

## **Type 2 Diabetes**

**Joy Li, Francisco Chen, Cindy Cheng, Sally Lin, Tiffany Chen**

Type 2 diabetes is a member of the big diabetes family, it is strongly related to insulin and blood sugar level and in severe conditions, can damage other parts of the body. However, this condition can often be prevented with good lifestyles and routines.

### **Introduction**

Type 2 diabetes is a chronic condition in which the body doesn't use insulin properly (a state called insulin resistance), leading to elevated blood sugar levels. It accounts for about 90% of all diabetes cases. The disease usually develops in adults over the age of 45, but rising childhood obesity has caused more cases in children and young adults in recent years. Over time, uncontrolled high blood sugar can damage organs and tissues, but the condition can be managed and often prevented with healthy lifestyle changes and proper treatments.

### **History**

Type two diabetes, also named as Diabetes Mellitus, was first discovered by scientists around 1500 BCE, after type one diabetes was discovered. It was first being noticed and described as a disease of excessive urination in Asia, and Indian physicians later referred to it as madhumeha, or a name for "honey urine," due to the discovery that the sweetness inside of the urine is capable of attracting ants. However, the term "diabetes" was first used by Apollonius of Memphis—a physician in ancient Egypt—during the third century BCE. Around the 5th century CE, Indian and Chinese scholars started to attempt to distinguish the difference between type 1 and type 2 diabetes through research and experiments. Later on, they observed that type 2 diabetes was more common in wealthy, heavier individuals since they have access to more food

and their lifestyle is relatively inactive. This had led to the conclusion that the two types of diabetes have separate conditions, with type 1 associated with youth or childrens, and type 2 being more related to obesity.

Continuing on in the early 17th century, English physician Thomas Willis tested out the characteristics of Type 2 Diabetes in extreme ways by tasting his patient's urine to identify its sweetness, which had been concluded as a key sign of diabetes. In 1869, 22-year-old medical student Paul Langerhans from Germany had identified the pancreatic cells — later named the islets of Langerhans — which are associated with insulin production and the regulation of blood sugar. This is a breakthrough and milestone in the research of Type 2 Diabetes which facilitated future discoveries.

### **Risk Factors, Cause and Prevention**

Type 2 Diabetes is a chronic disease that has been growing rapidly in the United States. Diabetes arises due to the body's resistance to the effects of insulin which is a hormone that facilitates the sugar in the blood to be absorbed by the cells. It can also occur due to the pancreas' inability to produce enough insulin to keep up with the body's consumption of sugar. Everything comes down to lifestyle choices when you're faced with health complications, especially for the case of Type 2 Diabetes. Generally, Type 2 Diabetes derives from being overweight or obese which refers to an absorbent amount of excess body weight. Many factors can contribute to Type 2 Diabetes and obesity, the most prominent being unhealthy diets which include the consumption of food that contain high saturated fats, processed foods, sugary foods/drinks, and carbohydrates. These highly processed and sugary foods contribute to diabetes because they can lead to insulin resistance which occurs when the body cells can no longer respond to insulin, resulting in the accumulation of blood sugar. Therefore, a healthy diet that

