

Weight gain from adolescence linked to higher risk of type 2 diabetes

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New research presented at this year's annual meeting of the European Association for the Study of Diabetes (EASD) in Berlin, Germany, reveals that weight gain between the age of 10 and adulthood is associated with type 2 diabetes (T2D) risk that is independent of body mass index (BMI).

Furthermore, children who are overweight at age 10 and remain so appear to be at lower [risk](#) for developing T2D than children who are regular weight at age 10 and then later become overweight as adults.

The research conducted by Dr. Jessica Tyrrell and colleagues at the University of Exeter, looked at how the risk of T2D in adulthood was influenced by the magnitude of the change in an individual's BMI since the age of 10. Obesity is already known to be a strong risk factor for T2D, but the condition occurs across the BMI range. Disease risk is also influenced by age, sex, ethnic differences, body fat distribution, and genetic factors which can affect the likelihood of developing T2D independently of an individual's BMI.

The authors wanted to test the hypothesis that there may be an additional risk factor; the change in a person's BMI between childhood and adulthood, which could contribute to the likelihood of them developing T2D.

Data were obtained from the UK Biobank of 371,903 individuals of European ancestry for whom their adult BMI, their self-reported relative body size at age 10, and genetic information were all available. The team validated the records of perceived body size by comparing it to that person's BMI genetic risk score. Subjects were then placed into "overweight" (BMI between 25 and 30 kg/m²) or "obese" (BMI over 30 kg/m²) groups and mathematical models were used to calculate their odds of developing diabetes. Each group was subdivided further according to whether subjects were "thin," "average," or "plump" at the age of 10.

The study found that while individuals in the overweight BMI range who reported being thin, average, or plump at age 10 had very similar average BMIs of 27.2, 27.3, and 27.5 kg/m² respectively, those who had been thin in childhood had a 53 percent higher risk of T2D than those whose BMI had not significantly increased.

Among obese adults, those who had been thin as children had a slightly lower average BMI than individuals who had been obese when they were 10 (33.6 vs 34.9 kg/m² respectively), but they had a higher prevalence of T2D (14.6 percent vs 12.3 percent respectively). These findings were independent of an individual's birth weight and current BMI and indicate that while an overweight or obese person will have an elevated risk of T2D, that risk may be lower if they had already been overweight as a child than if they had been relatively thin.

Dr. Tyrrell says: "These findings suggest that individuals who remain in the higher BMI range throughout life may adapt to excess weight in ways

that lower the risk of type 2 [diabetes](#) in comparison to [individuals](#) of similar adult BMI that have increased from lower to higher BMI since childhood."

Provided by University of Exeter

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