

Non-Communicable Diseases Watch

June 2023



Obesity

Key Messages

- ※ Obesity is recognised as a chronic disease with excessive body fat that can impair health. For Chinese adults in Hong Kong Special Administrative Region, a body mass index (BMI) greater than or equal to 25 is considered obesity while a BMI from 23.0 to less than 25 is regarded overweight. Central obesity is defined as having a waist circumference 90 centimeters (cm) or above for men and 80 cm or above for women. Furthermore, a waist-to-hip ratio at 0.90 or above for men and 0.85 for women also signify centrally obese.
- ※ The Population Health Survey 2020-22 conducted by the Department of Health (DH) showed that 32.6% of local persons aged 15–84 were obese and another 22.0% were overweight; 37.8% and 35.4% were classified as centrally obese when defined by waist circumference and waist-to-hip ratio respectively.
- ※ The fundamental cause of obesity is an energy imbalance between calories consumed from food as well as drinks and calories expended in normal body functions along with daily activities. To reduce the risk of obesity, members of the public are encouraged to eat a balanced diet and refrain from alcohol drinking, be physically active and reduce the amount of time spent being sedentary.
- ※ The DH will continue to step up efforts in increasing people's health literacy and enhancing public awareness about the importance of healthy living, as well as working in close partnership with various stakeholders to foster a health-enhancing environment.

Obesity

Being overweight is a condition characterised by excessive body fat, and obesity is recognised as a chronic disease with excessive body fat that can impair health¹. While overweight and obesity can manifest as increased body mass index (BMI, calculated as weight in kilograms (kg) divided by height in meters (m) squared: kg/m^2), central obesity can be indicated by elevated waist circumference or waist-to-hip ratio (calculated as waist circumference divided by hip circumference). Given that increased body fatness is a leading risk factor for non-communicable diseases (NCDs), the World Health Organization (WHO) has set the global target of halting the rise in obesity (and diabetes) by 2030 for the prevention and control of NCDs².

Measurement and Global Prevalence of Obesity

Based on statistical data of excess morbidity associated with increased BMI and excess accumulation of fat inside the abdominal cavity, the recommended BMI cut-offs for defining obesity and waist circumference cut-offs for defining central obesity are different for different ethnic groups^{3, 4}. For adults, the WHO generally defines overweight as having a BMI greater than or equal to 25 and obesity as having a BMI greater than or equal to 30⁵. For some Asian populations, however, the BMI cutoffs for defining obesity tend to be lower (such as greater than or equal to 25)^{3, 6}.

For Chinese adults in Hong Kong Special Administrative Region (SAR), a BMI greater than or equal to 25 is considered obesity while a BMI from 23.0 to less than 25 is regarded overweight⁶. Similarly, the suggested thresholds of waist circumference for defining central obesity are lower for Asian men than Caucasian men^{4, 7}. For most Asian adults including Chinese, central obesity is defined as having a waist circumference 90 centimeters (cm) or above for men (compared to 94 cm for Caucasian men) and 80 cm or above for women⁷. Furthermore, a waist-to-hip ratio at 0.90 or above for men and 0.85 for women also signify centrally obese⁷.