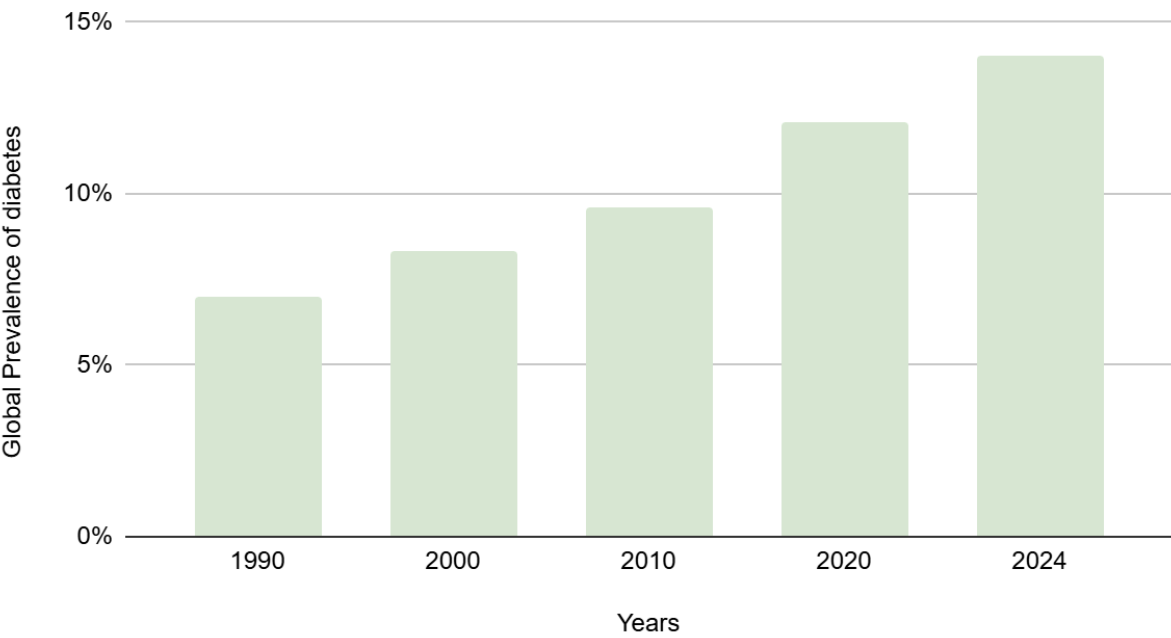
consists of all essential nutrients is important to have, it will lead to a stable hormone and homeostasis. Physical inactivity comes hand in hand with one's diet, regular exercises can contribute to an overall better metabolism, helping the body to lower the blood sugar levels. Common health concerns that occur often in individuals like high blood pressure and high cholesterol can also contribute to diabetes because both conditions can damage/block blood vessels and cause our body cells to become less sensitive to the effects of insulin. Some risks that are predetermined are family histories of type 2 diabetes, ethnicities that usually have a greater risk (African Americans, Hispanics, and Native Americans).

## **Treatment**

Type 2 diabetes cannot be cured, but it can be managed with healthy habits and medicine. The main goal of treatment is to keep blood sugar levels in a safe range. This is done by eating nutritious foods, staying active, losing weight if needed, and taking medicine like metformin. Some people may also need insulin to help control their blood sugar. These steps help keep the body balanced and reduce the risk of problems caused by diabetes.

Global Statistics

Global Prevalence of diabetes vs. Years

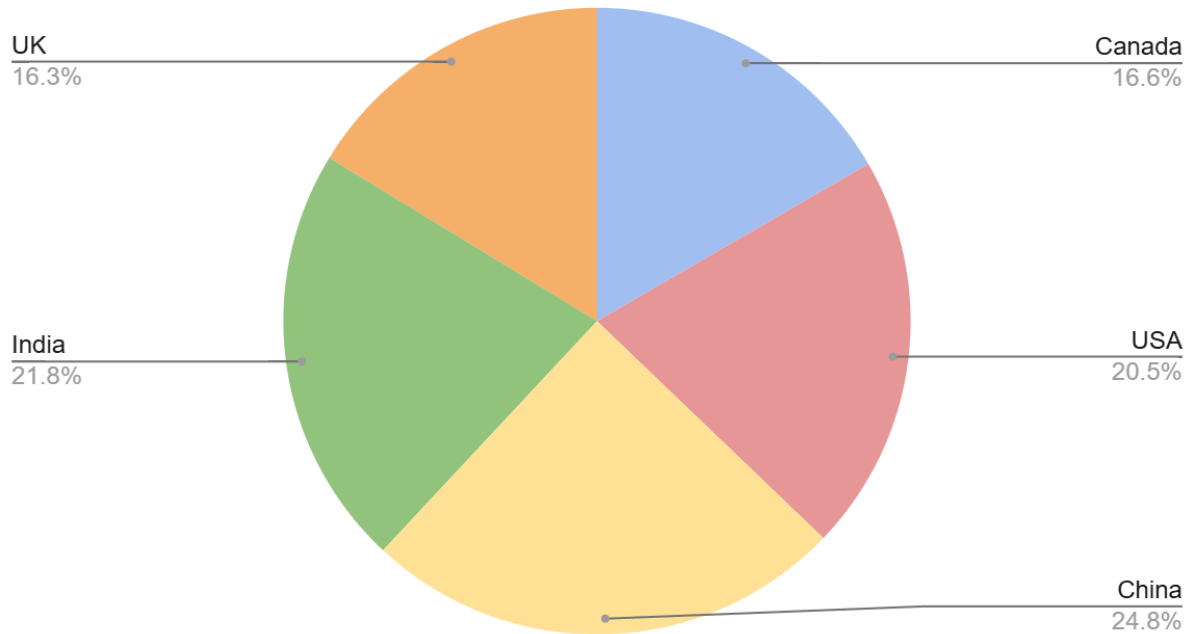


*Note:* The data was obtained from the World Health Organization Global diabetes report (2024)

According to the World Health Organization (2024), the global prevalence of diabetes has nearly doubled over the past three decades. In 1990, the prevalence was approximately 7.0%, whereas in 2024, it has surged to 14.0%. This increase underscores the urgent need for global public health interventions.

