Medical Xpress

Heart disease and obesity driven by liver function – new study

May 11 2021, by Tim Pilgrim

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How susceptible we are to obesity and heart disease could be determined by our livers, a new study has revealed.

Using a sample of over 700,000 individuals, scientists from Brunel University London and Imperial College London found that heart disease is far more prevalent in people who were born with a set of genes that have previously been associated with how our bodies control functions

such as the metabolism of fat and glucose.

Published by *Nature Communications*, it's hoped the study – Genetic analysis in European ancestry individuals identifies 517 loci associated with liver enzymes – could help clinicians identify those at the highest risk of heart disease in the future, potentially paving the way for earlier interventions.

"We were looking at liver enzymes, which are a reflection of our liver function, to identify which genes in the human genome control liver function and what else might be associated with those genes," said project co-lead Dr Raha Pazoki, a lecturer in biomedical sciences at Brunel.

"One of the things we found, for instance, was that these genes are linked to obesity and the distribution of fat in the body and the percentage of fat in the liver – they are implicated in our metabolism and how our bodies process fats and glucose."

To determine whether the genes could be said to be a cause of heart disease, the team used a method known as Mendelian Randomisation, which replicates a controlled, randomised trial using large-scale genetic datasets. The scientists looked at people's genomes based on the number of hazardous liver genes they carry, then investigated how an abundance of these hazardous genes affects someone's susceptibility to heart disease.

"We found that when we looked at coronary heart disease, for example, there is an abundance of disease in those who carry hazardous liver genes compared to those who don't. We can therefore say that there is a causal link between liver function and cardiovascular disease."

The study's sample was drawn from the UK Biobank – a large-scale

biomedical database of half a million Britons – and then validated again data from the USA's Million Veteran Program, the Dutch Rotterdam Study, the Lifeline Study, as well as the Finnish Northern Finland Birth Cohort.

Heart and circulatory disease cause more than a quarter of all deaths in the UK, with one person dying on average every three minutes, according to the British Heart Foundation.

More information: Genetic analysis in European ancestry individuals identifies 517 loci associated with liver enzymes, *Nature Communications* (2021). DOI: 10.1038/s41467-021-22338-2

Provided by Brunel University