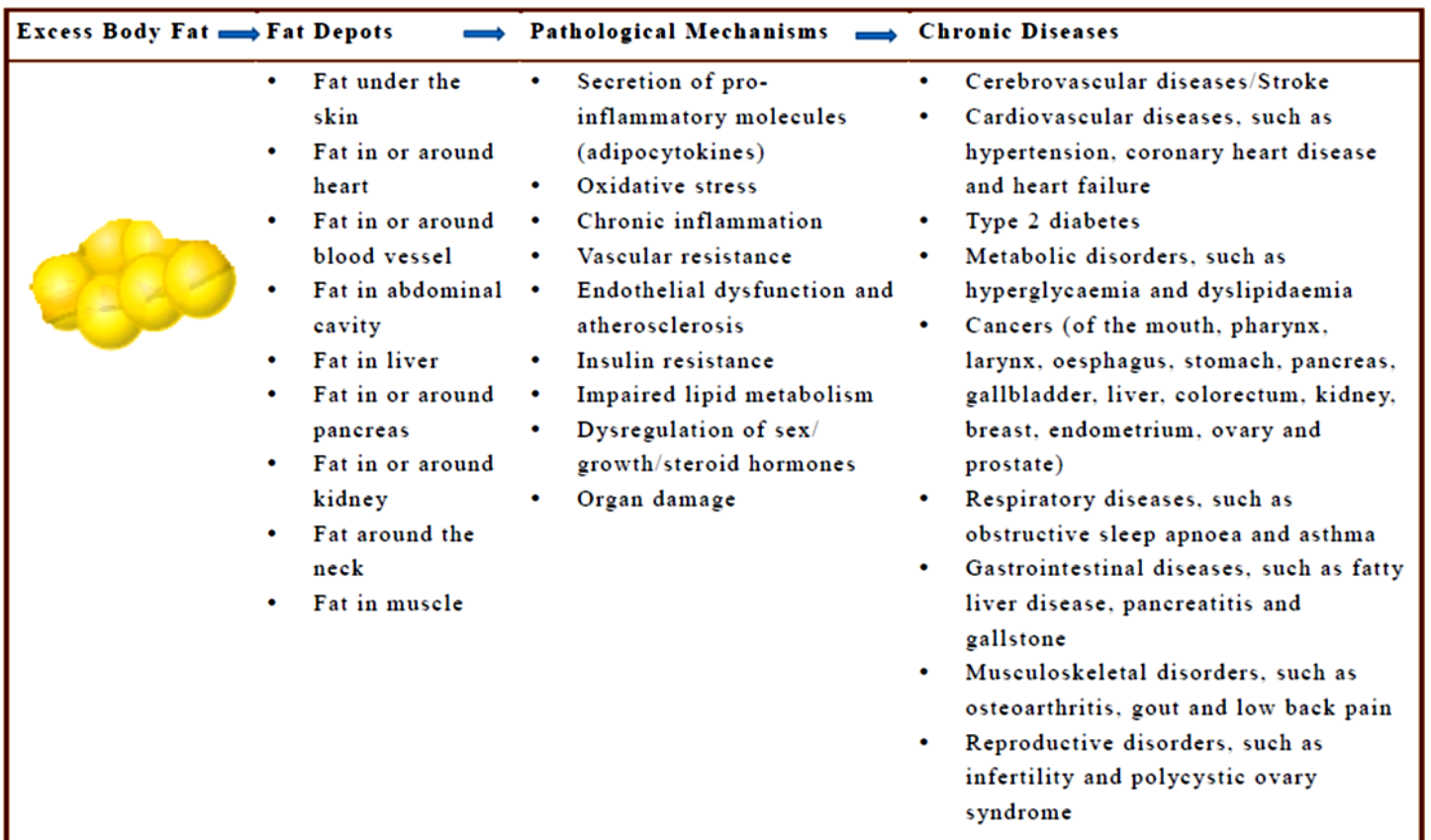
Epidemiological studies show that obesity prevalence and obesity-related disease burdens are increasing worldwide^{5, 8, 9}. Since 1975, worldwide prevalence of obesity has nearly tripled⁵. In 2019, the Global Burden of Disease Study appraised that high BMI (greater than or equal to 25) accounted for 5.02 million deaths worldwide¹⁰. By 2035, it is predicted that 23% of men aged 20 years or over and 27% of women aged 20 years or over will be living with obesity (with a BMI greater than or equal to 30), equating to over 1.5 billion people⁸.

Health Consequences of Obesity

Through certain biological mechanisms (Figure 1), obesity predisposes people to a wide range of chronic diseases (including stroke, cardiovascular diseases, type 2 diabetes and site-specific cancers) that can result in multiple comorbidities^{1, 11, 12}. An observational multi-cohort study found that obese individuals were at 5 times increased risk of developing two obesity-related diseases and more than 12 times for complex multi-morbidity (with four or more comorbid diseases) compared with people with healthy weight¹³. Of note, it is not just the amount of body fat but

its regional distribution also matters. Studies indicate that visceral fat (i.e. the fat accumulated within the abdominal cavity or around internal organs) relative to subcutaneous fat (i.e. the fat deposited under the skin) is more biologically active (such as secreting more proinflammatory molecules) and associated with greater risk of cardiovascular diseases^{11, 12}, type 2 diabetes^{12, 14} and certain cancers (such as colorectal cancer, pancreatic cancer and post-menopausal breast cancer)^{12, 15}.

