



# SMART *life*

 II pause

## Dodging the death trap

Diabetes is one of the most prolific silent killers of our time. Know how this disease emerges, the preventive steps to be taken and the treatment involved

BY POOJA PILLAI

**T**he statistics are scary. Globally, over 300 million people suffer from it, and the numbers are expected to go up to 500 million by 2025. It has already been deemed an epidemic by doctors and health organisations around the world. We are talking about diabetes mellitus or simply, diabetes.

As Mumbai-based Dr Deepak Chaturvedi, endocrinologist and diabetologist, says, "Diabetes is not a single clinical entity, but a spectrum of diseases which are metabolic, biochemical, endocrinal and more in nature."

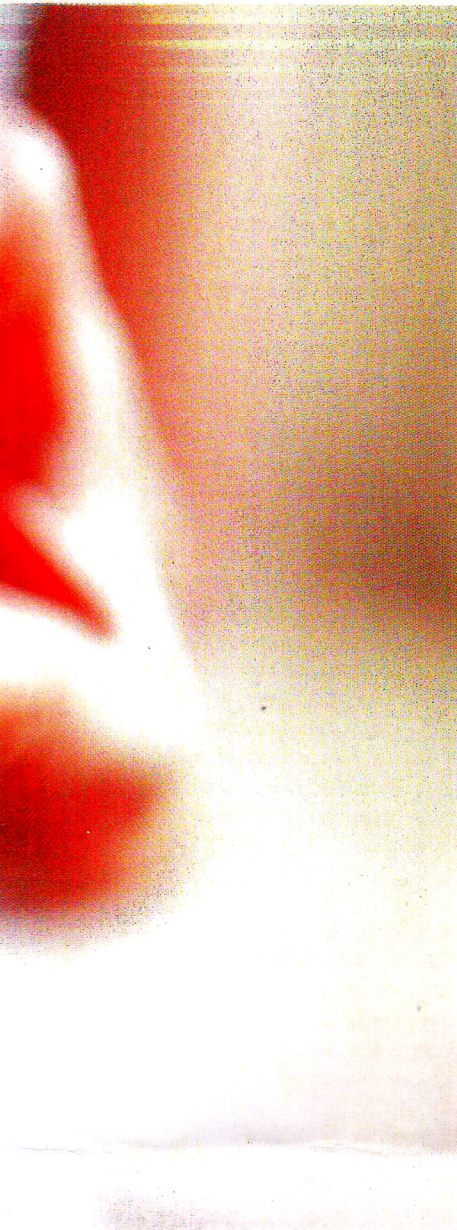
India is now widely looked upon as the diabetes capital of the world. According to a report published in the *Australasian Medical Journal* in January this year, the country has 62 million diabetics. The number is expected to go up to 79.4 million by 2030.

### **Blood sugar and the role of insulin**

Glucose is an important biological source of energy for all organisms, from single-celled bacteria to human beings. All the food that we eat contains dietary glucose. Having been absorbed by the digestive system, glucose is transported

through the rest of the body by blood (hence, the term blood sugar) and is then absorbed by the muscles where it is used as an energy source. This process of absorption is regulated by insulin, a hormone produced in the pancreas. In a healthy individual, the body produces enough insulin to regulate the glucose level so that it does not build up in the blood stream causing complications. In the case of a diabetic, as Dr Mufazzal Lakdawala, founder of Centre for Obesity and Diabetes Support, Mumbai, explains, the body either does not produce enough insulin or does not utilise the produced insulin properly.





### Types of diabetes

Broadly, diabetes is categorised as type 1, type 2 and gestational. There is also a condition known as prediabetes, which has no symptoms but is recognised now as being the first step towards developing type 2 diabetes. Early diagnosis and treatment can prevent the onset of diabetes.

### Type 1 diabetes

#### Overview

In type 1 diabetes, often referred to as insulin-dependent diabetes, the body's autoimmune system attacks the insulin-producing cells of the pancreas,

thus rendering the body deficient in the hormone. The afflicted have to go for regular insulin shots, besides having their diet and physical activity monitored and managed. Often called juvenile diabetes, type 1 can affect adults as well. It is usually genetically transmitted, although environment and lifestyle, as well as infection by certain viruses such as the rubella virus, have been implicated.

The classical symptoms of type 1 diabetes are polyuria (frequent urination), polydipsia (increased thirst), polyphagia (increased hunger) and weight loss.

#### Treatment

In addition to a good diet, exercise and adequate sleep, patients need regular insulin injections to stave off long-term damage. Type 1 requires lifelong care with frequent blood sugar tests and medical check-ups to stay on alert for other health complications caused by diabetes.

### Type 2 diabetes

#### Overview

Unlike type 1, type 2 diabetes is characterised by insulin resistance. So while insulin is being produced, the body has developed resistance to it, which leads to blood sugar not being properly metabolised. This can cause a number of complications, from kidney failure and heart disease to loss of vision and damage to other major organs of the body. Here, too, the presence of the disease is manifested by the triad of symptoms—polyuria, polydipsia and polyphagia.

