



# Obesity

Obesity is a multi-factorial chronic disease that occurs when a person has an excessive amount of body fat (adipose tissue) that might put him or her at risk of increased health complications. Over the past few decades, obesity has become common in developed nations, including Canada. Several health organizations, including the Canadian Medical Association and the World Health Organization, classify obesity as a chronic disease. Many factors contribute to causing obesity. Treatment is so much more complex than the commonly misused rhetoric of eat less and move more, and it involves lifelong management.

## Diagnosis and Classification

Typically, healthcare experts measure obesity using the body mass index (BMI), which is a calculation that involves dividing a person's weight in kilograms by his or her height in metres squared. For example, someone who weighs 80 kg (176 lbs) and is 1.75 m (5'9") tall would have a BMI of about 27 ( $80/1.75^2$ ). Medical experts define overweight as a BMI of 25-29.9 kg/m<sup>2</sup> and obesity as a body mass index (BMI) of 30 kg/m<sup>2</sup> or greater. There are also several categories of obesity severity (see chart).

To diagnose obesity, your physician will likely measure your weight and height to calculate your BMI, but there is more to it than BMI alone. They might also take your waist measurement, since a high concentration of body fat in the abdominal region is more significant than fat in other parts of the body, or look for signs of chronic disease that an increased weight might influence. Body composition can affect BMI, so some might have a BMI that indicates overweight or obesity but have a healthy level of body fat and an ideal waist measurement, and thus they would not technically have obesity.

On the other hand, having a normal/ideal or overweight

BMI does not necessarily mean that you do not have obesity. In some cases, a physician might still diagnose someone who has a BMI less than 30 kg/m<sup>2</sup> with obesity, such as those who accumulate more weight in the abdomen or those of certain ethnic backgrounds. For example, research shows that persons of Chinese ethnicity tend to experience an increase in several health conditions at lower BMIs than those of European origin and researchers suggest a BMI greater than 25.9 kg/m<sup>2</sup> in men and 26.6 kg/m<sup>2</sup> in women could indicate obesity in this population. Canadians with East or South Asian ancestry might have obesity at these lower cut-offs.

The higher your BMI, the greater your risk is of developing obesity-related conditions. If you have a BMI greater than 40 (class III obesity), you are at the greatest risk.

### Body Mass Index

Calculate your BMI by dividing your weight in kilograms by your height in metres squared and compare to the following chart or use the online calculator at [www.badgut.org/obesity](http://www.badgut.org/obesity).

Underweight	<18.5
Normal/Ideal weight	18.5-24.9
Overweight	25-29.9
Obesity Class I	30-34.9
Obesity Class II	35-39.9
Obesity Class III	≥40

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## Statistics

Statistics Canada released a document in 2018 containing figures about obesity in this country. The data came from self-reported weights and heights, which we know has some bias. However, they used correction equations, in which they compared the large sample of self-reported data to measured data to account for biases. They found that 26.8% of those who were 18 years of age or older had obesity, and another 36.6% were overweight, so 63.1% of participants had a weight above the ideal range. They found higher rates of obesity in men (69.4%) than in women (56.7%). There was quite a variance in obesity rates by provinces, with the lowest being 23.1% in British Columbia and the highest being 40.2% in Newfoundland. The survey data also showed that those with obesity are more likely to have certain medical conditions than those of an ideal weight, including type 2 diabetes (13.4% in those with obesity vs 2.9% in those with an ideal weight), high blood pressure (29.5% vs 9.5%), and heart disease (6.0% vs 2.7%).

## Causes of Obesity

The causes of obesity are complex and multifaceted and include interactions among multiple genes and environmental factors. The most commonly cited cause is excess food intake combined with inadequate exercise. While this is true in some cases, it is an over-simplification. Many other factors influence both appetite and weight gain, either by enlarging fat cells, which are always present in the body, or by creating more of them. Genetics, medications, poor sleep (including from sleep apnea), stress, mental health problems, socioeconomic status, hormones, endocrine disorders and more can all influence the development of obesity.

