Obesity and Cancer Risk

What is obesity?

Obesity is a condition in which a person has an unhealthy amount and/or distribution of body fat.

To measure obesity, researchers commonly use a scale known as the body mass index (BMI). BMI is calculated by dividing a person's weight (in kilograms) by their height (in meters) squared (commonly expressed as kg/m2). BMI provides a more accurate measure of obesity than weight alone, and for most people it is a fairly good (although indirect) indicator of body fatness.

What is known about the relationship between obesity and cancer?

Nearly all of the evidence linking obesity to cancer risk comes from large cohort studies, a type of observational study. However, data from observational studies can be difficult to interpret and cannot definitively establish that obesity causes cancer. That is because obese or overweight people may differ from lean people in ways other than their body fat, and it is possible that these other differences—rather than their body fat—are what explains their different cancer risk.

Despite the limitations of the study designs, there is consistent evidence that higher amounts of body fat are associated with increased risks of a number of cancers (6), including:

- Endometrial cancer: Obese and overweight women are two to about four times as likely as normal-weight women to develop endometrial cancer (cancer of the lining of the uterus), and extremely obese women are about seven times as likely to develop the more common of the two main types of this cancer (7). The risk of endometrial cancer increases with increasing weight gain in adulthood, particularly among women who have never used menopausal hormone therapy (8).
- Esophageal adenocarcinoma: People who are overweight or obese are about twice as likely as normal-weight people to develop a type of esophageal cancer called esophageal adenocarcinoma, and people who are extremely obese are more than four times as likely (9).
- Gastric cardia cancer: People who are obese are nearly twice as likely as normal-weight people to develop cancer in the upper part of the stomach, that is, the part that is closest to the esophagus (10).
- Liver cancer: People who are overweight or obese are up to twice as likely as normal-weight people to develop liver cancer. The association between overweight/obesity and liver cancer is stronger in men than women (11, 12).
- Kidney cancer: People who are overweight or obese are nearly twice as likely as normal-weight people to develop renal cell cancer, the most common form of kidney cancer (13). The association of renal cell cancer with obesity is independent of its association with high blood pressure, a known risk factor for kidney cancer (14).
- Multiple myeloma: Compared with normal-weight individuals, overweight and obese individuals have a slight (10% to 20%) increase in the risk of developing multiple myeloma (15).
- Meningioma: The risk of this slow-growing brain tumor that arises in the membranes surrounding the brain and the spinal cord is increased by about 50% in people who are obese and about 20% in people who are overweight (16).
- Pancreatic cancer: People who are overweight or obese are about 1.5 times as likely to develop pancreatic cancer as normal-weight people (17).

• Colorectal cancer: People who are obese are slightly (about 30%) more likely to develop colorectal cancer than normal-weight people (18).
• Gallbladder cancer: Compared with normal-weight people, people who are overweight have a slight (about 20%) increase in risk of gallbladder cancer, and people who are obese have a 60% increase in risk of gallbladder cancer (19, 20). The risk increase is greater in women than men.
• Breast cancer: Many studies have shown that, in postmenopausal women, a higher BMI is associated with a modest increase in risk of breast cancer. For example, a 5-unit increase in BMI is associated with a 12% increase in risk (21). Among postmenopausal women, those who are obese have a 20% to 40% increase in risk of developing breast cancer compared with normal-weight women (22). The higher risks are seen mainly in women who have never used menopausal hormone therapy and for tumors that express hormone receptors. Obesity is also a risk factor for breast cancer in men (23).
• Ovarian cancer: Higher BMI is associated with a slight increase in the risk of ovarian cancer, particularly in women who have never used menopausal hormone therapy (24).
• Thyroid cancer: Higher BMI (specifically, a 5-unit increase in BMI) is associated with a slight (10%) increase in the risk of thyroid cancer (25).

Does avoiding weight gain or losing weight decrease the risk of cancer?

Most of the data about whether avoiding weight gain or losing weight reduces cancer risk comes from cohort and case-control studies. These studies can be difficult to interpret because people who lose weight or avoid weight gain may differ in other ways from people who do not.

Nevertheless, when the evidence from multiple observational studies is consistent, the association is more likely to be real. Many observational studies have provided consistent evidence that people who have lower weight gain during adulthood have lower risks of colon cancer, kidney cancer, and—for postmenopausal women—breast, endometrial, and ovarian cancers (34).

Stronger evidence for a relationship between weight loss and cancer risk comes from studies of people who have undergone bariatric surgery (surgery performed on the stomach or intestines to induce weight loss). Obese people who have bariatric surgery appear to have lower risks of obesity-related cancers than obese people who do not have bariatric surgery (35).

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Nevertheless, the follow-up study of weight and breast cancer in the Women's Health Initiative (36) found that for women who were already overweight or obese at baseline, weight change (either gain or loss) was not associated with breast cancer risk during follow-up. However, for women who were of normal weight at baseline, gaining more than 5% of body weight was associated with increased breast cancer risk.

For the expanded article and references, please see the online version of this article.

Source: National Cancer Insititute.

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