

Excess Body Fat and Colorectal Cancer Risk

Key Messages

- ※ Being obese or overweight is one of the important risk factors for many types of cancer, including colorectal cancer that develops in the colon or rectum.
- ※ The Population Health Survey 2020-22 observed that 32.6% of local non-institutionalised persons aged 15–84 were obese and another 22.0% were overweight. By waist measurement, 37.8% of persons aged 15–84 were classified as centrally obese.
- ※ In 2021, colorectal cancer was the second commonest cancer locally with 5 899 new cases. As the second most common cause of cancer death, there were 2 270 registered deaths attributed to colorectal cancer in 2022.
- ※ To reduce the risk of obesity as well as colorectal cancer, members of the public are urged to lead a healthy lifestyle. For asymptomatic individuals aged 50–75 at average risk of developing colorectal cancer (e.g. those without hereditary bowel diseases), they should undergo annual or biennial faecal occult blood test; or sigmoidoscopy every 5 years; or colonoscopy every 10 years.
- ※ To reduce the burden of colorectal cancer, the Hong Kong Special Administrative Region Government's Colorectal Cancer Screening Programme subsidises asymptomatic Hong Kong residents aged between 50 and 75 to receive screening service in private sector for prevention and early detection of colorectal cancer. Eligible persons are urged to join the programme. For further details, please visit the thematic website at www.colonscreen.gov.hk.

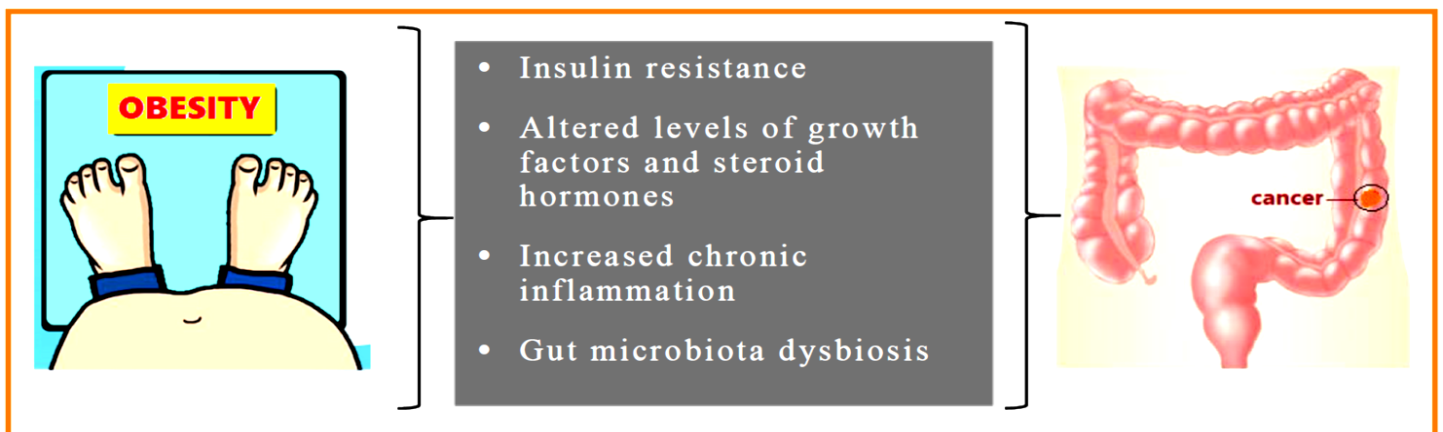
Excess Body Fat and Colorectal Cancer Risk

The World Health Organization (WHO) defines obesity and overweight as excessive fat accumulation that may impair health¹. Body mass index (BMI) is a common surrogate marker of adiposity calculated as body weight (in kg) divided by the square of height (in m): kg/m^2 . For local Chinese adults, a BMI greater than or equal to 25.0 is classified as obesity while a BMI from 23.0 to less than 25.0 is considered overweight². Central obesity refers to excessive accumulation of fat inside the abdominal cavity. Waist circumference is the most common and simple anthropometric measurement to assess central obesity. For most Asian adults including Chinese, a waist circumference of 90 centimeters (cm) or above for men and 80 cm or above for women would signify central obesity². Excess body fat puts people at greater risk of developing type 2 diabetes, cardiovascular diseases (mainly heart disease and stroke) and musculoskeletal disorders (especially osteoarthritis)¹. Being obese or overweight is also one of the important risk factors for many types of cancer, including colorectal cancer that develops in the colon or rectum³.