Hundreds of different genes are factors in overweight and obesity and scientists are still learning how they influence the body. We do know that they contribute to the causes of obesity in many ways, such as by affecting your appetite, sense of fullness (satiety), metabolism, food cravings, body-fat distribution, and the tendency to use eating as a way to cope with stress. Some studies show that your parents' and grandparents' lifestyles can affect your body's way of interacting with food.

## Complications

While the only actual symptom of obesity is increased body fat, particularly around the abdomen, many health complications can arise from this disease. Excess weight influences biology in many different ways, which can range from excess pressure in the abdominal region to hormonal effects, since adipose tissue can lead to certain hormone levels increasing. Individuals with obesity are at an increased risk for a wide range of conditions:

- insulin resistance
- type 2 diabetes
- high blood pressure
- heart disease
- stroke
- gout
- sleep apnea
- osteoarthritis
- headache or migraine
- endocrine conditions (e.g., polycystic ovary syndrome)
- infertility
- diminished sex drive
- mental health problems (e.g., low self-esteem, anxiety, depression)
- reduced quality of life
- skin problems
- hirsutism
- phlebitis
- kidney disease
- gynecomastia
- several types of cancer (e.g., breast, cervical, uterine, prostate, colorectal)
- several digestive conditions

Women with obesity also have an increased risk of complications during pregnancy, such as blood clots, preeclampsia, gestational diabetes, and miscarriage, and their babies are at a higher risk of being born with certain birth defects or being born pre-mature.

Obesity can complicate surgeries; you are more likely to get infections afterward and you might heal more slowly. Accurately calculating anesthetic dosage for a person with obesity can also pose challenges.

## Management and Treatments

The first line of treatment for obesity typically involves dietary and lifestyle changes. However, obesity is a chronic disease, which means that just losing weight does not cure it. It typically involves a life-long effort to combat regaining lost weight or gaining more weight. Other treatments are available, including medications and surgery. Most persons with obesity will need to use more than one treatment modality at any given time and over the course of their lifetime.

Where there is an underlying cause of obesity, treating this can lead to weight loss. For example, if you experience rapid weight gain after switching to a new medication (such as corticosteroids, which are highly associated with weight gain) you might find it easy to lose weight if your physician switches you to a different medication. Someone who is experiencing weight gain due to an endocrine condition might find it easier

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to lose weight once that condition is under control.

Along with trying to manage weight, treatment can focus on reducing the effects of obesity, such as balancing blood sugar if the person has type 2 diabetes.

### **Diet**

We all know that it is important to maintain proper dietary habits and we recommend following *Canada's Food Guide*. However, if you have an obesity diagnosis, it's not necessarily that simple. Studies show that the human body is possessive of the weight it gains, and it will do everything it can to resist weight loss. This is the basis of the obesity battle.

The primary target for treating obesity is stopping weight gain, followed by weight loss. Food education, such as knowledge of the caloric content, nutrient density, and satiety index of different foods can be helpful for some individuals. Dietary treatment plans involve reducing caloric intake and increasing exercise (also known as maintaining a caloric deficit). Many different caloric deficit plans are available and can range from reducing portion sizes to diets that involve cutting out entire food groups, and these vary in effectiveness.

We are not here to discourage you if you want to embark on a new diet to lose weight. However, the evidence does show little benefit from dieting over the long-term. For example, in one American study, three years after participants concluded a weight loss program, only 12% had kept off at least 75% of the weight they'd lost, while 40% had gained back more weight than they had originally lost. Weight loss camps are a relatively new commercial approach in treating severe obesity. However, results from Denmark demonstrate that even in a multidisciplinary, intensive setting that focuses on diet, exercise, and psychological counselling, only 28% had maintained a weight loss above 10% after 4 years. This emphasizes that obesity is a chronic condition that needs additional strategies to a diet plan in the effort to maintain a sufficient weight loss.

