

Risk of childhood obesity can be predicted at birth

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A simple formula can predict at birth a baby's likelihood of becoming obese in childhood, according to a study published today in the open access journal *PLOS ONE*.

The formula, which is available as an [online calculator](#), estimates the child's obesity risk based on its birth weight, the [body mass index](#) of the parents, the number of people in the household, the mother's professional status and whether she smoked during pregnancy.

The researchers behind the study hope their [prediction method](#) will be used to identify infants at high risk and help families take steps to prevent their children from putting on too much weight.

Childhood obesity is a leading cause of early type 2 diabetes and heart and [circulatory disease](#), and is becoming more common in developed countries. According to NHS figures, 17 per cent of boys and 15 per cent of girls aged two to 15 in England are classified as obese.

The researchers developed the formula using data from a study set up in 1986 following 4000 children born in Finland. They initially investigated whether obesity risk could be assessed using [genetic profiles](#), but the test they developed based on common genetic variations failed to make [accurate predictions](#). Instead, they discovered that non-genetic information readily available at the time of birth was enough to predict which children would become obese. The formula proved accurate not just in the Finnish cohort, but in further tests using data from studies in

Italy and the US.

"This test takes very little time, it doesn't require any lab tests and it doesn't cost anything," said Professor Philippe Froguel, from the School of Public Health at Imperial College London, who led the study.

"All the data we use are well-known risk factors for childhood obesity, but this is the first time they have been used together to predict from the time of birth the likelihood of a child becoming obese."

The 20 per cent of children predicted to have the highest risk at birth make up 80 per cent of obese children. The researchers suggest that services such as dieticians and psychologists could be offered to families with high-risk infants to help them prevent excessive weight gain.

"Once a young child becomes obese, it's difficult for them to lose weight, so prevention is the best strategy, and it has to begin as early as possible," said Professor Froguel. "Unfortunately, public prevention campaigns have been rather ineffective at preventing obesity in school-age children. Teaching parents about the dangers of over-feeding and bad nutritional habits at a young age would be much more effective."

Although common genetic variants did not prove to be helpful for predicting [childhood obesity](#), the researchers say about one in 10 cases of obesity are caused by rare mutations that seriously affect appetite regulation. Tests for these mutations could become available to doctors in the next few years as the cost of DNA sequencing technology falls.

More information: A Morandi et al. 'Estimation of newborn risk for child or adolescent obesity: lessons from longitudinal birth cohorts'

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The obesity risk calculator is available online at files-good.ibl.fr/childhood-obesity/

Provided by Imperial College London

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