



Body weight and cancer risk

Excess body weight: a major health issue in America

For many people, the modern American lifestyle has led them to eat more unhealthy foods, eat bigger food portions, and be less physically active. As a result, the number of Americans who are overweight or obese (very overweight) has been rising. About 1 out of 3 American adults is now obese, and another 1 out of 3 is overweight.

Being overweight or obese can have far-reaching health consequences. According to the Centers for Disease Control and Prevention, excess body weight increases the risk for:

- Heart disease
- Type 2 diabetes
- High blood pressure
- High cholesterol levels
- Stroke
- Liver and gallbladder disease
- Sleep apnea and respiratory problems
- Arthritis
- Abnormal menstrual periods and infertility in women
- Certain cancers

Overweight and obese people, on average, do not live as long as people who maintain a healthy body weight throughout their lives.

The increasing trend in excess body weight extends to children as well. Among children aged 6 to 19 years, about 1 in 3 (34%) is now overweight. About half of these children (17%) are actually obese. Some of the same health problems affecting overweight adults can also affect children. These include heart disease risk factors such as high cholesterol levels and high blood pressure, as well as asthma, type 2 diabetes, and liver disease.

Obese children and teens are also more likely to become obese as adults. About half of children who are overweight will remain overweight in adulthood, and about 70% of those who are overweight as teens will be overweight as adults.

Normal weight ranges: the body mass index (BMI)

The body mass index (BMI) is a way to help you figure out if you are at a healthy weight for your height. BMI is a number based on your weight and height. In general, the higher the number, the more body fat a person has. BMI is often used as a screening tool to decide if your weight might be putting you at risk for health problems such as heart disease, diabetes, and cancer.

BMI is used to broadly define different weight groups in adults 20 years old or older. The same groups apply to both men and women.

- Underweight: BMI is less than 18.5
- Normal weight: BMI is 18.5 to 24.9
- Overweight: BMI is 25 to 29.9
- Obese: BMI is 30 or more

What is my BMI?

There are several ways to find your BMI.

Charts and online calculators: Charts and tables, such as the one below, are one easy way to determine your BMI. There are also several online BMI calculators, such as the one on the American Cancer Society Web site (www.cancer.org).

To use the table below, find your height on the left side of the chart, then go across to the weight that is closest to yours. At the top of the chart you can see your BMI, and at the bottom of the chart you can see which category you fit into - healthy weight, overweight, or obese:

TABLE 2 Adult BMI Chart

BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Height	Weight in Pounds																
4'10"	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167
4'11"	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173
5'	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179
5'1"	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185
5'2"	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191
5'3"	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197
5'4"	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204
5'5"	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210
5'6"	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216
5'7"	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223
5'8"	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230
5'9"	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236
5'10"	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250
6'	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258
6'1"	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265
6'2"	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272
6'3"	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279
	Healthy Weight						Overweight					Obese					

Source: US Department of Health and Human Services, National Institutes of Health, National Health, Lung, and Blood Institute. The Clinical Guidelines on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults: Evidence Report. September 1998 [NIH pub. No. 98-4083].

This table shows us that a woman who is 5 ft. 4 in. tall is considered overweight (BMI is 25 to 29) if she weighs between 145 and 169 pounds. She is considered obese (BMI is 30 or more) if she weighs 174 pounds or more.

A man who is 5 ft. 10 in. tall is considered overweight (BMI is 25 to 29) if he weighs between 174 and 202 pounds, and is obese (BMI is 30 or more) if he weighs 209 pounds or more.

Calculating my BMI: You can also calculate your own BMI. The actual formula to determine BMI uses metric system measurements: weight in kilograms (kg) divided by height in meters, squared (m²).

When using pounds and inches, the formula needs to be altered slightly. Multiply your weight in pounds by 703. Divide that by your height in inches, squared:

$$\text{BMI} = \frac{(\text{your weight in pounds}) \times 703}{(\text{your height in inches}) \times (\text{your height in inches})}$$

For example, if you weigh 120 pounds and are 5 ft. 3 in. (63 in.) tall:

$$\text{BMI} = \frac{120 \times 703}{63 \times 63} = \frac{84,360}{3,969} = 21.3$$

This is well within the healthy weight range.