A nutritious, balanced diet is important for everyone, but no specific diet is the secret to cure or manage obesity. Studies that show poor outcomes often focus on restrictive diet routines. These can be difficult to maintain as they often lead to strong cravings for "forbidden" foods and can interfere with day-to-day life. In addition, restricting calories too heavily causes many hormonal changes that increase your hunger and appetite (see our article on Hunger and Appetite in the *Inside Tract*® newsletter issue 213 for more information). Following a balanced approach to eating by gradually reducing portion sizes and focusing on eating nutritious foods is generally more effective than diets that involve drastic changes such as removing multiple food groups. These dietary changes tend to be less rewarding in the short-term, so you might find adhering

## **Even the Most Successful Crash Diets Fail Long-Term**

Despite the extensive marketing and apparent commercial success of drastic weight loss programs that promote restrictive diets, including the type, nature, and amount of food you consume, these programs do not provide long-term success. They often put the person in a worse condition than they were before they started the program, including a big hit to their finances!

While sensational entertainment shows, such as *The Biggest Loser*, might give you hope, the reality is that you cannot sustain the diet and exercise routines that these contestants follow. They might experience rapid weight loss while a team of experts is helping them, but as soon as they return to the real world, it is exceedingly difficult to maintain these changes. Rapid weight loss from crash dieting can cause hormonal changes that drastically increase appetite and reduce the amount of calories that your body burns at rest.

A 2016 study from the US National Institutes of Health (NIH) followed more than a dozen former *The Biggest Loser* contestants and found that of the 14 contestants studied, 13 regained a significant portion of the weight they lost on the show. Four were heavier in 2016 than they were before they set foot on the set. When it comes to weight loss through dieting, most people have better success keeping the weight off by making small changes and losing weight slowly.

to them more challenging.

It can be difficult to maintain a caloric deficit, even when following a well-balanced diet. Hormonal changes and certain medications can also drastically increase appetite and it is common for people to fall back into old eating habits. This is why, despite this being a seemingly simple solution, obesity rates are continuing to grow.

All of us can benefit from employing mindful eating habits, which is about using mindfulness to reach a state of full attention to your experiences, cravings, and physical cues when eating. It uses techniques such as eating slowly and without distraction, listening to physical hunger cues, and eating only until you feel full.

For more information on diet, and to get help creating a diet plan that works best for your individual preferences and lifestyle, contact a registered dietitian.

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## Exercise

While exercise on its own is often not effective enough for sustained weight loss, when done in tandem with a diet plan, it can greatly increase success. Exercise can improve conditions associated with obesity even without weight loss. These benefits include improving cardiovascular function and reducing blood pressure, improving blood sugar levels, maintaining muscle tone, improving lung function, reducing stress, and increasing the amount of calories the body burns at rest. You might see better health results from low-intensity exercise, including walking, swimming, and yoga.

## Support Systems

When it comes to success with dietary changes and physical activity, having a solid support system is vital. If you spend a lot of time with others who are constantly eating junk food and trying to make you join them, or who belittle you for trying to improve your health, it is difficult to stay on track. If you can gather support from the friends and family members who will help you succeed, the ones who will share healthy recipes and go for walks with you, or at least encourage you and be there for you when you need them, it can make a world of difference. They should be the kind of people who won't monitor your actions and judge you, but who will simply support your choices.

## Sleep

There is some evidence that a lack of sleep can lead to obesity by changing hormone levels, increasing appetite, and decreasing willpower. Ensuring you get enough sleep can help make it easier to manage weight by keeping hormone levels stable and giving you the energy you need to maintain an exercise regimen.