Plausible Biological Mechanisms of Excess Body Fat on Increased Colorectal Cancer Risk

As shown in Figure 1, excess fat accumulation increases the risk of colorectal cancer via a number of plausible biological mechanisms.

Figure 1: Plausible biomedical mechanisms of obesity on increased colorectal cancer risk



Obesity triggers insulin resistance and subsequent hyperinsulinemia. Higher levels of circulating serum insulin have been associated with increased cancer risk and progression in epidemiological studies^{4, 5}. Adipose tissue secretes pro-inflammatory growth factors which affect the levels of certain hormones, giving rise to chronic inflammation that facilitates cancer development^{5, 6}. Obesity also disturbs the gut microbiota composition (increased harmful microbiota and metabolites and/or decreased beneficial microbiota and metabolites), which promotes abnormal cell growth and proliferation in the large intestine^{6, 7}.

Epidemiological Evidence of Obesity and Colorectal Cancer Risk

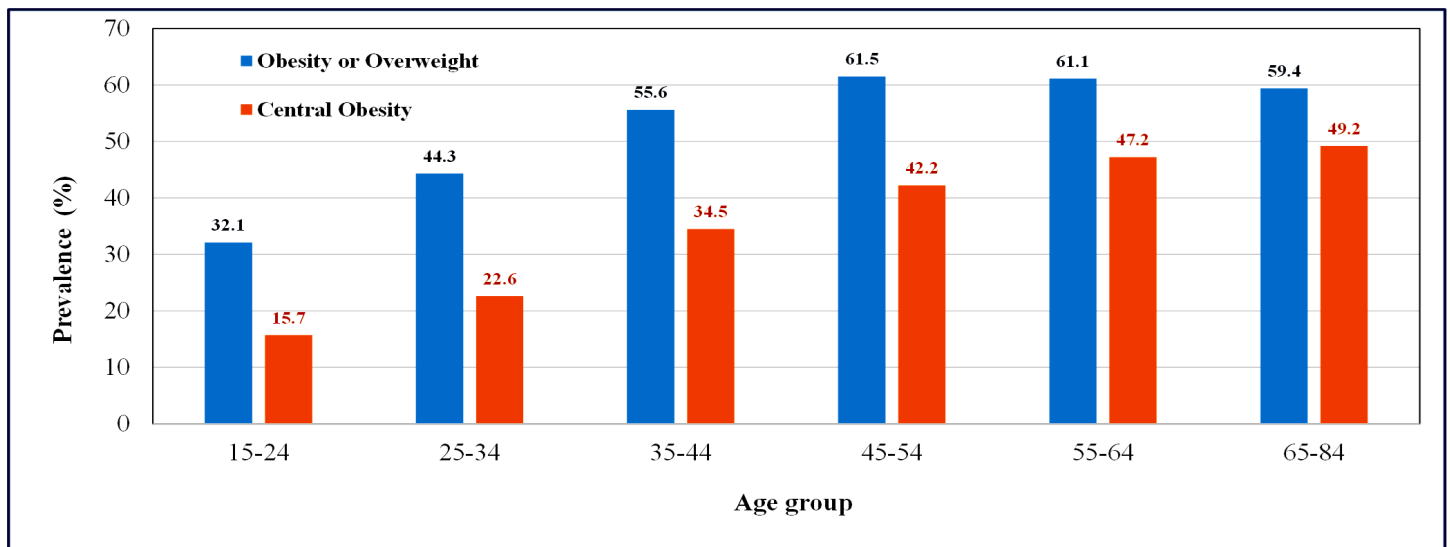
Multiple epidemiological studies have also implicated an association between obesity and an increased risk of colorectal cancer. Compared with individuals with normal weight, obese individuals have a 31% increased risk of colorectal cancer⁸. Central obesity increases colorectal cancer risk by 42% (colon cancer by 53%; rectal cancer by 20%)⁹.

