

# Diabetes Mellitus

Energy to perform all daily functions of the body is provided to the cells in the form of glucose. The body regulates glucose levels by means of hormones; the most important of which is insulin that is responsible for the uptake of glucose by the cells. In a diabetic individual, the body is unable to regulate the amount of glucose in the blood. Cells are unable to take in glucose and blood glucose level shoots up, much over the upper limit of 110 mg/dl, a condition known as 'hyperglycemia'. This is a dangerous situation, firstly, because cells are unable to get their source of energy and secondly, because the excess glucose in the blood can be toxic to the tissues and organs exposed to it.

In type I diabetes (Insulin Dependent Diabetes Mellitus), this loss of regulation comes about due to an abnormality in the production of insulin. Insulin can become functionally absent as a consequence of injuring  $\beta$  cells in the pancreas by the body's own immune system (autoimmunity), leading to diabetes. Type II diabetes (Non-Insulin Dependent Diabetes Mellitus), on the other hand, is characterized by normal insulin production. However, cells develop 'insulin resistance' and are unable to take up glucose.

Diabetes is one of the most common diseases in the world and presents with numerous complications. Hyperglycemia can affect tissues and organs including the retina of the eyes, immune system, kidneys, blood vessels, skin, and the nervous system. Occasionally, too much or regular administration of antidiabetic drugs may lead to a dangerous hypoglycemic condition, characterized by very low blood sugar. This leaves the brain with very little glucose, and can develop very quickly into a lethal situation, if not immediately corrected.

## Risk Factors

Studies have shown that type I diabetes has a distinct genetic basis, with more than 50 different genes involved in the development of Type 1 diabetes alone (see [www.t1dbase.org](http://www.t1dbase.org)). Most importantly, certain variations in the Human Leukocyte Antigen (HLA) genes that are involved in immunity have been found more frequently in type I diabetic patients. Similarly, mutations in the insulin gene have also been implicated in diabetes.

Likewise, type II diabetes has also been shown to be transmitted in families. However, the genes involved in this form of the disease have been difficult to trace and research is ongoing to uncover them and elucidate their roles. Additionally, type II diabetes is associated with a number of other risk factors, including obesity, age, sedentary lifestyle, high blood cholesterol levels, and hypertension.

## Diagnosis and Management

Measurement of blood glucose level after an overnight fast is the most reliable method to diagnose diabetes. Individuals with fasting glucose level between 110 and 200 mg/dl are considered to be at risk for developing diabetes, whereas individuals with levels greater than 200 mg/dl are diagnosed as full-blown diabetics.

Insulin administration is the usual medication for type I diabetes. On the other hand, type II diabetes can be controlled by drugs such as sulfonylureas, biguanides, or phenylalanine derivatives that either stimulate the pancreas to produce more insulin, or reduce the amount of glucose produced by the liver. Diet, exercise, and

maintaining a healthy lifestyle are integral components of a successful treatment strategy for diabetes.

### Diabetes in the Arab World

Diabetes is extremely prevalent in the Arabian Peninsula. In fact, some of the highest worldwide prevalence rates of diabetes are recorded in the States of the Arabian Gulf; Saudi Arabia (23.9%), Kuwait (23.1%), Qatar (22.8%), Bahrain (21.9%), and the United Arab Emirates (19%). In these and other Arab countries, including Egypt, Lebanon, Oman, and Tunisia, the number of diabetics is continually rising, especially in middle-aged urban residents, and it is expected to be double of what it was at the turn of the century (by the year 2030). Researchers agree that this huge prevalence

of diabetic individuals in this region is due to an effect of the change in lifestyle in recent years, particularly the increase in sedentary lifestyle, high intake of dairy products, and vitamin D deficiency.

It is noteworthy that a relatively large number of cases with diabetes in the Arab world could be due to a genetic susceptibility to the disease, fueled by the high level of consanguinity.

Diabetes usually does not show a sexual preference. However, in the Arab world, it has been noted to occur more frequently among women than in men; a fact attributable to the higher rate of obesity among Arabic women.