## Stress and Mental Health

Similarly to lack of sleep, stress can influence certain hormones that can lead to increased weight. When you experience chronic stress, you produce more cortisol, which can increase appetite and lead to weight gain around the abdomen. You might turn to "comfort foods" when feeling stressed, depressed, anxious, isolated, or even bored. These foods are typically high calorie and low in nutrients. Managing emotional eating can be very difficult. Whether you eat for emotional reasons because of an underlying condition or from occasional stressors, learning alternative strategies to manage these feelings can help reduce your desire to overeat. If you are feeling angry, anxious, or upset, getting active can help blow off steam and keep your mind from wandering; try learning a new sport, hiking in nature, or just going for a walk while listening to music or an audiobook. If you are eating due to loneliness or feeling down, calling a friend or joining an online forum

might make you feel better. If you find yourself eating too much because you are bored, try taking up a hobby. Things such as knitting, crocheting, drawing, painting, origami, scrapbooking, or doing yoga can keep you busy while you relax at the end of the day. If you are feeling stressed, any of the above can help, as can focusing on relaxing; have a nice hot bath, curl up with a good book and a hot drink, or watch a funny movie.

Journaling can help in many ways. You might find that writing out in long form how you are feeling can reduce stress and bullet journaling can help you better understand your triggers. Tracking what and when you eat, along with data on how much sleep you get, whether or not you exercised, your general emotional state, and how stressed you were on a given day might help you identify which habits and patterns improve your mental health and which make it worse. We have created a *Digestive Health Journal* you might find helpful, which is available on Amazon. Learn more about these journals at [www.badgut.org/digestive-health-journals](http://www.badgut.org/digestive-health-journals).

If you frequently experience symptoms of depression or anxiety, or if you are concerned about your mental health, please contact your physician.

## Medications

There are a few prescription medications available to treat obesity in Canada, using different methods of action. No medication can work entirely on its own to manage obesity but they might make it easier for you to adhere to a weight-loss plan, as they can affect the drivers of appetite and hunger. It is still necessary to work on lifestyle changes, such as increasing exercise and improving your diet, while you take any of these medications. Health Canada has approved medications to treat obesity for use in anyone with a BMI  $\geq 30$  or anyone with a BMI  $\geq 27$  who also has an obesity-related disease.

The combination of naltrexone and bupropion (Contrave®) works by suppressing appetite. It is available in pill form, starting with a once-daily dosage and increasing gradually to two pills twice daily. Contrave® is a generally well-tolerated medication, with nausea being the most common side effect.

Liraglutide (Saxenda®), also known as Victoza® when used in lower doses to treat type 2 diabetes, works by regulating your appetite level. You self-administer it via injection under the skin (subcutaneously). Side effects can include low blood sugar, headaches, dizziness, and digestive symptoms such as nausea and diarrhea.

Orlistat (Xenical®) inhibits the enzyme that breaks down dietary fat into absorbable components (lipase). When you use this medication, your body is unable to absorb all the calories from the fats you eat, and eliminates them with your bowel movements. Side effects can include diarrhea, oily stools, oily discharge when passing gas, and bowel urgency.

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While there are many over-the-counter supplements marketed as weight loss aids, the majority have little evidence of efficacy and some of them can be dangerous. It is best to avoid these unless your physician recommends you take a specific product.

### **Bariatric Surgery**

There are several surgeries available to treat obesity. Future editions of the *Inside Tract*<sup>®</sup> newsletter will cover a more detailed examination of this topic, which we have condensed here. Surgery typically works in one (or both) of two ways:

- by reducing the amount of food that the stomach can hold, thereby making it very difficult to consume enough calories to maintain bodyweight, or
- by changing the path that food takes during digestion to avoid parts of the small intestine, which reduces absorption of some nutrients, including calories.

Most physicians won't recommend weight loss surgery unless you have a BMI  $\geq 40$  or a BMI  $\geq 35$  along with weight-related health complications (e.g., type 2 diabetes, heart disease, sleep apnea) and have already failed to lose weight using less risky tools, such as lifestyle modifications and medications. Physicians rarely recommend bariatric surgery for anyone younger than 18 years of age.

