

Genetic analysis links obesity with diabetes, coronary artery disease

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A Cleveland Clinic genetic analysis has found that obesity itself, not just the adverse health effects associated with it, significantly increases the risk of Type 2 diabetes and coronary artery disease. The paper was published today in the *Journal of the American Medical Association Network Open*.

Coronary artery disease -and complications that arise from it, such as heart attacks and heart failure- is the leading cause of the death in the United States and across the world. While other factors such as high cholesterol have been tied to coronary artery disease, the association between [obesity](#) and cardiovascular disease has not been clearly established.

For this study, [researchers](#) performed a meta-analysis of five studies with more than 880,000 participants. Researchers examined participants' genetic variations using a method called Mendelian randomization, which offers insight into the relationships between [health risks](#) and health outcomes. By relying on [genetic data](#), this method removes confounding, or outside, variables that can extraneously influence outcomes, such as smoking, [high blood pressure](#), or elevated cholesterol. Mendelian randomization cannot prove causality, but it can be suggestive of a causal association—as was the case in this study.

"This study is important because we can conclude that it is not solely factors like high blood pressure, high cholesterol or lack of exercise that tend to come with obesity that are harmful—the excess fat itself is harmful," said Haitham Ahmed, M.D., the senior author of the study and a preventive cardiologist at Cleveland Clinic. "Patients may think their cardiovascular risk is mitigated if their other risk factors are normal or being treated, but this study suggests you cannot ignore the extra weight. Physicians should take heed and make sure they are counseling their patients about weight loss in a comprehensive and collaborative manner."

The study showed that each five-point rise in BMI, for example from a BMI of 25 to a BMI of 30, increased the odds of Type 2 diabetes by 67 percent and [coronary artery disease](#) by 20 percent. In light of the Mendelian randomization, these increases are thought to be independent of traditional risk factors. This means the risks hold true even if the

patient has, for example, normal cholesterol, blood pressure and blood sugar. Three of the studies analyzed also included stroke as a clinical outcome, but the researchers did not find a significant association between obesity and all-cause stroke.

"It is very important to recognize that while lifestyle factors certainly contribute to obesity, obesity is not simply a lifestyle choice. It is a disease, and there is large genetic influence on your weight," Dr. Ahmed said. "Our data show that nearly 100 genetic variations influence the development of obesity and subsequently increase your risk of heart disease."

According to the CDC, 39.8 percent of U.S. adults are obese. Meanwhile, World Health Organization reports 13 percent of the world's adult population is obese and that the prevalence of obesity has tripled between 1975 and 2016. Obesity rates, along with rates of cardiovascular [disease](#) and diabetes, are expected to continue to rise, if current trends continue.

Provided by Cleveland Clinic

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