

Preterm birth linked to increased rates of diabetes in children and young adults

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New research shows that preterm birth is linked to increased rates of type 1 and type 2 diabetes in children and young adults, with certain effects stronger in females. People who have been born preterm may

need more intensive monitoring and prevention efforts to lower their risk of diabetes, concludes the study, published in *Diabetologia*.

Preterm [birth](#) (before 37 weeks of pregnancy) has been associated with early life insulin resistance, which can develop into diabetes. However, no large population-based studies have examined risks of type 1 diabetes (T1D) and type 2 diabetes (T2D) in people born [preterm](#) and potential differences between boys and girls from childhood into adulthood. "This is important because doctors will increasingly encounter adults who were born prematurely due to higher survival rates, and will need to understand their long-term risks," say the authors who include Professor Casey Crump, Icahn School of Medicine at Mount Sinai, New York, NY, USA, and colleagues.

The authors did a national cohort study of all 4,193,069 single babies (not twins or other multiple births) born in Sweden during 1973-2014, who were followed up for T1D and T2D identified from nationwide diagnoses and pharmacy data to the end of 2015 (and thus having a maximum age 43 years; the median age of the study population was 22 years). Computer modelling was used to adjust for potential confounders that could affect the results, including [maternal age](#) at delivery, maternal education, country of maternal birth, maternal BMI, maternal smoking and presence of pre-eclampsia.

In addition, the authors performed a co-sibling analysis—an assessment of the siblings of the people in the study (83% had at least one sibling). This analysis was to provide more evidence as to whether the risk of diabetes was associated specifically with preterm birth, or associated with genetic or [environmental factors](#) shared by all siblings in a family.

Throughout the study, 27,512 (0.7%) and 5,525 (0.1%) people were identified with T1D and T2D, respectively (the lower number for T2D was because of the young age of this population; T2D is much more

common in older adults). Analysis showed being born preterm (earlier than 37 weeks) was associated with a 21% [increased risk](#) of T1D and a 26% increased risk of T2D in those aged less than 18 years. In [young adults](#) aged 18-43 years, being born preterm was associated with a 24% increased risk of T1D and a 49% increased risk of T2D.

In most cases, being born extremely preterm (22-28 weeks) was associated with higher risks of diabetes than those born at term, except for T1D in those aged less than 18 years. The authors say this finding for T1D in those under 18 years was against their expectations and needs further research.

Being born male and preterm was associated with an approximately 20% increased risk of T1D at both the under 18 years group and the age 18-43 years group, while for females the increased risk was around 30% for both age groups. For T2D, being born female and preterm was associated with a 60% increased risk in those aged under 18 years, while for males aged under 18 years there was no increased risk. In those aged 18-43 years, the authors found the increased risk associated with being born preterm was much higher among women (75%) than men (28%). This is despite the fact that across all normal term births in this study, T2D incidence was slightly higher among males (5.84 per 100,000 person-years) than females (5.27).

Across all the results, shared genetic and environmental factors between siblings were not wholly responsible for differences in diabetes risk in individuals born preterm. The authors highlight specifically that the association between preterm birth and T2D in those aged 18-43 years appeared independent of shared familial factors.

The authors say a host of mechanisms could account for these observed associations, including preterm birth interrupting and limiting the production of beta cells in the pancreas which produce insulin; effects on

the immune system; the impact of medications and procedures in intensive care during the birth period; and then differences in other risk factors such as diet, exercise and obesity.

The authors say: "Because of major advances in treatment, most preterm infants now survive into adulthood. As a result, clinicians will increasingly encounter adult patients who were born prematurely. Preterm birth should now be recognised as a chronic condition that predisposes to the development of diabetes across the life course."

They add: "Doctors currently seldom seek birth histories from adult patients, and thus [preterm birth](#) may remain a 'hidden' risk factor. Medical records and history-taking in patients of all ages should routinely include birth history, including gestational age, birthweight and any complications during or after the birth. Such information can help identify those born prematurely and facilitate screening and early preventive actions, including patient counselling to promote lifestyle prevention of diabetes."

They conclude: "We found that preterm and early term birth were associated with increased risk of type 1 and type 2 diabetes from childhood into early to mid-adulthood in a large population-based cohort. Children and adults who were born prematurely may need early preventive evaluation and long-term follow-up for timely detection and treatment of [diabetes](#)."

More information: Casey Crump et al. Preterm birth and risk of type 1 and type 2 diabetes: a national cohort study, *Diabetologia* (2019). [DOI: 10.1007/s00125-019-05044-z](https://doi.org/10.1007/s00125-019-05044-z)

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