

Diabetes: An Overview

Key Messages

- ※ Diabetes mellitus (or simply called diabetes) would affect many different organ systems in the body and, over time, can lead to serious complications including heart disease, stroke, kidney failure and blindness. The World Health Organization has identified diabetes as one of the priority non-communicable diseases requiring urgent global actions.
- ※ The Department of Health (DH) conducted the Population Health Survey 2020-22 and observed that 8.5% of non-institutionalised persons aged 15–84 had diabetes or raised blood glucose, including 5.4% self-report doctor-diagnosed diabetes and 3.1% with no self-reported history but had raised blood glucose or glycated haemoglobin by biochemical testing. The prevalence increased with age from 0.6% among persons aged 15–24 to 19.0% among persons aged 65–84.
- ※ Type 2 diabetes is strongly associated with obesity, physical inactivity, smoking, a family history of diabetes and increasing age. Regardless of genetic risk (such as having a family history of diabetes), healthy living can prevent type 2 diabetes or delay its onset. Thus, members of the public are encouraged to keep a healthy body weight and optimal waist circumference, be physically active, eat a balanced diet, avoid smoking and refrain from alcohol consumption.
- ※ Another key to lower the risk of complications from type 2 diabetes is screening for high blood glucose with early detection and intervention if indicated. Screening for type 2 diabetes should begin at age 45. Based on the presence of diabetes risk factors and previous results, screenings should be conducted every one to three years. Members of the public are encouraged to consult their family doctors if they have any questions about diabetes or relevant screening recommendation.
- ※ The DH will continue to work in close partnership with other government departments and community partners with a view to enhancing people's health literacy, increasing public awareness about the importance of healthy living in diabetes prevention, and building a healthy living environment.

Diabetes: An Overview

Diabetes mellitus (or simply called diabetes) is one of the priority non-communicable diseases that the World Health Organization (WHO) has identified as requiring urgent global actions¹. It occurs when the pancreas does not produce enough insulin (a hormone that regulates blood glucose) or when the body cannot effectively use the insulin it produces².

There are three main types of diabetes: type 1 diabetes, type 2 diabetes, and gestational diabetes (Box 1), among which type 2 diabetes is the most common and accounts for over 90% of all diabetes worldwide³. Diabetes would affect many different organ systems in the body and, over time, can lead to serious complications including heart disease, stroke, kidney failure and blindness².

Box 1: Major types of diabetes

Type 1 diabetes: It is characterised by a lack of insulin production and requires administration of insulin to survive. The exact cause of Type 1 diabetes is not fully understood, but it often runs in families and occurs most frequently in children and adolescents³. To date, there is no known way to prevent type 1 diabetes².

Type 2 diabetes: It results from the body's ineffective use of insulin. While its cause is not completely understood, there is a strong link with obesity, physical inactivity, smoking, increasing age, ethnicity, and a family history of diabetes^{2, 3}. Type 2 diabetes used to occur only in adults^{2, 3}, but is now increasingly seen in children and adolescents⁴.

Gestational diabetes: It refers to diabetes that starts or is first diagnosed during pregnancy. Gestational diabetes arises when the body cannot produce enough insulin to meet extra needs in pregnancy. Risk factors for gestational diabetes include excess body weight or excessive weight gain during pregnancy, advanced maternal age and a family history of diabetes. It is also more common in some ethnic groups³. Although gestational diabetes usually goes away after delivery, women with prior gestational diabetes would have substantially increased risk of developing type 2 diabetes compared to women without gestational diabetes⁵.

Global Disease Burden of Diabetes

The global disease burden of diabetes has significantly increased in recent decades and predicted that it will continue to soar in the next few decades, primarily due to a rise in obesity caused by multiple factors⁶. In 2021, an estimated 529 million people of all ages worldwide had diabetes, yielding a global age-standardised prevalence of 6.1% (6.5% for males; 5.8% for females). By 2050, the global age-standardised total diabetes prevalence would increase to 9.8%, resulting in more than 1.31 billion people living with diabetes⁶. Prediabetes, comprising impaired glucose tolerance and impaired fasting glucose, is a high-risk state for developing type 2 diabetes. Studies shown that 5%–10% of people with prediabetes progress to diabetes each year, and up to 70% of prediabetic individuals eventually develop diabetes⁷. In 2021, about 541 million and 319 million adults aged 20–79 had impaired glucose tolerance and impaired fasting glucose across the globe respectively³. Future projections suggest that by 2045 the number of adults with impaired glucose tolerance will have increased to about 730 million and that for impaired fasting glucose will have increased to over 440 million³.

