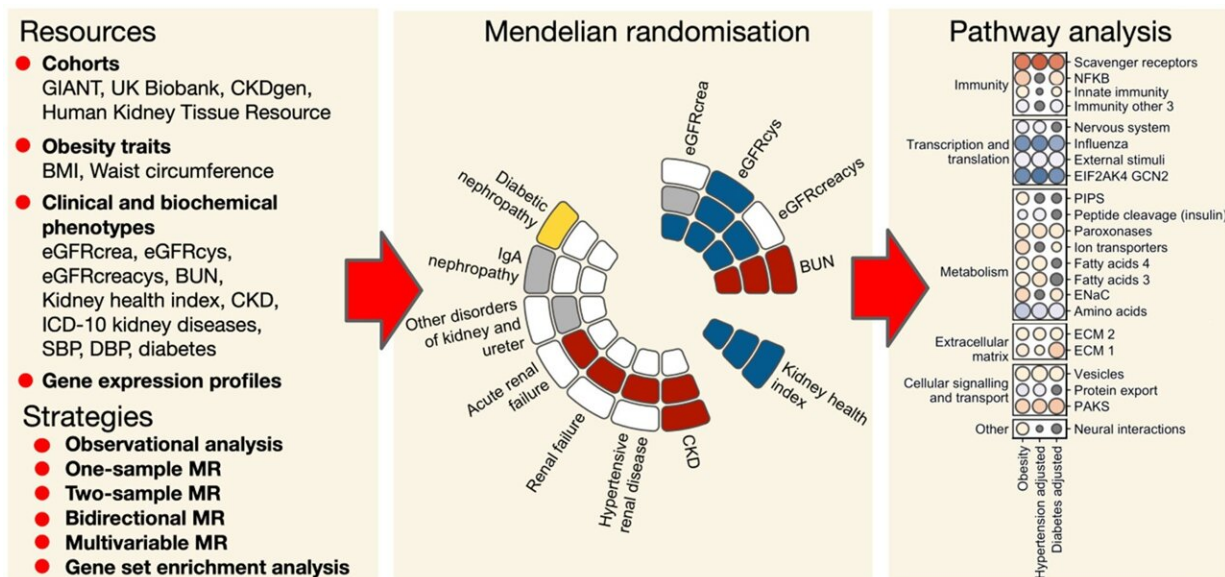


Obesity is likely to cause an increased risk of kidney disease

February 1 2022, by Michael Addelman



Graphical abstract. Credit: DOI: 10.1093/cvr/cvab357

A study led by University of Manchester and Manchester University NHS Foundation Trust (MFT) researchers has revealed that obesity is likely to cause an increased risk of kidney disease.

Published in *Cardiovascular Research*, the findings—based on [big data](#) and a unique [kidney](#) tissue resource funded by Kidney Research UK—suggest that tackling obesity could have a powerful impact on kidney health.

Using data from around 300,000 participants in the UK Biobank—one of the world's largest biomedical databases and previous genome-wide association studies—the scientific team extracted information on the two most common measures of obesity, [body mass index](#) (BMI) and waist circumference (WC), and different measures of kidney function.

Most of the previous studies have been unable to explain if the relationship between obesity and renal disease was little more than an association.

However, through a technique called Mendelian Randomisation—which groups people according to a genetic code randomly assigned at birth and removes any bias—they found that increasing values of genetically predicted BMI and WC were causally associated with the measures of kidney function.

The team were able to show that the causal effect of obesity on the kidney is only partly mediated by high blood pressure and type 2 diabetes.

Through analysis of 467 kidney tissue samples, the study also uncovered the signatures of obesity on the human kidney—groups of genes and pathways that may potentially explain the effects of obesity on the kidney.

First author, Dr. Xiaoguang Xu from The University of Manchester, said: "Obesity and kidney disease are common complex disorders with an increasing clinical and economic impact on healthcare around the globe.

"Our evidence substantiates the value of weight loss as a strategy of preventing or reversing a decline in kidney health, as well as decreasing the risk of renal disease.

"So, we hope our findings will help to stimulate further research and drive the development of public health policies to improve kidney health and prevent kidney disease through encouraging weight loss."

Principal Investigator Professor Maciej Tomaszewski from The University of Manchester is also a Consultant Physician based at Manchester Royal Infirmary, part of MFT.

He said: "Chronic kidney disease affects more than 10 percent of adults worldwide and is predicted to become a global threat to public health. With the use of Mendelian Randomisation, we were able to demonstrate a potentially causal effect excessive weight has on kidney health and the risk of chronic kidney disease and several other kidney disorders.

"Through the analysis of one of the largest collection of the human kidney samples, we have uncovered the specific renal pathways associated with body mass index/waist circumference—they are the most likely biological connections between obesity and kidney health and disease."

Dr. Aisling McMahon, Executive director: research, innovation and policy at Kidney Research UK said: "Studies like this from the University of Manchester, are adding to a growing body of evidence suggesting that obesity is a direct cause of kidney disease.

"Three million people in the UK are already living with kidney disease. With levels of [obesity](#) on the increase, this figure could be set to rise rapidly. The Manchester team's findings demonstrate the need to promote healthy lifestyles in order to improve kidney [health](#). Once someone becomes a kidney patient, they are a kidney patient for life because there is no cure. As the UK's largest kidney disease research charity, finding new and transformative treatments and ways to prevent kidney disease are our core priorities. This means that our endeavors to

help prevent people developing kidney [disease](#) are just as critical as finding new ways to treat it."

More information: Xiaoguang Xu et al, Contributions of obesity to kidney health and disease: insights from Mendelian randomization and the human kidney transcriptomics, *Cardiovascular Research* (2021).
[DOI: 10.1093/cvr/cvab357](https://doi.org/10.1093/cvr/cvab357)

Provided by University of Manchester

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