Diabetes

14 November 2024

Key facts

- The number of people living with diabetes rose from 200 million in 1990 to 830 million in 2022. Prevalence has been rising more rapidly in low- and middle-income countries than in high-income countries.
- More than half of people living with diabetes did not take medication for their diabetes in 2022. Diabetes treatment coverage was lowest in low- and middle-income countries.
- Diabetes causes blindness, kidney failure, heart attacks, stroke and lower limb amputation.
- In 2021, diabetes and kidney disease due to diabetes caused over 2 million deaths. In addition, around 11% of cardiovascular deaths were caused by high blood glucose.
- A healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use are ways to prevent or delay the onset of type 2 diabetes.
- Diabetes can be treated and its consequences avoided or delayed with diet, physical activity, medication and regular screening and treatment for complications.

Overview

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood glucose. Hyperglycaemia, also called raised blood glucose or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels.

In 2022, 14% of adults aged 18 years and older were living with diabetes, an increase from 7% in 1990. More than half (59%) of adults aged 30 years and over living with

diabetes were not taking medication for their diabetes in 2022. Diabetes treatment coverage was lowest in low- and middle-income countries.

In 2021, diabetes was the direct cause of 1.6 million deaths and 47% of all deaths due to diabetes occurred before the age of 70 years. Another 530 000 kidney disease deaths were caused by diabetes, and high blood glucose causes around 11% of cardiovascular deaths *(1)*.

Since 2000, mortality rates from diabetes have been increasing. By contrast, the probability of dying from any one of the four main noncommunicable diseases (cardiovascular diseases, cancer, chronic respiratory diseases or diabetes) between the ages of 30 and 70 decreased by 20% globally between 2000 and 2019.

Symptoms

Symptoms of diabetes may occur suddenly. In type 2 diabetes, the symptoms can be mild and may take many years to be noticed.

Symptoms of diabetes include:

- feeling very thirsty
- needing to urinate more often than usual
- blurred vision
- feeling tired
- losing weight unintentionally

Over time, diabetes can damage blood vessels in the heart, eyes, kidneys and nerves.

People with diabetes have a higher risk of health problems including heart attack, stroke and kidney failure.

Diabetes can cause permanent vision loss by damaging blood vessels in the eyes.

Many people with diabetes develop problems with their feet from nerve damage and poor blood flow. This can cause foot ulcers and may lead to amputation.

Type 1 diabetes

Type 1 diabetes (previously known as insulin-dependent, juvenile or childhood-onset) is characterized by deficient insulin production and requires daily administration of insulin. In 2017 there were 9 million people with type 1 diabetes; the majority of them live in high-income countries. Neither its cause nor the means to prevent it are known.

Type 2 diabetes

Type 2 diabetes affects how your body uses sugar (glucose) for energy. It stops the body from using insulin properly, which can lead to high levels of blood sugar if not treated.

Over time, type 2 diabetes can cause serious damage to the body, especially nerves and blood vessels.

Type 2 diabetes is often preventable. Factors that contribute to developing type 2 diabetes include being overweight, not getting enough exercise, and genetics.

Early diagnosis is important to prevent the worst effects of type 2 diabetes. The best way to detect diabetes early is to get regular check-ups and blood tests with a healthcare provider.

Symptoms of type 2 diabetes can be mild. They may take several years to be noticed. Symptoms may be similar to those of type 1 diabetes but are often less marked. As a result, the disease may be diagnosed several years after onset, after complications have already arisen.

More than 95% of people with diabetes have type 2 diabetes. Type 2 diabetes was formerly called non-insulin dependent, or adult onset. Until recently, this type of diabetes was seen only in adults but it is now also occurring increasingly frequently in children.

Gestational diabetes

Gestational diabetes is hyperglycaemia with blood glucose values above normal but below those diagnostic of diabetes. Gestational diabetes occurs during pregnancy.

Women with gestational diabetes are at an increased risk of complications during pregnancy and at delivery. These women and possibly their children are also at increased risk of type 2 diabetes in the future.

Gestational diabetes is diagnosed through prenatal screening, rather than through reported symptoms.

Impaired glucose tolerance and impaired fasting glycaemia

Impaired glucose tolerance (IGT) and impaired fasting glycaemia (IFG) are intermediate conditions in the transition between normality and diabetes. People with IGT or IFG are at high risk of progressing to type 2 diabetes, although this is not inevitable.

Prevention

Lifestyle changes are the best way to prevent or delay the onset of type 2 diabetes.

To help prevent type 2 diabetes and its complications, people should:

- reach and keep a health body weight
- stay physically active with at least 150 minutes of moderate exercise each week
- eat a healthy diet and avoid sugar and saturated fat
- not smoke tobacco.

Diagnosis and treatment

Early diagnosis can be accomplished through relatively inexpensive testing of blood glucose. People with type 1 diabetes need insulin injections for survival.

