

Birthweight strongly linked to type 2 diabetes risk in adulthood

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A birthweight of 2.5 kg or more is strongly linked to the risk of developing type 2 diabetes in adulthood, finds research published in the online journal *BMJ Open Diabetes Research & Care*.

It is associated with lower circulating levels of insulin-like growth factor-1, or IGF-1 for short, a hormone similar to insulin that affects childhood growth and energy metabolism in adults.

Compelling evidence indicates that susceptibility to type 2 [diabetes](#) over the life course is determined jointly by [risk factors](#) in both early life and adulthood, say the researchers.

To find out if there might be any association between adult circulating IGF-1 levels, birthweight, and the risk of developing type 2 diabetes, the researchers drew on data from 112,736 women and 68,354 men taking part in the UK Biobank study.

The UK Biobank is a large population-based study, which recruited its 37-73 year old participants between 2006 and 2010. It is tracking the potential

impact of genetic and [lifestyle factors](#) on a wide range of common diseases of middle-and old age.

At recruitment, participants provided social and demographic details, as well as information on their usual diet, lifestyle (smoking status, alcohol intake, sleep duration and habitual physical activity), early life factors (birthweight and maternal smoking) and [medical history](#).

They also provided blood, urine, and saliva samples and their height, weight, body mass index (BMI), body circumferences (waist, hip, and limbs), and skinfold thickness were measured.

Blood was checked for IGF-1, cholesterol, triglycerides and an indicator of inflammation, C-reactive protein. And repeat measures of IGF-1 were available from 17,699 participants. Information on the development of type 2 diabetes was obtained from self-report, hospital records, and death certificates.

During an average monitoring period of nearly 10 years, 3299 people developed type 2 diabetes.

Participants with lower levels of IGF-1 tended to be older and more likely to live in a deprived area. They were also more likely to have lifestyle and clinical risk factors for diabetes.

Nevertheless, a clear inverse association emerged between IGF-1 levels and type 2 diabetes: the lower the IGF-1 level, the higher was the risk of type 2 diabetes.

But birthweight significantly altered this association, although only for those whose weight was 2.5 kg or more at birth, and only in men.

Compared with those in the lowest 20% of IGF-1 levels, the odds of type 2 diabetes were 14% lower for those in the second lowest 20%, and up to 36% lower for those in the highest 20% of IGF-1 levels.

The findings held true, irrespective of any [genetic predisposition](#) to birthweight.

This is an observational study, and as such, can't establish cause. Nor was there any information on whether the births had been premature or full term, or on ethnicity—factors that may well be influential, say the researchers.

Nevertheless, their findings echo those of other epidemiological studies, they note. "Our findings highlight the importance of [early-life](#) risk factors in the development of the lifecourse prevention strategies targeting IGF-1 and [type 2 diabetes]," they conclude.

More information: Birth weight modifies the relation between adulthood levels of insulin like growth factor-1 and type 2 diabetes: a prospective cohort study, *BMJ Open Diabetes Research & Care*, [DOI: 10.1136/bmjdr-2020-001885](https://doi.org/10.1136/bmjdr-2020-001885)

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