Are there any problems with using the BMI?

Doctors and nurses often use the BMI to help find out if a person may have a weight problem. For most people, the BMI gives a good estimate of total body fat, but it doesn't work well for everybody. For example, bodybuilders or other muscular people may have a high BMI because of their muscle mass, even though they're not necessarily overweight. The BMI can also underestimate body fat in people who have lost muscle mass, such as some older people.

For most adults, the BMI is a good way to get an idea of healthy weight ranges. But it is not always the final word in deciding if a person is overweight or obese. There are other things to think about when judging how much someone should weigh. A person with a high BMI should be evaluated by a health care provider, who might use other factors such as skinfold thickness (a measure of body fat), waist size, evaluations of diet and family health problems, and other tests to find out if a person's weight might pose a health risk.

BMI in children and teens

The BMI can be calculated the same way for children and teens as it is for adults, but the numbers don't have the same meaning. This is because the normal amount of body fat changes with age in these groups, and is different between boys and girls. Therefore, the BMI levels that define being normal weight or overweight are based on the child's age and gender.

To account for this, the US Centers for Disease Control and Prevention (CDC) has developed age- and gender-specific growth charts. These charts are used to translate a BMI number into a percentile based on a child's sex and age. The percentiles are then used to determine the different weight groups:

- Underweight: less than the 5th percentile
- Normal weight: 5th percentile to less than the 85th percentile
- Overweight: 85th percentile to less than the 95th percentile
- Obese: 95th percentile or higher

An easy way to determine your child's BMI percentile is to use the CDC's online BMI percentile calculator at <http://apps.nccd.cdc.gov/dnpabmi>.

Even at a young age, being overweight or obese can cause health problems. It may directly increase the risk for certain health problems later in life, including some kinds of cancer. It also increases the chances of being overweight or obese as an adult, as well as the risk of health problems that can come with this.

Does body weight affect cancer risk?

An estimated 1 out of every 3 cancers in the United States is linked to excess body weight, poor nutrition, or physical inactivity. While these factors are all related and may all contribute to cancer risk, body weight seems to have the strongest evidence linking it to cancer. Excess body weight contributes to 14% to 20% of all cancer-related deaths.

Being overweight or obese is clearly linked with an increased risk of many cancers, including cancer of the breast (in women past menopause), colon, endometrium (uterus), esophagus, and kidney.

Obesity has also been linked with an increased risk of cancers of the pancreas, gallbladder, thyroid, ovary, and cervix, as well as multiple myeloma, Hodgkin lymphoma, and aggressive prostate cancer.

But the links between body weight and cancer are complex and are not yet fully understood. For example, studies have found that excess weight is linked with an increased risk of breast cancer in women after menopause, but not before menopause. The reasons for this are not clear.

The timing of weight gain might also affect cancer risk. Being overweight during childhood and young adulthood might be more of a risk factor than gaining weight later in life for some cancers. For example, some research suggests that women who are overweight as teenagers (but not those who gain weight as adults) may be at higher risk for developing ovarian cancer before menopause.

Clearly, more research is needed to better define the links between body weight and cancer.

How might body weight affect cancer risk?

Excess body weight may affect cancer risk through a number of mechanisms, some of which may be specific to particular cancer types. Excess body fat may affect:

- How the body processes fats and sugars
- Immune system function
- Levels of certain hormones, such as insulin and estrogen
- Factors that regulate cell division, such as insulin-like growth factor-1 (IGF-1)
- Proteins that influence how the body uses certain hormones, such as sex hormone-binding globulin

Does losing weight reduce cancer risk?

There has been limited research on how losing weight might lower the risk of developing cancer. Still, there is growing evidence that weight loss may reduce the risk of certain cancers, such as breast cancer and more aggressive forms of prostate cancer.

Some changes in the body that occur as a result of weight loss suggest it may reduce cancer risk. For example, overweight or obese people who intentionally lose weight have reduced levels of certain hormones that are related to cancer risk, such as insulin, estrogens, and androgens.

