbiota at an earlier age actually predicts the child's BMI two to five years later. That's extending our knowledge, and it's pretty cool," said Peter Katzmarzyk, a professor of physical activity and obesity epidemiology at Louisiana State University's Pennington Biomedical Research Center in Baton Rouge. He was not involved with the study.

Differding said an infant's microbiota could be affected by environmental factors, diet and antibiotics. Figuring out how to minimize microbiota linked to obesity could help battle weight gain later in life.

"The body has to learn which bacteria are acceptable and which aren't," she said. "If there are disruptions in the first year of life, this causes problems early on. And if it isn't fixed right away, the body might react later with a more inflammatory response."

Another possible factor is breastfeeding. Differding said bacteria levels among infants who were breastfed were less associated with higher BMIs, but that more results are needed to prove a link. The study is ongoing, she said.

Katzmarzyk agreed the breastfeeding factor was interesting, but not conclusive.

"We need more studies to look at whether breastfeeding actually modifies the microbiota," he said. "We understand the mix of bacteria in the infant's gut is associated with obesity several years later. There's something in their diet and their environment that's affecting that, but we don't know the mechanisms."

Differding said other studies have shown breastfeeding can reduce childhood obesity, though not because of microbiota.

"Breastfeeding is beneficial to overall health," she said. "It's good for nutrition, it's good for antibodies, it's good for maternal-infant bonding.

"But beyond breastfeeding, we need to figure out how these [bacteria](#) might be causing child obesity. It's important to fix the [microbiota](#) early in life so we can reduce the potential of [obesity](#) later, whether babies are breastfed or not."

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