



Dr. Samiksha Singh

Metabolic Physician & Diabetologist

9833477536

dr.samiksha.sr@gmail.com

Insulin Resistance: The Metabolic Changes That Can Begin Before Diabetes

Blood glucose can be normal while important metabolic changes are already taking place.

One of those changes is insulin resistance.

Insulin helps glucose enter cells where it can be used for energy. When tissues become less responsive to insulin, the body may compensate by producing more insulin to maintain glucose levels.

For some time, this compensation can keep blood glucose within the normal range.

Insulin Resistance and Metabolic Health

Insulin resistance is often associated with a cluster of metabolic abnormalities rather than occurring in isolation.

These may include increased waist circumference, elevated glucose, high blood pressure, high triglycerides, low HDL cholesterol, PCOS and fatty liver.

When several of these abnormalities occur together, they may constitute **metabolic syndrome**.

Looking Beyond a Single Laboratory Value

There is no single laboratory number that captures the entire metabolic picture.

Assessment may include glucose parameters, weight and waist circumference, blood pressure, lipid profile, liver health, family history and associated medical conditions.

This broader approach helps identify people whose metabolic risk may not be obvious from glucose alone.

Improving Metabolic Health

Addressing excess weight where appropriate, increasing physical activity, improving nutrition and treating associated glucose, blood pressure or lipid abnormalities can improve the metabolic profile.

The important principle is to **address interconnected risk factors together rather than treating every abnormal number as an unrelated problem.**

Key Takeaway

Metabolic risk can begin before diabetes appears. Recognizing the pattern early creates an opportunity for earlier intervention.