What is the relationship between obesity and diabetes?

Obesity and type 2 diabetes share a close association. Research highlights that obesity is a common risk factor that can lead to the development of prediabetes and type 2 diabetes. Maintaining a moderate weight and making certain lifestyle adjustments can help slow or prevent diabetes. Obesity is a condition that occurs when a person has excess body fat that may affect their health. A health expert might diagnose a person with obesity if they have a sufficiently high body mass index (BMI).

Diabetes describes a group of conditions that affect how the body processes blood sugar. Type 2 diabetes, the most common type, occurs due to problems using or producing insulin. This hormone is responsible for allowing glucose in the blood to enter cells, which provides them with the energy to function.

Research highlights an association between obesity and the risk of developing both prediabetes and type 2 diabetes.

Insulin resistance is a common feature of these conditions. It occurs when cells no longer respond to signals from insulin. This causes the pancreas to work harder to produce sufficient insulin to maintain blood sugar levels. Over time, the pancreas loses its ability to release insulin, which can lead to the development of type 2 diabetes.

The link between obesity and diabetes

Obesity is a major risk factor for various health conditions, including type 2 diabetes. According to the National Diabetes Statistics Report, in 2013–2016, 45.8% of adults with diabetes had obesity, and 15.5% had extreme obesity. The report also notes that among U.S. adults with diabetes, 89% were overweight or had obesity.

Some evidence indicates that an individual with obesity is approximately 10 times more likely to develop type 2 diabetes than someone with a moderate body weight. Research also indicates that the prevalence of obesity-related diabetes in the U.S. may rise to 300 million adults by 2025. In fact, some health experts use the term diabesity to refer to the combined adverse health effects of obesity and diabetes.

How does obesity lead to diabetes?

Excess body fat, particularly around the abdomen, appears to be a major contributor to inflammation that can lead to type 2 diabetes. Having obesity usually results in low level but chronic inflammation, and research highlights that inflammation plays a role in the development of diabetes.

Although experts do not yet fully understand the complete mechanism, obesity-linked inflammation contributes to insulin resistance. This term refers to when cells in the body do not respond well to insulin and cannot easily take up glucose from the blood. This causes the pancreas to produce more insulin to keep blood sugars within a healthy range.

However, over time, the pancreas is unable to keep up, and this results in high blood sugar levels. High levels of sugar in the bloodstream can be very damaging and cause various complications. To try to lower blood sugar levels, the liver sends excess blood sugars to fat cells, which store it as body fat.

Other risk factors

Some other risk factors for developing type 2 diabetes include:

having prediabetes
being aged 45 years or older
having a close relative, such as a parent or sibling, with type 2 diabetes
having gestational diabetes or giving birth to a baby weighing more than 9 pounds
being African American, Hispanic, Latino, American Indian, Pacific Islander, Asian American, or Alaska Native

Type 2 diabetes also has other modifiable risk factors. These can include:

a lack of regular physical activity

high blood pressure
low high-density lipoprotein (HDL) cholesterol levels and high low-density lipoprotein (LDL) cholesterol levels
smoking
not eating a healthy and varied diet
heavy alcohol consumption
high stress levels
insufficient sleep

Managing body weight
The American Diabetes Association notes that maintaining a moderate weight may help a person prevent or manage diabetes. For many people, this may simply involve finding the right combination of exercise, healthy foods, and portion control.

Taking part in physical activity plays an important part in losing weight and maintaining a moderate weight. The exact amount of physical activity necessary varies from person to person.

However, a good goal to aim for is 150–300 minutes of moderate intensity aerobic exercise each week. This can include activities such as brisk walking. Alternatively, a person could aim for 75–150 minutes of vigorous intensity exercise, such as running or cycling, each week.

It is vital to eat a variety of nutritious foods from all food groups, in suitable amounts. These food groups include:
nonstarchy vegetables: such as broccoli, carrots, and tomatoes. starchy vegetables, such as potatoes, corn, and green peas
fruits: including oranges, apples, bananas, melon, berries, and grapes
grains: such as bread, pasta, and cereals that preferably include wheat, rice, and oats
protein: such as chicken, fish, and meat substitutes
dairy: such as nonfat or low fat milk, yogurt, and cheese