Diabetes and its complications are a major driver of mortality worldwide. Globally, approximately 6.7 million adults aged 20–79 were estimated to have died as a result of diabetes or its complications in 2021³. A pooled analysis of more than 1 million Asian individuals (from mainland China, Japan, South Korea, Singapore, Taiwan, India, and Bangladesh) observed that

individuals with diabetes had 89% increased risk of all-cause mortality compared with those without diabetes, with significantly increased risk of death from diabetes itself and other chronic diseases including renal failure, coronary heart disease, ischaemic stroke, liver diseases (such as liver cirrhosis and failure), and certain cancers (such as liver, breast, pancreas, gallbladder, and colon or rectum)⁸. Another study analysed more than 23 million person-years of follow-up in 19 high-income countries suggested that every decade of earlier diagnosis of type 2 diabetes was associated with about 3–4 years of lower life expectancy⁹.

Local Situation

Diabetes is a major cause of morbidity and mortality among local population as well. The Population Health Survey (PHS) 2020-22¹⁰ conducted by the Department of Health (DH) observed that 8.5% of non-institutionalised persons aged 15–84 had diabetes or raised blood glucose, including 5.4% self-report doctor-diagnosed diabetes and 3.1% with no self-reported history but raised blood glucose or glycated haemoglobin (HbA1c) by biochemical testing. As shown in Table 1, males (11.1%) had a higher prevalence of diabetes or raised blood glucose than females (6.1%) and the prevalence increased with age from 0.6% among persons aged 15–24 to 19.0% among persons aged 65–84. Additionally, 1.6% of persons aged 15–84 had impaired fasting glucose as defined by biochemical testing with fasting plasma glucose between 6.1 and 6.9 millimoles per liter (mmol/L)¹⁰. In 2022, there were 661 registered deaths attributed to diabetes with a crude death rate of 9.0 per 100 000 population¹¹.

Table 1: Proportion of raised blood glucose or diabetes (including self-reported doctor-diagnosed diabetes and no self-reported history but raised blood glucose or HbA1c by biochemical testing) among non-institutionalised persons aged 15–84 by gender and age group

	Self-reported doctor-diagnosed diabetes	No self-reported history but raised blood glucose or HbA1c by biochemical testing*	Total
Gender			
Male	7.3%	3.8%	11.1%
Female	3.6%	2.5%	6.1%
Age group			
15–24	-	0.6%	0.6%
25–34	0.3%	0.6%	0.9%
35–44	1.7%	1.4%	3.1%
45–54	2.6%	2.7%	5.3%
55–64	8.5%	6.3%	14.9%
65–84	14.3%	4.7%	19.0%
Overall	5.4%	3.1%	8.5%

Base: All respondents aged 15–84 who had participated in the health examination.

Notes: *No self-reported history but raised blood glucose or HbA1c by biochemical testing: fasting plasma glucose higher than or equal to 7.0 mmol/L, or HbA1c higher than or equal to 6.5%. ‘-’ denotes a nil figure.

Source: Population Health Survey 2020-22.

Prevention and Control of Diabetes

Substantial evidence shows that healthy living can prevent type 2 diabetes or delay its onset¹². A study with over 550 000 Chinese participants from mainland China and Singapore observed that adherence to a healthy lifestyle was associated with a lower risk of type 2 diabetes regardless of genetic risk (such as having a family history of diabetes). Compared to people with high genetic risk and unhealthy lifestyle, a healthy lifestyle would have a 57%, 66% and 75% reduced risk of type 2 diabetes among those at a high, middle and low genetic risk, respectively¹³. Among diabetic patients, healthy living would also reduce the risk of related complications. A meta-analysis of 10 prospective cohort studies with about 34 000 diabetic patients showed that those with the healthiest lifestyle had a 56% lower risk of all-

cause mortality, 49% lower risk of cardiovascular mortality and 31% lower risk of cancer mortality when compared to those with the least-healthy lifestyle¹⁴. However, the risk factors for type 2 diabetes are prevalent among local population. Among persons aged 15–84, the PHS 2020-22 observed that 54.6 % of them were overweight or obese by body mass index and 37.8 % were centrally obese by waist measurement. While 14.4 % of persons aged 15 or above reported that they have ever smoked, 8.7% drank at least once a week. Regarding physical activity participation, 24.8% of persons aged 18 or above performed insufficient level of physical activities¹⁰. To guard against type 2 diabetes, members of the public are urged to lead a healthy lifestyle (Box 2).

