

Children of mothers with type 1 diabetes have a higher body mass index

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Children of mothers with type 1 diabetes are at significantly higher risk of being overweight and of exhibiting insulin resistance. This was published by scientists from Helmholtz Zentrum München and the Technical University of Munich in the journal *Diabetologia*.

Type 1 diabetes is the most common metabolic disorder in childhood. But what effects does this condition have when sufferers themselves have children? It was already known that children of parents with type 1 diabetes are at much higher risk of developing the disease than the rest

of the population. "Moreover, there were also sporadic indications from previous studies that children of mothers with type 1 diabetes are also at increased risk of having metabolic syndrome, as the intermittent high [blood glucose levels](#) in the uterus appear to have long-term effects on the child's metabolism and body weight," explains Dr. Andreas Beyerlein. "We now had the possibility to investigate this hypothesis with a large and appropriate dataset," adds the statistician and epidemiologist, who led the study together with Prof. Dr. Anette-Gabriele Ziegler from the Institute of Diabetes Research at Helmholtz Zentrum München.

Nearly 2,800 children followed over an 18 year period

The starting point for their work were three large studies aimed at understanding the mechanisms underlying type 1 diabetes (TEENDIAB, BABYDIAB and BABYDIET). "In total, we studied data from nearly 2,800 children with a first-degree relative with type 1 diabetes," explains lead author Anitha Pitchika. "Their metabolic status and body weight were tracked up to the age of 18." "This analysis was possible only now with our dataset which contains such a large number of mothers with type 1 diabetes," adds Anette-Gabriele Ziegler. "A few decades ago, mothers with this condition were often advised not to get pregnant due to the high risk of complications at birth."

The researchers found that children of mothers with type 1 diabetes had a significantly higher body mass index than children from mothers without diabetes. "Children in the TEENDIAB study were for instance almost twice as likely to become overweight," explains Andreas Beyerlein. Other parameters, such as waist circumference, fasting [blood glucose](#) level and risk for [insulin resistance](#), were also significantly higher if the mother had type 1 diabetes. The scientists corrected for a number of possible confounding factors, such as the mother's socioeconomic status and high birth weight.

To find out to what extent the differences were due to fundamental changes in the child's metabolism, the researchers collected metabolomics data from 500 children in the TEENDIAB study. As it turned out, however, they did not find any significant changes in metabolic products and pathways caused by maternal type 1 diabetes.

"Our study shows that children of mothers with type 1 [diabetes](#) are not only at significantly higher risk of having the condition itself, but are also at greater risk of being overweight and developing insulin resistance," says Anette-Gabriele Ziegler, summarizing the findings. "We would therefore advise that paediatricians should bear this correlation in mind, so that they can react on early warning signs in such children."

More information: Anitha Pitchika et al. Associations of maternal type 1 diabetes with childhood adiposity and metabolic health in the offspring: a prospective cohort study, *Diabetologia* (2018). [DOI: 10.1007/s00125-018-4688-x](#)

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