Non-Communicable Diseases Watch

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衞生防護中心 Centre for Health Protection

衞生署 Department of Health

Diabetes + Obesity = Diabesity

Key Messages

※ Diabetes and obesity are major chronic diseases. On their own, they can lead to various complications (including heart disease, stroke and kidney disease) and increase the risk of certain types of cancer. Co-existence of both diabetes and obesity (i.e. diabesity) would further multiply the risk of complications and increase the individuals' mortality risk 7-fold.

※ The Population Health Survey 2014/15 observed that 8.4% of persons aged 15–84 had diabetes, 29.9% were classified as obese (with a body mass index (BMI) greater or equal to 25.0), and 36.5% had central obesity (with waist circumference greater or equal to 90 cm for male and greater or equal to 80 cm for female). Among persons with obesity defined by BMI, the prevalence of diabetes was 15.8%. Among persons with central obesity, the prevalence of diabetes was 14.0%.

※ Leading a healthy lifestyle reduces the risk of type 2 diabetes and obesity and could guard against diabesity. Members of the public are encouraged to maintain an optimal body weight and waist circumference, eat a balanced diet, be physically active, avoid smoking and refrain from alcohol use.

※ For prevention of diabetes, obesity and diabesity, the Department of Health will continue organising publicity campaigns and working in close partnership with various stakeholders to enhance public awareness about the importance of healthy living and increase people's health literacy.

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Diabetes + Obesity = Diabesity

Diabetes mellitus (called 'diabetes' thereafter) is a chronic disease that 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 produces[1]. Main types of diabetes include type 1, type 2 and gestational diabetes. Obesity is also classified as a chronic disease[2], in which abnormal or excess body fat (adiposity) impairs health[3]. For diabesity, it indicates the co-existence of diabetes and obesity[4]. On their own, diabetes and obesity can lead to various complications (including heart disease, stroke, and kidney disease), increase the risk of certain types of cancer and reduce lifespan. Coexistence of both diabetes and obesity would further multiply the risk of complications and increase the individuals' mortality risk 7-fold[5, 6].

Global Impacts of Diabetes, Obesity and Diabesity

Driven by ageing populations, greater consumption of energy-dense foods and a sedentary lifestyle with insufficient physical activity, the prevalence of diabetes and obesity worldwide have markedly increased over the past few decades[7, 8]. Consequently, diabesity becomes an emerging epidemic[4].

Diabetes

Diabetes is one of the most common chronic diseases and major drivers of mortality worldwide (Box 1). In 2021, the International Diabetes Federation estimated that globally there were nearly 537 million adult aged 20–79 living with diabetes and approximately 6.7 million adults died as a result of diabetes or its complications[8].

Box 1: Key diabetes statistics[8]

- An estimated 537 million adults aged 20–79 years worldwide (10.5% of all adults in this age group) had diabetes in 2021, of which 90% were living with type 2 diabetes.
- Almost one in two (44.7%, or 240 million) adults aged 20–79 years living with diabetes worldwide in 2021 were undiagnosed and unaware of their status.
- Approximately 6.7 million adults aged 20–79 years worldwide were estimated to have died as a result of diabetes or its complications in 2021.
- The number of adults aged 20–79 years having diabetes is projected to increase to 643 million (11.3% of all adults in this age group) by 2030 and 783 million (12.2% of all adults in this age group) by 2045.
- An estimated 541 million adults aged 20–79 years worldwide (10.6% of all adults in this age group) had prediabetes (defined by impaired glucose tolerance which would place them at high risk of type 2 diabetes) in 2021.
- The number of adults aged 20–79 years having prediabetes is projected to increase to 730 million (11.4% of all adults in this age group) by 2045.

Source: IDF Diabetes Atlas 10th Edition.

Obesity

Obesity can manifest as increased body mass index (BMI) or body fat percentage, elevated waist circumference or waist-hip ratio (i.e. central/abdominal obesity)[7]. According to the World Health Organization (WHO)'s definition, a BMI greater or equal to (≥) 30.0 is considered obesity in adults[3]. In 2020, the World Obesity Federation estimated that about 764 million adults were obese (BMI ≥ 30) globally[9]. For some Asian populations, however, the BMI cut point for defining obesity tends to be lower (such as ≥ 25.0)[10].