Figure 1: Biological pathways linking excess body fat with chronic diseases

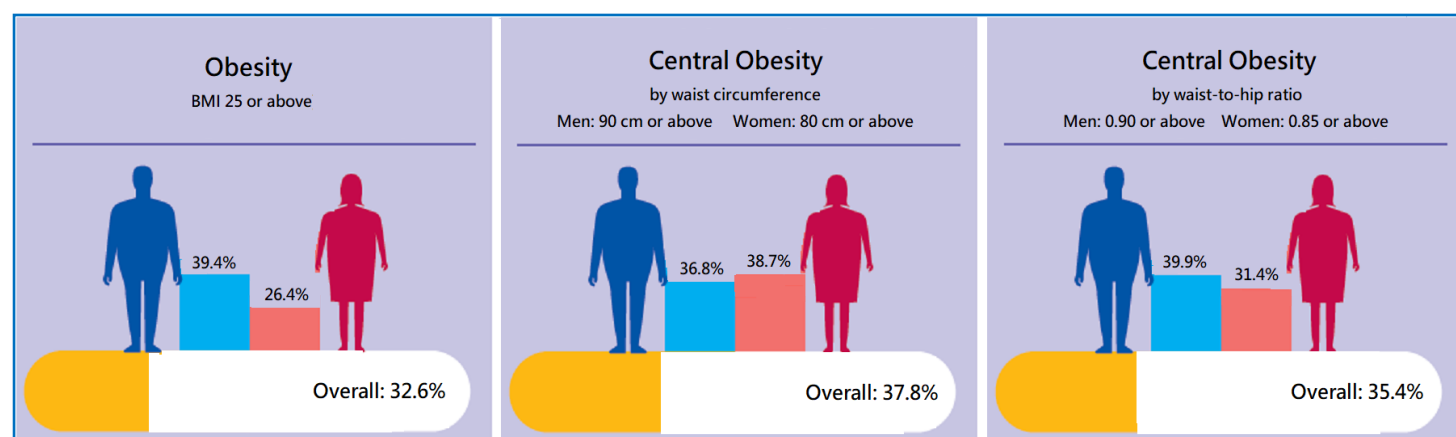


Local Situation

The Department of Health (DH) conducted regular territory-wide surveys to collect pertinent information on the patterns of health status and health-related issues of the general population in Hong Kong Special Administrative Region (SAR), including weight status. Among persons aged 15–84, the Population Health Survey 2020–22¹⁶ showed that 32.6% of them were obese and another 22.0% were overweight; 37.8% and 35.4% were classified as centrally obese when defined by waist circumference and waist-to-hip ratio respectively (Figure 2). Analysed by age group, the proportion of males classi-

fied as obese increased from 25.0% among those aged 15–24 to 47.4% among those aged 45–54, then decreased to 34.7% for those aged 65–84. For females, the prevalence obesity increased with age from 12.3% for those aged 15–24 to 32.1% for those aged 65–84. Regarding central obesity, the prevalences based on both waist circumference (from 15.7% for those aged 15–24 to 49.2% for those aged 65–84) and waist-to-hip ratio (from 9.4% for those aged 15–24 to 60.2% for those aged 65–84) generally increased with age¹⁶.

Figure 2: Prevalence of obesity and central obesity among persons aged 15–84 by gender



Base: All respondents aged 15–84 who had participated in the health examination.
Source: Population Health Survey 2020–22.

Halt the Rise in Obesity

The fundamental cause of obesity is an energy imbalance between calories consumed from food as well as drinks and calories expended in normal body functions along with daily activities. Therefore, leading a healthy lifestyle is the key to reduce the risk of obesity. Members of the public are urged to eat a balanced diet and refrain from

alcohol drinking, be physically active and reduce the amount of time spent being sedentary (Box 1). For more information about healthy living, please visit the Change for Health website of the DH at <https://www.change4health.gov.hk/en/index.html>.

Box 1: Leading a healthy lifestyle to reduce the risk of obesity

Eat a balanced diet — Members of the public should eat according to the “Healthy Eating Food Pyramid”¹⁷. Apart from proactively reducing the consumption of fat, salt and sugar, adults are urged to eat at least 5 servings of fruit and vegetables per day and choose more whole grains as dietary fiber helps in maintaining a healthy weight and lowering the risk of diabetes, heart disease and some types of cancer.

Refrain from alcohol drinking — Alcohol drinking is positively associated with obesity risk, even light alcohol consumption¹⁸. Alcohol beverages are extremely caloric, with 7 kilocalorie per gram of alcohol¹⁹. Apart from adding extra calories to daily diet, alcohol inhibits the breakdown and usage of fats as energy and favours fat accumulation, particularly in the liver and abdominal area²⁰. Drinkers are urged to appraise their drinking habits, realise the potential health risks associated with alcohol drinking, and appreciate the benefits of stopping alcohol consumption.

Be physically active — Members of the public are urged to make physical activity a “must do” habit. For optimal health, the WHO recommends persons aged 18 or above to do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week²¹. To meet the daily or weekly goal, individuals can go for a variety of physical activities and do aerobic exercises in shorter bouts (such as 10, 15 or 20 minutes) a few times a day.

Reduce chair-time — Members of the public should limit the time spent being sedentary and replace sitting time with physical activity of any intensity including light-intensity physical activity (such as light walking)²¹. Individuals are encouraged to incorporate stand-ups and small walks into daily routines, such as standing on public transport; pacing around while talking on the phone; hand-delivering messages to colleagues rather than using the phone or emails if feasible in the workplace; standing or stepping on the spot while watching television; standing up while folding laundry, ironing or performing other chores.

