

Early weight gain in children linked to ability to produce the hormone leptin

November 23 2020



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Young children of African ancestry are more at risk of developing obesity if they possess a genetic variant that reduces their ability to produce the hormone leptin. Adults with the variant do not have the

same risk, suggesting that leptin plays a role in the development of obesity at a young age but the obesity does not continue into adulthood.

This is one of the findings made in an international study by scientists at the University of Copenhagen, University of Exeter, Icahn School of Medicine at Mount Sinai, and others, who investigated the role of genetics in controlling [leptin levels](#).

"Our findings suggest that young children might be particularly sensitive to the effect of leptin in controlling their [body weight](#)," says Associate Professor Tuomas Kilpeläinen from the Novo Nordisk Foundation Center for Basic Metabolic Research (CBMR) at the University of Copenhagen.

Understanding variation in leptin levels through genetics

It has long been established that the [hormone leptin](#) is released by the body's fat tissue and tells the brain how much fat is stored on the body—the more body fat a person has, the higher the levels of leptin. The brain uses this information to regulate a person's appetite and food intake.

Leptin levels vary between individuals, however, and around 10 to 20 percent of individuals with obesity have the same leptin levels as individuals with [normal weight](#). This variation raises questions about the role leptin plays in regulating weight.

In the research, published in *Diabetes*, the scientists screened the genome of more than 55,000 people for genetic variants that affect leptin levels. They identified five new genetic variants that play a role in regulating leptin levels.

Leptin may play a stronger role in weight control in children, than adults.

One of the variations, Val94Met, which reduces the amount of leptin that the body produces, is only found in individuals of African ancestry. Young people with this variation are more at risk of developing obesity, though this is not true of adults with the variation, who tend to be of similar weight as other adults.

This finding supports the theory that people become less sensitive to leptin with age. Administering leptin to obese adults has proven ineffective at controlling their weight.

"This new knowledge on the impact of leptin in the weight control of [young people](#) now needs to be followed up with further studies to uncover the [molecular mechanisms](#) that underlie this age-dependent relationship between leptin and BMI," says Associate Professor Tuomas Kilpeläinen.

More information: Hanieh Yaghootkar et al, Genetic Studies of Leptin Concentrations Implicate Leptin in the Regulation of Early Adiposity, *Diabetes* (2020). [DOI: 10.2337/db20-0070](https://doi.org/10.2337/db20-0070)

Provided by University of Copenhagen

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