

Understanding the interconnection between diabetes, obesity, and metabolism

Veronika Vorobieva*

Received: 07-Feb-2022, Manuscript No. FMDM-23-93659; **Editor assigned:** 09-Feb-2022, PreQC No. FMDM-23-93659 (PQ); **Reviewed:** 23-Feb-2022, QC No. FMDM-23-93659; **Revised:** 03-Mar-2023, Manuscript No. FMDM-23-93659 (R); **Published:** 10-Mar-2023, DOI: 10.37532/1758-1907.2023.13.457-458

Description

Two of the most common health issues affecting the world's population today are diabetes and obesity. A sedentary lifestyle, unhealthful eating patterns, and a lack of physical activity have all been connected to the rise in these health issues. Diabetes, a metabolic condition defined by elevated blood glucose levels, is known to increase the risk of obesity. Because of the complexity of the metabolic pathways that control glucose metabolism, it is unclear how diabetes, obesity, and metabolism are related to one another.

This essay examines the connections between these three ailments and highlights the most recent findings about their interactions.

When the body is unable to properly make or utilize insulin, a hormone that controls blood glucose levels, diabetes develops. The immune system of the body targets and kills the insulin-producing cells in the pancreas, resulting in type 1 diabetes. On the other hand, type 2 diabetes happens when the body develops an inability to respond to insulin and the pancreas is unable to create enough insulin to meet the body's requirements. Globally, the frequency of diabetes is rising, and it is predicted that 700 million people will have the disease by 2045.

A condition known as obesity involves having too much body fat. Obesity is more than just a visual issue. It is a medical condition that raises the risk of various illnesses and conditions, including heart disease, diabetes, high blood pressure, and some cancers.

There are numerous causes for why some people struggle to lose weight. Obesity typically results from a combination of dietary, physiological, and environmental factors along with exercise, physical activity, and lifestyle choices. The good news is that even a small amount of weight loss can help or even stop the health issues linked to obesity. Body can lose weight by changing your behaviour, increasing body physical activity, and eating healthier. Additional options for treating obesity include prescription medications and weight-loss techniques.

On the other hand, obesity is a condition marked by an excessive buildup of bodily fat. Having a Body Mass Index (BMI) of 30 or greater is the standard definition. Heart disease, stroke, and various forms of cancer are just a few of the health issues that obesity is linked to. Type 2 diabetes is also significantly more likely to occur in those who are obese. 90% of those who have type 2 diabetes are thought to be overweight or obese. Many factors contribute to the development of diabetes and obesity, and their connections are intricate. Insulin resistance, which happens when the body's cells grow resistant to insulin's actions, is one of the key contributing reasons. Obesity and a sedentary lifestyle, as well as genetics and other variables, are associated with insulin resistance.

Insulin resistance is largely caused by excess body fat, especially abdominal fat, according to research. Adipose tissue in the abdomen produces cytokines that are pro-inflammatory, which disrupt insulin signalling and increase



Department of Medicine, Monash University, Clayton, Australia

*Author for correspondence: veronika@astin.org.au

insulin resistance. As a result, type 2 diabetes risk is increased and blood glucose levels rise.

The gut microbiome is another element that supports the emergence of diabetes and obesity. The complex ecosystem of bacteria that inhabits the digestive tract is called the gut microbiome. The gut microbiome is critical in controlling metabolism and inflammation, according to recent research. Obesity and type 2 diabetes have been linked to dysbiosis, or a balance in the gut microbiome. Studies have shown that people with obesity have a different gut microbiome composition than those who are lean. Similarly, people with type 2 diabetes have been found to have lower microbial diversity in their gut microbiome.

The liver also has an impact on the relationship

between obesity and diabetes. In controlling insulin sensitivity and glucose metabolism, the liver is essential. Non-alcoholic fatty liver disease can result from too much body fat loading the liver with fat. NAFLD poses a sizable risk for the emergence of type 2 diabetes and insulin resistance.

Genetics also has an impact on the relationship between diabetes, obesity, and metabolism. Some people are more likely than others to have these conditions due to genetics. For instance, specific genetic variations have been connected to a higher risk of type 2 diabetes. The genetic component of obesity has also been demonstrated to be significant, with studies suggesting that up to 70% of the risk of obesity is due to genetic factors.