Although what we know about the link between weight loss and cancer risk is incomplete, people who are overweight or obese should be encouraged and supported in their efforts to lose weight. Aside from possibly reducing cancer risk, losing weight can have many other health benefits, such as lowering the risk of other chronic diseases like heart disease and diabetes.

What does the American Cancer Society recommend?

To help lower your risk of cancer

As part of its guidelines on nutrition and physical activity for cancer prevention, the American Cancer Society recommends that people try to achieve and maintain a healthy weight throughout life. The best way to stay at a healthy body weight is to balance how much you eat with how active you are. If you are overweight, the best way to get to a healthy body weight is to limit the calories you take in, and burn more calories through physical activity.

The healthiest way to reduce calorie intake is to limit your intake of added sugars, saturated and trans fats, and alcohol, which all contain many calories but few or no essential nutrients. Calorie intake can be reduced by decreasing the size of food portions and limiting your intake of foods and beverages that are high in calories, fat, and/or refined sugars, and which provide few nutrients (such as fried foods, cookies, cakes, candy, ice cream, and soft drinks). Such foods and beverages should be replaced with choices like vegetables and fruits, whole grains, beans, and lower-calorie beverages.

The American Cancer Society recommends that adults get at least 30 minutes (preferably 45 to 60 minutes) of moderate to vigorous physical activity, above usual activities, on 5 or more days of the week. Children and adolescents should get at least 60 minutes per day of moderate to vigorous physical activity at least 5 days per week. Up to 60 minutes of moderate to vigorous intensity physical activity per day may be needed to prevent weight gain, but as much as 60 to 90 minutes of moderate intensity physical activity per day may help to sustain weight loss for previously overweight people.

In addition to helping you get to or maintain a healthy weight, both eating a healthy diet and increasing your physical activity may have their own health benefits, including lowering your risk of cancer.

For people already diagnosed with cancer

Increasing evidence suggests that being overweight raises the risk of cancer recurrence and may lower the chances of survival for many cancers. Both during and after cancer

treatment, people should strive to achieve and maintain a healthy weight whenever possible.

Some cancer survivors can be malnourished and underweight at diagnosis or as a result of cancer treatment. These people may need help gaining or maintaining their weight. But many people are overweight or obese at the time of a cancer diagnosis. These people may want to talk with their doctor about trying to lose modest amounts of weight during treatment, as long as it is monitored closely and does not interfere with treatment. Safe weight loss should be achieved through a well-balanced diet and increased physical activity tailored to the specific needs of the person being treated.

After cancer treatment, weight should be managed with a combination of dietary and physical activity strategies. One way to help achieve healthy weight control is by reducing calories in the diet. This can be done by eating lower-calorie foods (such as vegetables, fruits, and soups, and cooked whole grains), limiting intake of fat and sugars, and limiting portion sizes of high-calorie foods. Increased physical activity is also important in promoting weight loss, and in keeping weight off in patients who are overweight or obese. Even if an ideal weight is not achieved, it is likely that any weight loss will still have significant health benefits.

Additional resources

More information from your American Cancer Society

The following related information may also be helpful to you. These materials may be ordered from our toll-free number, 1-800-227-2345.

American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention (also available in Spanish)

Low-Fat Foods

Nutrition and Physical Activity During and After Cancer Treatment: Answers to Common Questions

National organizations and Web sites*

Along with the American Cancer Society, other sources of information and support include:

American Dietetic Association (ADA)

Toll-free number: 1-800-877-1600

Web site: www.eatright.org

American Institute for Cancer Research (AICR)

Toll-free number: 1-800-843-8114

Web site: www.aicr.org

Centers for Disease Control and Prevention (CDC)

Toll-free number: 1-800-232-4636 (1-800-CDC-INFO)

Home page: www.cdc.gov

Overweight and obesity page: www.cdc.gov/obesity/

Office of the Surgeon General

Home page: www.surgeongeneral.gov

Call to Action on Overweight and Obesity: www.surgeongeneral.gov/topics/obesity

**Inclusion on this list does not imply endorsement by the American Cancer Society.*

No matter who you are, we can help. Contact us anytime, day or night, for cancer-related information and support. Call us at 1-800-227-2345 or visit www.cancer.org.

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1 - 800 - ACS-2345 or www.cancer.org