Early-onset (or young-onset) colorectal cancer generally refers to colorectal cancer occurring in people before the age of 50 years^{10, 11}. While genetic factors (such as a family history of colorectal cancer, familial adenomatous polyposis or Lynch syndrome) may be the underpinning etiology in early-onset colorectal cancers, only approximately 20% of early-onset colorectal cancers are attributable to hereditary causes^{10, 12}. This implies that there are other possible risk factors, including obesity and other lifestyle factors, that may be associated with early-onset colorectal cancer development¹¹⁻¹⁴. To investigate the association between changes in body weight and the risk of early-onset colorectal cancer, a population-based cohort study in Korean followed-up over 3.3 million participants aged 20–49 years until 2019 and censored when they became 50 years old. Compared with non-obese persons, the study showed that those with persistent obesity (with a BMI greater than or equal to 25.0) and persistent central obesity (with a waist circumference 90 cm or above for men and 85 cm or above for women) had 9% and 18% increased risk of early-onset colorectal cancer, respectively. The corresponding risk increased to 19% if both conditions were present¹⁵. This study highlighted the importance of maintaining a healthy weight, beginning in early adulthood for the prevention of early-onset colorectal cancer.

Prevalence of Obesity or Overweight and Burden of Colorectal Cancer among Local Population

The Population Health Survey 2020-22 conducted by the Department of Health (DH)¹⁶ observed that 32.6% (39.4% for males; 26.4% for females) of local non-institutionalised persons aged 15–84 were obese and another 22.0% (24.6% for males; 19.7% for females) were overweight. Stratification by age group showed that the prevalence of obesity or overweight (with a BMI greater than or equal to 23.0) peaked at 61.5% among persons aged 45–54 (Figure 2). By waist measurement, 37.8% (36.8% for males; 38.7% for females) of persons aged 15–84 were classified as centrally obese. The prevalence of central obesity increased with age from 15.7% among persons aged 15–24 to 49.2% among persons aged 65–84¹⁶.

Figure 2: Prevalence of obesity or overweight and central obesity among persons aged 15–84 by age group



Source: Population Health 2020-22.

The local burden of colorectal cancer has been increasing over the past 10 years. Between 2012 and 2021, the number (crude incidence rate) of newly diagnosed colorectal cancer cases increased from 4 563 (63.8 per 100 000 population) to 5 899 (79.6 per 100 000 population). In 2021, colorectal cancer was the second commonest cancer and accounted for 15.3% of all new cancer cases. While over 90% of the newly diagnosed colorectal cancer cases in 2021 occurred in people aged 50 years and above, the median age at diagnosis was of 68 years for both males and females¹⁷.

By stage distribution of colorectal cancer, over half (51.3%) of the cases belonged to an advanced stage when diagnosed, which means that the cancer had spread to nearby lymph nodes (Stage III: 26.9%) or had further metastasized to other parts of the body (Stage IV: 24.4%)¹⁷. As the second most common cause of cancer death, there were 2 270 registered deaths attributed to colorectal cancer in 2022 with crude death rates of 38.5 for males and 24.5 for females per 100 000 population of respective sex¹⁸.