Since type 2 diabetes is often asymptomatic in early stages, screening those at a high risk of type 2 diabetes or recognising prediabetes is a crucial component of disease prevention. According to the Hong Kong Reference Framework for Diabetes Care for Adults in Primary Care Settings, it is recommended that persons aged 45 or above should screen for type 2 diabetes. Based on the presence of diabetic risk factors (such as family history of diabetes, women with history of gestational diabetes, obesity,

hypertension or clinical cardiovascular disease) and previous results, screening should be conducted every 1 to 3 years¹⁹. According to the Population Health Survey 2020-22, however, less than three-fifths (59.1%) of persons aged 45 or above reported that they had their blood glucose checked within 3 years¹⁰. Members of the public are encouraged to consult their family doctors if they have any questions about diabetes or relevant screening recommendations.

Box 2: Healthy living to reduce the risk of type 2 diabetes

Maintain an optimal body weight and waist circumference — Chinese adults in Hong Kong should aim to maintain a body mass index between 18.5 and 22.9. Men should keep their waist circumference below 90 cm (about 36 inches), while women should keep theirs below 80 cm (about 32 inches).

Be physically active — Regular physical activity improves insulin sensitivity and enhances glucose uptake by the muscles, which in turn helps regulate blood glucose level and reduce the risk of type 2 diabetes. For substantial health benefits, adults are urged to engage at least 150–300 minutes of moderate-intensity physical activity, or at least 75–150 minutes of vigorous-intensity physical activity every week, or an equivalent amount of physical activity throughout the week. They should also reduce chair-time and replace sitting time with physical activity of any intensity including light-intensity physical activity (such as walking)¹⁵.

Eat a balanced diet — Adults are urged to eat according to the Healthy Eating Food Pyramid, including consuming at least five daily servings of fruit and vegetables, choosing whole grains over refined grains, as well as limiting fats, salt and sugar intake¹⁶.

Do not smoke — Smoking is associated with insulin resistance in a dose-dependent manner¹⁷. Smokers should quit immediately. For free quit tools and services, they can visit <https://www.livetobaccofree.hk> or call the Quitline 1833 183.

Refrain from alcohol consumption — Prolonged alcohol consumption may cause chronic inflammation of the pancreas¹⁸, which can impair its ability to secrete insulin and potentially lead to the development of type 2 diabetes. Drinkers are urged to appraise their drinking habits, realise potential health risks associated with alcohol drinking, and appreciate the benefits of stopping alcohol consumption.

The DH will continue to work in close partnership with other government departments and community partners with a view to enhancing people's health literacy, increasing public awareness about the importance of healthy living in diabetes prevention, and building a healthy living environment. To get more information about healthy living, please visit the DH's Change for Health Website at <https://change4health.gov.hk>.

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world diabetes day

14 November

World Diabetes Day was established in 1991 by International Diabetes Federation (IDF) and the World Health Organization in response to growing concerns about the escalating health threat posed by diabetes. Every year, World Diabetes Day campaign focuses on a dedicated theme that runs for one or more years. The theme for World Diabetes Day 2021–23 is **Access to Diabetes Care**.

This year's campaign focuses on the importance of knowing your risk of type 2 diabetes to help prevent or delay the condition as well as having access to the right information and care to ensure timely treatment and management. IDF has created an [online diabetes risk assessment](#) which aims to predict an individual's risk of developing type 2 diabetes within the next ten years. The test takes only a couple of minutes to complete. It is a quick, easy, and confidential way to find out your risk of developing type 2 diabetes.

Diabetes: Know your risk, Know your response

1 in 10 adults worldwide have diabetes. Over 90% have type 2 diabetes. Close to half are not yet diagnosed.

In many cases, type 2 diabetes and its complications can be delayed or prevented by adopting and maintaining healthy habits. Knowing your risk and what to do is important to support prevention, early diagnosis and timely treatment.

Do you know your risk?
Find out at:
worlddiabetesday.org/prevention

#WorldDiabetesDay #KnowYourRisk

world diabetes day
14 November
A campaign led by the International Diabetes Federation

For more information about World Diabetes Day, please visit the thematic website at <https://worlddiabetesday.org>.

Non-Communicable Diseases (NCD) WATCH is dedicated to promote public's awareness of and disseminate health information about non-communicable diseases and related issues, and the importance of their prevention and control. It is also an indication of our commitments in responsive risk communication and to address the growing non-communicable disease threats to the health of our community. The Editorial Board welcomes your views and comments. Please send all comments and/or questions to so_dp3@dh.gov.hk.

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