Obesity is a critical risk factor for the development of type 2 diabetes. In 2019, an estimated 218 million cases of type 2 diabetes and 1.9 million related deaths were attributed to high BMI globally[7]. Using ethnic-specific BMI classifications for obesity, the pooled risk of type 2 diabetes in non-Asians was about 6 times as likely for a BMI ≥ 30.0 compared with normal weight, while the corresponding risk in Asians was nearly 3 times as likely for a BMI ≥ 25.0 compared with normal weight[11]. Independent of the BMI, abdominal fat accumulation would also exacerbate insulin resistance and confer a strong diabetic risk[12, 13]. For each 10 cm increase in waist circumference, studies found a 61% higher risk of type 2 diabetes.[12]

Diabesity

One major mechanism linking diabetes and obesity is the ability of adipose (fat) tissue to induce chronic inflammation of multiple organs (such as the pancreas, liver and muscle), leading to insulin resistance, diminished pancreatic hormone secretion, increased hepatic glucose production, reduced glucose uptake in skeletal muscle and thus resulting in high blood glucose[13-15].

People who have type 2 diabetes are mostly obese[5, 13]. In Europe, obesity was present in 50.9% to 98.6% of adults aged 18 years or above with type 2 diabetes[16]. Among U.S. adults aged 20 or above with a diagnosis of (type 1 and type 2) diabetes, 90.8% of them were obese[17]. In the Australian primary care setting, 53.0% and 76.0% of adults with type 2 diabetes met ethnic-specific BMI- and waist circumference-based criteria for obesity respectively[18]. Furthermore, more than half of middle-aged and older adults with type 2 diabetes in China were overweight or obese (BMI ≥ 24.0)[19].

Local Situation

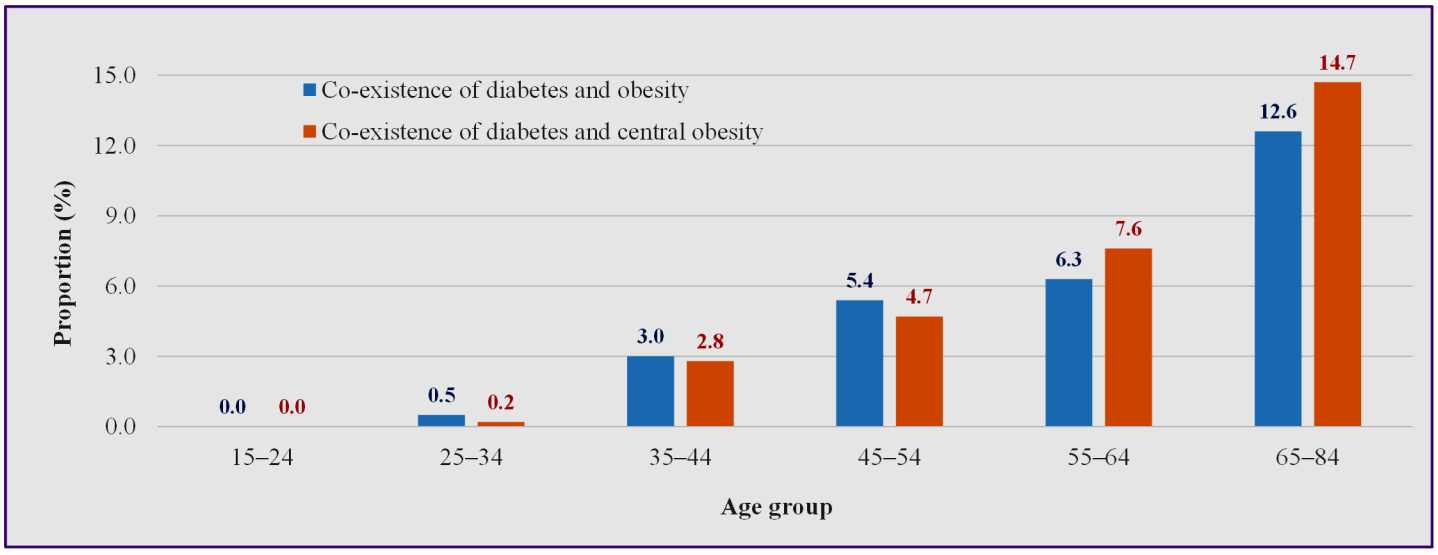
The Population Health Survey 2014/ 15 observed that 8.4% of persons aged 15–84 had diabetes, 29.9% were classified as obese (with BMI ≥ 25.0), and 36.5% had central obesity (with waist circumference ≥ 90 cm for male and ≥ 80 cm for female). Among persons with obesity defined by BMI, the prevalence of diabetes was 15.8%. Among persons with central obesity, the prevalence of diabetes was 14.0%.