Fighting Against Excess Body Fat Accumulation and Colorectal Cancer

The fundamental cause of obesity or overweight is more calories are consumed from food and drinks than expended in daily activities. Therefore, making healthy food choices and staying physically active are the key to reduce the risk of obesity or overweight. Apart from excess body fat accumulation, significant behavioral factors associated with increased risk of colorectal cancer include physical inactivity and prolonged sitting, high consumption of red or processed meat, low fibre intake (such as insufficient consumption of fruit and non-starchy vegetables), alcohol consumption and smoking^{11, 19, 20}. To reduce the risk of colorectal cancer, members of the public are urged to lead a healthy lifestyle. Studies showed that adopting a healthy lifestyle could reduce the risk of colorectal cancer by as much as 48% (46% of colon cancer; 49% of rectal cancer)²¹. Core primary preventive measures for colorectal cancer include²²:

- ◆ Maintaining optimal body weight (with a BMI between 18.5 and 22.9) and waist circumference (below 90 cm for men and below 80 cm for women);
- ◆ Eating a balanced diet with at least 5 servings of fruit and vegetables daily;
- ◆ Limit consumption of red and processed meat;
- ◆ Staying physically active with at least 150–300 minutes of moderate-intensity aerobic activities (such as brisk walking) or an equivalent amount of physical activity throughout the week;
- ◆ Avoid alcohol use; and
- ◆ Avoid smoking.

The Importance of Regular Colorectal Cancer Screening

Screening for colorectal cancer can bring health benefit through early detection and treatment. To illustrate, local data show that the 5-year survival rate for Stage I colorectal cancer is 95.7%, the corresponding survival rates would decrease progressively to 87.3% for Stage II, 68.7% for Stage III, and just 9.3% for Stage IV²³.

Based on the latest scientific evidence, overseas screening guidelines and practice, the Special Administrative Region Government (SAR) Government's Cancer Expert Working Group on Cancer Prevention and Screening provides recommendations on colorectal cancer screening applicable to local situation. For asymptomatic individuals aged 50–75 at average risk of developing colorectal cancer (e.g. those without hereditary bowel diseases), they should undergo:

- ◇ annual or biennial faecal occult blood test; or
- ◇ sigmoidoscopy every 5 years; or
- ◇ colonoscopy every 10 years²².

To reduce the burden of colorectal cancer, the SAR Government's Colorectal Cancer Screening Programme (CRCSP) subsidises asymptomatic Hong Kong residents aged between 50 and 75 to receive screening service in private sector for prevention and early detection of colorectal cancer. Participants will receive faecal immunochemical test (FIT) that can detect small amounts of blood in stool invisible to the naked eye. If the FIT result is positive, participants would be referred to enrolled colonoscopy specialists for colonoscopy. If polyps are found and considered safe to remove during colonoscopy, they will be removed and therefore prevented from developing into cancer. However, the Population Health Survey 2020-22 observed that less than half (40%) of Hong Kong residents aged 50–75 had ever received faecal occult blood test or colonoscopy¹⁶.

Eligible persons are urged to join the CRCSP and have screening for prevention of colorectal cancer. Please visit the thematic website at www.colonscreen.gov.hk or call the dedicated hotline (3565 6288) during office hours for more information. The SAR Government is committed to reducing the impacts of obesity and cancer among local population. The DH will continue to promote healthy living for the prevention of obesity and colorectal cancer as well as work with various sectors of the community to promote the uptake of the CRCSP.



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Colorectal Cancer Awareness Month is observed in March to highlight the importance of screening for colorectal cancer, as well as to promote healthy lifestyle habits that can decrease a person's risk of developing cancer (website: www.iarc.who.int).

Colorectal cancer is the third most common cancer type worldwide, with almost 2 million cases diagnosed in 2020. As the second most common cause of cancer death globally, there were almost 1 million deaths attributed to colorectal cancer per year. Nevertheless, incidence and mortality of colorectal cancer can be reduced by effective prevention and screening measures.

The Department of Health takes the opportunity of the upcoming Colorectal Cancer Awareness Month to strengthen the awareness of the public on colorectal cancer and its preventive measures. Apart from leading a healthy lifestyle, eligible persons aged between 50 and 75 are highly encouraged to participate in the Government subsidised Colorectal Cancer Screening Programme. For further details, please visit the thematic website at www.colonscreen.gov.hk.

***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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