The Hong Kong SAR Government is committed to halt the rise in obesity and intensifying various obesity prevention initiatives. The DH will continue to step up efforts in increasing people's health literacy and enhancing public awareness about the importance of healthy living, as well as working in close partnership with various stakeholders to foster a health-enhancing environment.

References

1. Bovet P, Farpour-Lambert N, Banatvala N, et al. Obesity: Burden, epidemiology and priority interventions. In Banatvala N, Bovet P, (Eds). Non-communicable Diseases: A Compendium. London: Routledge 2023.
2. WHO Discussion Paper on the Development of an Implementation Roadmap 2023-2030 for the WHO Global Action Plan for the Prevention and Control of NCDs 2023-2030 (Version dated 20 August 2021). Geneva: World Health Organization. Accessed 26 April 2023: <https://www.who.int/publications/m/item/implementation-roadmap-2023-2030-for-the-who-global-action-plan-for-the-prevention-and-control-of-ncds-2023-2030>.
3. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *Lancet* 2004;363(9403): 157-163.
4. Lear SA, James PT, Ko GT, et al. Appropriateness of waist circumference and waist-to-hip ratio cutoffs for different ethnic groups. *European Journal of Clinical Nutrition* 2010;64(1):42-61.
5. Obesity and Overweight (9 June 2021). Geneva: World Health Organization. Accessed 26 April 2023: <https://www.who.int/news-room/factsheets/detail/obesity-and-overweight>.
6. World Health Organization Regional Office for the Western Pacific. The Asia-Pacific Perspective: Redefining Obesity and its Treatment. Sydney: Health Communications, 2000. Accessed 26 April 2023: <https://apps.who.int/iris/handle/10665/206936>.
7. Waist Circumference and Waist-Hip Ratio: Report of a WHO Expert Consultation, Geneva, 8-11 December 2008. Geneva: World Health Organization, 2011. Accessed 26 April 2023: <https://www.who.int/publications/i/item/9789241501491>.
8. World Obesity Atlas 2023. London: World Obesity Federation, March 2023.
9. Dai H, Alsalhe TA, Chalghaf N, et al. The global burden of disease attributable to high body mass index in 195 countries and territories, 1990-2017: An analysis of the Global Burden of Disease Study. *PLoS Medicine* 2020;17(7):e1003198.
10. Global Health Metrics: High body-mass index -- Level 2 risk. Accessed 26 April 2023: https://www.healthdata.org/sites/default/files/disease_and_injury/gbd_2019/topic_pdf/risk/108.pdf.
11. Lim S, Meigs JB. Links between ectopic fat and vascular disease in humans. *Arteriosclerosis, Thrombosis, and Vascular Biology* 2014;34(9):1820-1826.
12. Tchernof A, Després JP. Pathophysiology of human visceral obesity: an update. *Physiological Reviews* 2013;93(1):359-404.
13. Kivimäki M, Strandberg T, Pentti J, et al. Body-mass index and risk of obesity-related complex multimorbidity: an observational multicohort study. *Lancet Diabetes & Endocrinology* 2022; 10(4):253-263.
14. Jayedi A, Soltani S, Motlagh SZ, et al. Anthropometric and adiposity indicators and risk of type 2 diabetes: systematic review and dose-response meta-analysis of cohort studies. *British Medical Journal* 2022;376:e067516.
15. Silveira EA, Kliemann N, Noll M, et al. Visceral obesity and incident cancer and cardiovascular disease: An integrative review of the epidemiological evidence. *Obesity Reviews* 2021;22(1):e13088.
16. Population Health Survey 2020-22. Hong Kong SAR: Department of Health.
17. Healthy Eating Food Pyramid in Hong Kong. Hong Kong SAR: Department of Health. Accessed 26 April 2023: https://www.change4health.gov.hk/en/healthy_diet/guidelines/food_pyramid/index.html.
18. Park EJ, Shin HJ, Kim SS, et al. The effect of alcohol drinking on metabolic syndrome and obesity in Koreans: Big data analysis. *International Journal of Environmental Research and Public Health* 2022;19(9):4949.
19. Traversy G, Chaput JP. Alcohol consumption and obesity: An update. *Current Obesity Reports* 2015;4(1):122-130.
20. Jeon S, Carr R. Alcohol effects on hepatic lipid metabolism. *Journal of Lipid Research* 2020;61(4):470-479.
21. WHO Guidelines on Physical Activity and Sedentary Behaviour. Geneva: World Health Organization, 2020.

Announcement in the Public Interests: “Alcohol and Calories”

To raise public awareness on the potential effect of alcohol drinking on increasing body weight and facilitate members of the public to make an informed choice for better health, the Department of Health (DH) has produced an Announcement in the Public Interests (API) “**Alcohol and Calories**” which can be accessible at https://youtu.be/BhzQzzQ_K88.



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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