

Maternal overweight and obesity increases risk of type 1 diabetes in children when neither parent has diabetes

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Credit: Darren Lewis/public domain

A study of more than 1.2 million children in Sweden has concluded that children of parents with any type of diabetes are more likely to develop type 1 diabetes (T1D), and that maternal overweight and obesity increases the risk of the child developing T1D when neither parent has diabetes.

The results, published in *Diabetologia* (the journal of the European

Association for the Study of Diabetes), clearly suggest that strategies to reduce overweight and obesity before and during pregnancy could reduce the incidence of T1D, which is currently increasing in children (and especially in younger children) in most countries of the world. The research is by Associate Professor Tahereh Moradi, Karolinska Institutet, Stockholm, Sweden, and colleagues.

The study cohort comprised 1,263,358 children, born in Sweden between 1992 and 2004. Children were followed from birth until diagnosis of T1D, emigration, death or end of follow-up in 2009, whichever occurred first. Body mass index (BMI) was calculated for the first trimester of the mother's pregnancy.

A total of 5,771 children were diagnosed with type 1 [diabetes](#) during the study period. Of those, 5,155 [children](#) had both parents born inside Nordic countries, including Sweden, and 322 had both parents born outside Nordic countries, and a further 294 had one parent born in a Nordic country and the other born outside. Nordic countries are Sweden, Norway, Finland, Denmark and Iceland.

Risk of T1D was increased in [offspring](#) of parents with any type of diabetes regardless of parental ethnicity. In Nordic families (for which there was most data), having a father with any type of diabetes increased the risk of T1D in the child by five times, while having a mother with any type of diabetes increased the risk of T1D in the child by around three times.

High first trimester maternal BMI (meaning 30 kg/m² or higher, classed as obese) was associated with a 33% increased risk of type 1 diabetes only in offspring of parents without diabetes when compared with maternal BMI in the normal range (18.5 to 25). The authors explain: "The finding that first trimester maternal obesity was a risk factor for type 1 diabetes only in offspring of parents without diabetes, and that

maternal obesity caused no 'extra' risk in offspring of parents with diabetes, clearly suggests that heredity for type 1 diabetes is the strongest risk factor of the two for development of type 1 diabetes in the next generation."

They conclude: "This population-based study from Sweden demonstrates significantly increased risks of type 1 diabetes in offspring of both mothers and fathers with diabetes and regardless of parental migration background. The highest risks were noted in offspring of mothers and fathers with type 1 diabetes. Furthermore, maternal overweight and obesity in early pregnancy was associated with increased risk of type 1 diabetes in the offspring of [parents](#) without diabetes. Therefore prevention of overweight and obesity in women of reproductive age—currently increasing in all countries—may contribute to a decreased incidence of [type 1 diabetes](#)."

Provided by Diabetologia

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