By BMI-based criteria for obesity, the overall prevalence of diabesity among persons aged 15–84 was 4.7%. By waist circumference-based criteria for central obesity, the corresponding prevalence was 5.1%. As shown in Figure 1, prevalence of diabesity increased with age from about 3% among persons aged 35–44 to over 12% among persons aged 65–84[20].

Healthy Living to Prevent Diabetes, Obesity and Diabesity

There are strong evidences showing that leading a healthy lifestyle (Box 2) reduces the risk of type 2 diabetes and obesity and could guard against diabesity. Of note, type 2 diabetes is often asymptomatic in early stages and patients can remain undetected for many years until complications develop. As recommended by the Hong Kong Reference Framework for Diabetes Care for Adults in Primary Care Settings, screening for type 2 diabetes in general population should begin at age 45. Based on the presence of diabetes risk factors (including overweight and central obesity) and previous results, screening should be conducted every 1 to 3 years[21].

Figure1: Prevalence of persons aged 15–84 with diabesity by aged group



Source: Population Health Survey 2014/15 .

Obese individuals should also appreciate that moderate weight loss would yield various health benefits. Even 5% weight loss can improve multi-organ (adipose tissue, pancreas, liver and skeletal muscle) insulin sensitivity and help modulate blood glucose levels[22]. For health, Chinese Adults in Hong Kong should aim to maintain a BMI between 18.5 and 22.9. Men should keep their waist circumference below 90 cm, while women should keep theirs below 80 cm.

For prevention of diabetes, obesity and diabesity, the Department of Health will continue organising publicity campaigns and working in close partnership with various stakeholders to enhance public awareness about the importance of healthy living and increase people's health literacy. Let's work together to halt the rise in diabetes, obesity and diabesity!

Box 2: Lifestyle measures that help reduce the risk of type 2 diabetes, obesity and diabesity

Eat a balanced diet — Members of the public should eat according to the "Healthy Eating Food Pyramid"[23]. Apart from limiting intake of fats, salt and sugar, adults are urged to eat at least 5 servings (or 400 grams) of fruit and vegetables per day and choose more whole grains as increasing dietary fiber intake helps control blood glucose level and body weight.

Be physically active — Physical activity can reduce overall adiposity including intra-abdominal fat, improve insulin sensitivity and enhance glucose uptake by the muscles, which in turn helps regulate blood glucose level and reduce the risk of type 2 diabetes. Adults should engage in at least 150–300 minutes of moderate-intensity aerobic physical activity or an equivalent amounts throughout the week[24]. In addition, they should limit the amount of time spent being sedentary and replace sitting time with physical activity of any intensity including light intensity physical activity such as walking[24]. For health, walkers are recommended to gradually increase their step goal to '10 000 Steps a Day' based on an individual's own physical conditions, abilities, pace and circumstances.

Refrain from alcohol use — Chronic alcohol consumption may cause inflamemation of the pancreas and impair its ability to secrete insulin. Alcohol beverages are extremely caloric (with 7 kilocalorie per gram of alcohol, second highest next to fats) that can contribute to unhealthy weight gain. Drinkers are urged to appraise their drinking habits, realise potential health risks and appreciate the benefits of stopping alcohol consumption.

Do not smoke — Smoking is a risk factor for insulin resistance and diabetes. Chemicals in cigarettes can cause inflammation throughout the body, impair pancreatic function and decrease the effectiveness of insulin. Smokers are encouraged to seriously think about the harms of smoking and appreciate how much there is to gain from quitting smoking. They can visit www.livetobaccofree.hk or call the Quitline 1833 183 for free quit tools and services.

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world diabetes day

14 November

World Diabetes Day was established in 1991 by International Diabetes Federation 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. **Access to Diabetes Care** is the theme for World Diabetes Day 2021–23, such as access to healthy diet and a place for physical activities, access to diabetes education programmes and psychological support, access to the equipment and supplies for self-monitoring of blood glucose levels, and access to oral medicines or insulin for regulating blood glucose levels. To know more 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.