One of the most important ways to treat diabetes is to keep a healthy lifestyle.

Some people with type 2 diabetes will need to take medicines to help manage their blood sugar levels. These can include insulin injections or other medicines. Some examples include:

- metformin
- sulfonylureas
- sodium-glucose co-transporters type 2 (SGLT-2) inhibitors.

Along with medicines to lower blood sugar, people with diabetes often need medications to lower their blood pressure and statins to reduce the risk of complications.

Additional medical care may be needed to treat the effects of diabetes:

- foot care to treat ulcers
- screening and treatment for kidney disease
- eye exams to screen for retinopathy (which causes blindness).

WHO response

WHO aims to stimulate and support the adoption of effective measures for the surveillance, prevention and control of diabetes and its complications, particularly in low- and middle-income countries. To this end, WHO:

- provides scientific guidelines for the prevention of major noncommunicable diseases including diabetes;
- develops norms and standards for diabetes diagnosis and care;
- builds awareness on the global epidemic of diabetes, marking World Diabetes Day (14 November); and
- conducts surveillance of diabetes and its risk factors.

In April 2021 WHO launched the Global Diabetes Compact, a global initiative aiming for sustained improvements in diabetes prevention and care, with a particular focus on supporting low- and middle-income countries.

In May 2021, the World Health Assembly agreed a Resolution on strengthening prevention and control of diabetes. In May 2022 the World Health Assembly endorsed five global diabetes coverage targets to be achieved by 2030.

To learn more about the Global Diabetes Compact, to access diabetes-related technical publications to get involved in upcoming initiatives, visit the Global Diabetes Compact webpage.

References

1. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2021. Results. Institute for Health Metrics and Evaluation. 2024 (https://vizhub.healthdata.org/gbd-results/).

Cardiovascular diseases (CVDs)

31 July 2025

Key facts

- Cardiovascular diseases (CVDs) are the leading cause of death globally.
- An estimated 19.8 million people died from CVDs in 2022, representing approximately 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke.
- Over three quarters of CVD deaths take place in low- and middle-income countries.
- Out of the 18 million premature deaths (under the age of 70) due to noncommunicable diseases in 2021, at least 38% were caused by CVDs.
- Most cardiovascular diseases can be prevented by addressing behavioural and environmental risk factors such as tobacco use, unhealthy diet (including excess salt, sugar, and fats) and obesity, physical inactivity, harmful use of alcohol and air pollution.
- It is important to detect cardiovascular disease as early as possible so that management with counselling and medicines can begin.

Overview

Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels.

They include:

- coronary heart disease – a disease of the blood vessels supplying the heart muscle;
- cerebrovascular disease – a disease of the blood vessels supplying the brain;
- peripheral arterial disease – a disease of blood vessels supplying the arms and legs;
- rheumatic heart disease – damage to the heart muscle and heart valves from rheumatic fever, caused by streptococcal bacteria;

- congenital heart disease – birth defects that affect the normal development and functioning of the heart caused by malformations of the heart structure from birth; and
- deep vein thrombosis and pulmonary embolism – blood clots in the leg veins, which can dislodge and move to the heart and lungs.

Heart attacks and strokes are usually acute events and are mainly caused by a blockage that prevents blood from flowing to the heart or brain. The most common reason for this is a build-up of fatty deposits on the inner walls of the blood vessels that supply the heart or brain. Strokes can be caused by bleeding from a blood vessel in the brain or from blood clots.

Risk factors for cardiovascular disease

The most important behavioural risk factors of heart disease and stroke are unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol. Amongst environmental risk factors, air pollution is an important factor. The effects of behavioural risk factors may show up in individuals as raised blood pressure, raised blood glucose, raised blood lipids, and overweight and obesity. These “intermediate risks factors” can be measured in primary care facilities and indicate an increased risk of heart attack, stroke, heart failure and other complications.

Cessation of tobacco use, reduction of salt in the diet, eating more fruit and vegetables, regular physical activity and avoiding harmful use of alcohol have been shown to reduce the risk of cardiovascular disease. Health policies that create conducive environments for making healthy choices affordable and available, as well as improving air quality and reducing pollution, are essential for motivating people to adopt and sustain healthy behaviours.

There are also a number of underlying determinants of CVDs. These are a reflection of the major forces driving social, economic and cultural change – globalization, urbanization and population ageing. Other determinants of CVDs include poverty, stress and hereditary factors.

In addition, drug treatment of hypertension, diabetes and high blood lipids are necessary to reduce cardiovascular risk and prevent heart attacks and strokes among people with these conditions.

Common symptoms of cardiovascular diseases

Symptoms of heart attacks and strokes

Often, there are no symptoms of the underlying disease of the blood vessels. A heart attack or stroke may be the first sign of underlying disease. Symptoms of a heart attack include:

- pain or discomfort in the centre of the chest; and/or
- pain or discomfort in the arms, the left shoulder, elbows, jaw, or back.