While genes do play a role in type 2, lifestyle is the defining factor. Obesity, unhealthy diet, sedentary life, smoking, stress and lack of proper sleep are all observed to cause this disease. This is why, often, doctors agree that the progress of the disease can be managed if healthy changes are made in lifestyle.

Traditionally, type 2 diabetes was believed to affect people above 40 years of age. But it is increasingly being observed in young people as well as children. Dr Shehla Sheikh,

### The obesity factor

According to Dr Abhay Agrawal, a Mumbai-based bariatric surgeon and founder of the Centre for Obesity Control, there is a strong relationship between obesity and type 2 diabetes. He terms it "diabesity" and says it is the single largest silent killer today. He says, "The rapid increase in our girth accounts for the rapid emergence of metabolic syndrome. Fewer than 15 per cent of people with healthy body weight have the problem, but the risk rises to 22 per cent in overweight people and to 60 per cent in those who are obese."

All forms of obesity are troublesome, but upper body obesity poses the biggest risk. Abhay says, "Abdominal obesity is more common in men than women. The easiest way to find out if you have abdominal obesity is to measure your waist at the navel, measure your hips at their widest, then divide your waist size by your hip size. A man's risk of diabetes, heart attack and stroke rises progressively with waist-to-hip ratios above 1 and above 0.85 for women."

endocrinologist at the Saifee Hospital in Mumbai, says, "This is worrying because when the younger ones become diabetic, they suffer longer, increasing the chances of them developing complications like high blood pressure, heart disease and kidney failure."

#### Prevention

A healthy lifestyle, including moderate amount of physical activity on a regular basis, a balanced diet that includes lots of whole grains, fruits and vegetables, as well as seeds and nuts, and good quality, regular sleep, can help prevent type 2. Also important are stress-management techniques such as yoga and meditation.

#### Treatment

Apart from lifestyle modifications, oral medication is usually prescribed as treatment for type 2. In advanced cases, insulin injections may be required. While it is believed that diabetes can





## Latest treatments

An insulin injection pen called KiCoPen, developed by product development firm Cambridge Consultants, promises to make diabetes management easier and more accurate. This instrument links with the patient's smartphone to give a more accurate indication of when each insulin dose was administered. This helps patients keep better track of their daily insulin regimen. Researchers at Harvard University have developed a technique which allows them to modify stem cells to create beta cells, which are located in the pancreas and are responsible for secreting insulin. The team, lead by researcher Doug Melton, has worked on this for 15 years and, as published in *Cell* Journal last month, they are confident of being able to produce hundreds of millions of these makeshift cells and hope to start transplanting them into humans in a few years.

never actually be 'cured', it can be controlled enabling the patient to lead a normal life.

Given the strong link to obesity, one of the major treatments for type 2 emerging today is surgical intervention. Mufazzal refers to a landmark paper published in 1995 and says, "There have been reports that weight-loss surgery, especially Roux-en-Y Gastric Bypass, cures type 2 diabetes within days of surgery. Even the newer sleeve gastrectomy has been seen to give very good results in diabetics."

Diagnosis and treatment at the right stage are crucial, says Dr Manish Motwani, laparoscopic bariatric surgeon at Aastha Healthcare and Jaslok Hospital in Mumbai. He says, "Morbid obesity with even early diabetes is an indication for bariatric surgery or metabolic surgery. Risks involved may be surgical risks and anesthesia risks as in any other surgery. With the standardised techniques and high-end instrumentation and expertise, complications are rare." He cautions that severe diabetics who have

undergone bariatric surgery should be prepared for occasional episodes of hypoglycaemia (low blood sugar). He says, "Since the maximum resolution of diabetes occurs within the first three months of the surgery, patients are usually not prepared for the sudden decrease in sugar level and decreasing requirement for hypoglycaemic agents. Good counselling is important. Self-medication or stopping of medicines or insulin without informing the doctor should be avoided."

## Gestational diabetes

Gestational diabetes is a condition when non-diabetic women exhibit high blood-sugar levels during pregnancy. Human pregnancy is characterised by increased insulin resistance which ensures a steady supply of glucose to the developing foetus. While in most cases the blood sugar levels return to normal after delivery, sometimes it may actually unmask underlying prediabetes. Gestational diabetes can lead to, among other things, a large foetus, obstructed

labour, increased risk for respiratory distress syndrome in the baby and gestational hypertension in the mother. Moreover, almost 50 per cent of women with gestational diabetes have the chance of developing diabetes later in life.

## Prevention

Pregnant women can avoid gestational diabetes by keeping their weight in the healthy range. They can do this by eating a balanced diet and staying active during pregnancy. It is also a good idea to go for pre-conception screening and counselling, says Deepak.

## Treatment

When it comes to treating gestational diabetes, calorie control is important. Deepak says, "The daily meals should be split in five to six portions and insulin therapy should be provided as needed. The patient should carry on normal daily activities as well as graduated daily exercises such as walking." Constant monitoring of foetal development and the body weight, blood pressure and blood-sugar level of the patient is important. □