

# New proof of link between obesity and disease

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Professor Elina Hypponen of the University of South Australia's Australian Centre for Precision Health. Credit: University of South Australia

The University of South Australia's Australian Centre for Precision Health researchers examined links between body mass index (BMI) and more than 925 diseases in 337536 UK volunteers, confirming the link between obesity and conditions such as diabetes, cancer and cardiovascular disease.

Led by Professor Elina Hypponen, researchers developed a multi-dimensional analysis that subjected [genetic data](#) to stringent examinations in order to deliver high confidence of causality.

"We conducted five different analyses and the more consistent the evidence for a causal association between obesity and [health outcomes](#) across these five [different approaches](#), the more confident we could be that we were looking at the true causal effect," Professor Hypponen said.

She said while previous research suggested a high BMI was linked with increased risk of chronic diseases, the clinical trials used to assess health risks of obesity were typically too small or too short to assess causation with many of the diseases.

To overcome this challenge, Professor Hypponen said they used alternative statistical approaches.

Drawing data from the UK Biobank—a research database holding health and [genetic information](#) from half a million UK volunteers—Professor Hypponen said the researchers looked at the link between genetic obesity risks and more than 900 disease outcomes.

"The results were really quite astounding," she said.

"Fully consistent evidence across all approaches was seen for 14 different diseases, and for 26 different diseases evidence was obtained by at least four of the five methods used.

"What increases the confidence that these associations are largely reflective of real effects is the fact that those effects which came across with consistent evidence are also ones for which we have previous clinical evidence."

Professor Hypponen said while all five of the approaches used to help prove causation rely on a number of statistical assumptions by working through each of the approaches, they were able to note consistent evidence of causal association.

She said the approach could be used to cement the relationship between disease risks and other health factors and has already been used by researchers to identify the link between serum iron concentration and [disease](#) risks.

Professor Hypponen said the study also highlighted the importance of genetic research to further the understanding that genes played in obesity, and the insights it could provide for the future management and treatment of obesity.

One of the key findings, according to Professor Hypponen, was the strong the relationship observed between obesity and diabetes.

"For example, we saw evidence for obesity effects on peripheral nerve disorders, chronic leg and foot ulcers, and even gangrene and kidney failure, which are all known to be diabetic complications.

"This suggests a key aspect to reduce comorbidity risk in [obesity](#) is careful monitoring of blood sugar and effective control of diabetes and its complications."

The study was published this month in digital [health](#) journal *The Lancet*.

**More information:** Elina Hyppönen et al, A data-driven approach for studying the role of body mass in multiple diseases: a phenome-wide registry-based case-control study in the UK Biobank, *The Lancet Digital Health* (2019). DOI: 10.1016/S2589-7500(19)30028-7

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