## Comparison of diabetes prevalence in different countries

### Prevalence of diabetes (%)

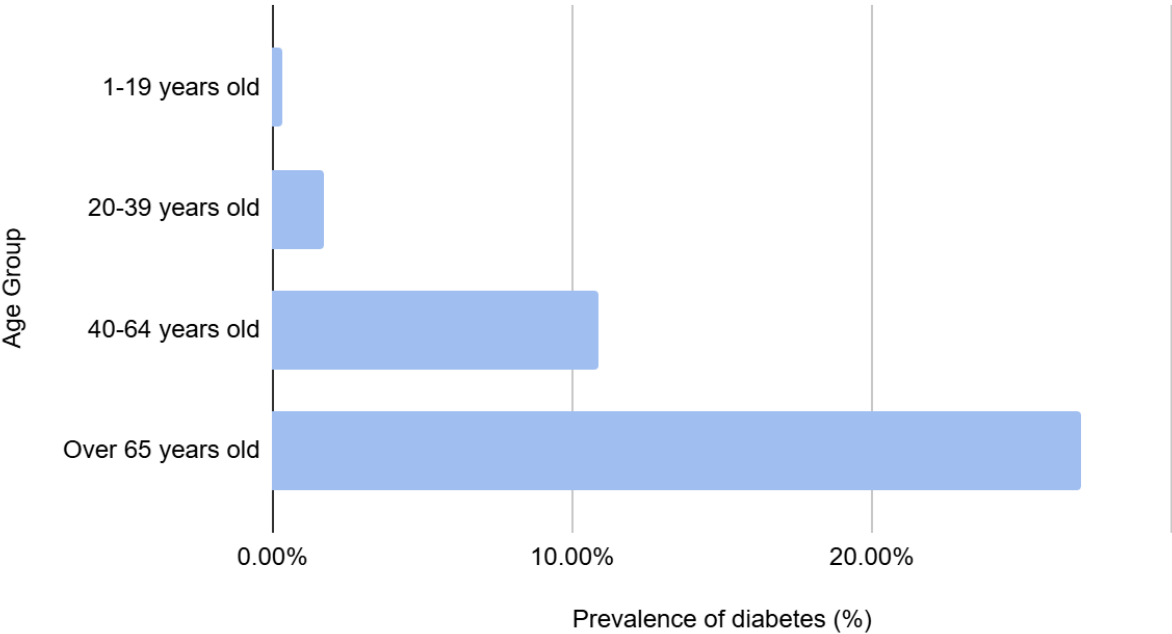


*Note:* The data was obtained from the WHO (2024), CDC (2023), and Public Health Agency of Canada (2023)

The prevalence of type 2 diabetes varies significantly across different countries. According to the CDC (2023) and the Public Health Agency of Canada (2023), Canada reports a prevalence of 9.4%, whereas the United States has a higher rate at 11.6%. Notably, China has one of the highest rates at 14.0%, indicating a major public health concern.

Comparison of diabetes prevalence in different age groups

Prevalence of diabetes (%) vs. Age Group



*Note:* The data was obtained from the Public Health Agency of Canada (2023)

The prevalence of diabetes is highly correlated with age. Data from the Public Health Agency of Canada (2023) shows that while only 0.3% of individuals under 19 have diabetes, the rate dramatically increases to 27% among those aged 65 and above. This highlights the importance of age-specific prevention strategies.

Proportion of diagnosed and undiagnosed diabetes patients

Category	Number of people (million)	Proportion (%)
Patients diagnosed with diabetes	29.7	77.2%
Undiagnosed diabetic patients	8.7	22.8%

*Note:* The data was obtained from the CDC (2023)

A significant portion of diabetes cases remain undiagnosed. According to the CDC (2023) approximately 22.8% of adults with diabetes in the U.S. have not been diagnosed. This lack of awareness can lead to severe complications, underscoring the necessity for improved screening programs.

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