

Weight gain when there's a family history of Type 2 diabetes

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In the first study of its type, Australian researchers have shown that healthy people with a genetic predisposition to Type 2 diabetes gain more weight overeating over the short term than their non-genetically-prone counterparts.

In a 28-day study undertaken at Sydney's Garvan Institute of Medical Research, scientists set out to mimic the kind of overfeeding that typically takes place during feasting periods like Christmas.

Seventeen (otherwise healthy) people with a family history of Type 2 diabetes, along with 24 people without any family history, took part in the research. The groups were matched for age, weight and lifestyle.

Each person was asked to eat 1,250 calories a day beyond their energy requirements – all carefully calculated in advance. They were given a variety of high-fat snacks such as crisps, chocolate bars and dairy desserts to supplement their normal diets. Their weight, fat distribution and blood insulin levels were measured at the start of the project, after 3 days and at 28 days.

On average, the people with a family history of diabetes gained over a kilogram more than the rest (3.4 kg as opposed to 2.2 kg) over 28 days. They also had more insulin circulating in their systems after only 3 days, before they showed any detectable difference in weight gain from the other group.

Dr Dorit Samocha-Bonet, Dr Leonie Heilbronn and Professor Lesley Campbell have published their findings in the international journal *Diabetologia*, now online.

"It's already well-known that relatives of people with Type 2 diabetes are more likely to develop it themselves," said Professor Campbell, senior researcher at Garvan and Director St Vincent's Diabetes Services.

"We wanted to challenge these individuals with overfeeding while they were still young and healthy, without any metabolic impairments."

"Our study shows just how quickly the body reacts to overeating, and how harmful it can be in susceptible people. While we expected differences between the two groups, we were surprised by the amount of extra weight the diabetes-prone group gained."

An early warning sign of diabetes is the development of 'insulin resistance', usually triggered by excess body fat. Insulin is a hormone made by the pancreas, which helps the body use glucose for energy. Insulin

resistant muscle cannot respond properly to insulin from the bloodstream, leading to high levels of sugar in the blood.

High blood sugar levels damage tissues and organs, so the body works very hard to reduce them by producing more insulin. Eventually, the insulin-producing cells in the pancreas become exhausted and Type 2 diabetes develops.

“Insulin resistance can start to develop at least a decade before clinical diabetes, and this study helps us examine its very early stages in healthy adults,” said Dr Samocha-Bonet.

At the end of the study, participants were helped to lose weight, with both groups being equally successful. Interestingly, the ‘biggest loser’ belongs to the group with a family history of diabetes.

ABOUT GARVAN

The Garvan Institute of Medical Research was founded in 1963. Initially a research department of St Vincent's Hospital in Sydney, it is now one of Australia's largest medical research institutions with nearly 500 scientists, students and support staff. Garvan's main research programs are: Cancer, Diabetes & Obesity, Immunology and Inflammation and Neuroscience. Garvan's mission is to make significant contributions to medical science that will change the directions of science and medicine and have major impacts on human health. The outcome of Garvan's discoveries is the development of better methods of diagnosis, treatment, and ultimately, prevention of disease.

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