In addition the person may experience difficulty in breathing or shortness of breath; nausea or vomiting; light-headedness or faintness; a cold sweat; and turning pale. Women are more likely than men to have shortness of breath, nausea, vomiting, and back or jaw pain.

The most common symptom of a stroke is sudden weakness of the face, arm, or leg, most often on one side of the body. Other symptoms include sudden onset of:

- numbness of the face, arm, or leg, especially on one side of the body;
- confusion, difficulty speaking or understanding speech;
- difficulty seeing with one or both eyes;
- difficulty walking, dizziness and/or loss of balance or coordination;
- severe headache with no known cause; and/or
- fainting or unconsciousness.

People experiencing these symptoms should seek medical care immediately.

Characteristics of rheumatic heart disease

Rheumatic heart disease is caused by damage to the heart valves and heart muscle from the inflammation and scarring caused by rheumatic fever. Rheumatic fever is caused by an abnormal response of the body to infection with streptococcal bacteria, which usually begins as a sore throat or tonsillitis in children.

Rheumatic fever mostly affects children in developing countries, especially where poverty is widespread. Globally, about 2% of deaths from cardiovascular diseases are related to rheumatic heart disease.

Symptoms of rheumatic heart disease

Symptoms of rheumatic heart disease include: shortness of breath, fatigue, irregular heartbeats, chest pain and fainting.

Symptoms of rheumatic fever include: fever, pain and swelling of the joints, nausea, stomach cramps and vomiting.

Why cardiovascular diseases are a development issue in low- and middle-income countries

Approximately 80% of the world's deaths from CVDs occur in low- and middle-income countries. People living in low- and middle-income countries often do not have the benefit of primary health care programmes for early detection and treatment of people with risk factors for CVDs. People in low- and middle-income countries who suffer from CVDs and other noncommunicable diseases have less access to effective and equitable health care services which respond to their needs. As a result, for many people in these countries detection is often late in the course of the disease and people die at a younger age from CVDs and other noncommunicable diseases, often in their most productive years.

The poorest people in low- and middle-income countries are most affected. At the household level, evidence is emerging that CVDs and other noncommunicable diseases contribute to poverty due to catastrophic health spending and high out-of-pocket expenditure. At the macro-economic level, CVDs place a heavy burden on the economies of low- and middle-income countries.

How the burden of cardiovascular diseases can be reduced

The key to cardiovascular disease reduction lies in the inclusion of cardiovascular disease management interventions in universal health coverage packages, although in a high number of countries health systems require significant investment and reorientation to effectively manage CVDs.

Evidence from 18 countries has shown that hypertension programmes can be implemented efficiently and cost-effectively at the primary care level which will ultimately

result in reduced coronary heart disease and stroke. Patients with cardiovascular disease should have access to appropriate technology and medication. Basic medicines that should be available include:

- aspirin
- beta-blockers
- calcium channel blockers
- angiotensin-converting enzyme inhibitors
- diuretics
- statins.

An acute event such as a heart attack or stroke should be promptly managed.

Sometimes, surgical operations are required to treat CVDs. They include:

- coronary artery bypass;
- balloon angioplasty (where a small balloon-like device is threaded through an artery to open the blockage);
- valve repair and replacement;
- heart transplantation; and
- artificial heart operations.

Medical devices are required to treat some CVDs. Such devices include pacemakers, prosthetic valves, and patches for closing holes in the heart.

WHO response

WHO works to drive and support the implementation of effective actions for the prevention, management, and control of CVDs and their associated risk factors, especially in low- and middle-income countries. To this end, WHO:

- develops evidence-based guidelines and tools for the prevention and management of major noncommunicable diseases, including CVDs;
- develops norms and standards for cardiovascular risk assessment, hypertension diagnosis, and CVD care;
- raises awareness about the growing global burden of CVDs; and
- conducts global surveillance on CVDs and their key risk factors.

In 2016, to further scale up action, WHO launched the Global HEARTS Initiative, aiming to support countries in strengthening CVD prevention and control through primary health care, particularly in low- and middle-income countries.

In 2013, WHO Member States agreed on global mechanisms to reduce the avoidable NCD burden including a "Global action plan for the prevention and control of NCDs 2013-2020". This Plan has the aim of reducing the number of premature deaths from NCDs by 25% by 2025 through nine voluntary global targets. Two of the targets directly focus on preventing and controlling CVDs.

Target 6: Reduce global prevalence of raised blood pressure by 25% between 2010 and 2025.

Target 8: At least 50% of eligible people should receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes by 2025.

In addition, target 9 states that there should be 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major NCDs in both public and private facilities.

Achieving these targets will require significant investment in and strengthening of health systems.

WHO is also working on increasing the normative guidance available for the management of acute coronary syndrome and stroke.