The following are some of the more common forms of bariatric surgery:

**Gastric Sleeve:** a surgeon will remove part of your stomach, leaving just a thin sleeve, approximately the size of a small banana, behind. This method simply reduces the amount of food you can eat during a window of time.

**Gastric Bypass:** a surgeon removes part of the stomach, leaving just a small pouch, and then connects the small pouch to the middle of the small intestine. Roux-en-Y is another name for this process. This surgery works in two ways: you can't eat as much because the stomach is smaller, and your body won't absorb as many calories because of the small intestine bypass.

**Gastric Band:** a surgeon will place a band around the upper part of the stomach to create a smaller pouch. The surgeon can adjust the band to make the available stomach area smaller or larger, as needed. However, it is not used often anymore due to poor results.

**Intragastric Balloons:** this is a newer and less common form of surgery at this time. It is a temporary measure that involves placing a fluid-filled balloon into the stomach that delays the rate of gastric emptying. It is different from other methods of surgery as it does not involve modifying the structure of the digestive tract and it is reversible, but it still has risks.

Bariatric surgery is very effective, often leading to significant weight loss and reversal of several obesity-related diseases, such as type 2 diabetes and high blood pressure. However, it

is not without risks. Of those who have bariatric surgery, 5% experience complications while in hospital and 6% need hospital readmission within a month of release due to complications. The mortality rate for bariatric surgeries is between 0.1-2%.

There is growing evidence of potentially severe – occasionally even life-threatening – nutritional, and pharmacological consequences of bariatric surgery, including iron deficiency anemia.

Please note that some types of surgery you might have heard of, such as liposuction and body sculpting, are not effective forms of weight loss. These focus on minor changes to the body and are not treatments for obesity.

### **Effects of Weight Loss**

For a person who has lived with obesity for a long time, and who manages to lose significant weight, typically through effective medication or surgery, new issues can arise. As the body uses fat stores, the stretched skin relaxes but there is usually not sufficient elasticity for it to resume its pre-weight-gain form. Loose skin can happen to anyone, but it is a more common consequence for those who:

- are older when they lose weight
- lose weight very quickly (more than 0.5-1 kg [1-2 lbs] per week)
- lose more than 45 kg (100 lbs)
- do not exercise while losing weight

These skin folds might require surgical body contouring to mitigate the loose skin, which public medical plans may or may not cover. We believe that public plans should cover these surgeries, as a unique set of health problems can arise from excessive amounts of loose skin, such as excessive sagging, chafing, and sores between the folds that are difficult to heal.

Living with obesity negatively affects mental health. After going through treatment that effectively reduces body weight, you might still have the consequences of excessive weight, which can further affect mental health.

Weight loss can also cause gallstones. This is because the liver secretes more cholesterol into the bile to help deal with the extra fat the body is breaking down. Losing weight slowly can help prevent the formation of gallstones.

If you are making drastic changes to your diet, nutrition deficiencies are possible, such as iron, B12, or vitamin D deficiency. You might also experience periods of low blood sugar. The changes to your body when you eat at a deficit can cause many symptoms, including fatigue, irritability, dizziness, headaches, hormonal changes, constipation, and hair loss. If you experience these symptoms while losing weight, speak with your physician.

However, it is important to note that in the case of weight loss, the benefits are greater than the risks. You can reduce your

chances of experiencing negative effects of weight loss by working with your healthcare team to establish a routine that focuses on slow and steady weight loss and adequate nutrient intake.

## Outlook

Claims that you can easily treat obesity through simple lifestyle changes are harmful and reinforce social stigma. These are also in stark contrast to the conversation around other diseases, none of which have simple solutions. We need to work together on reducing the social stigma that permeates all levels of society, so those living with obesity get the same respect and attention as others accessing healthcare. Just as for most chronic diseases, medical intervention will be necessary.

Untreated obesity can lead to many complications, increase the risk of several medical conditions, and decrease quality of life. It might be easier to prevent obesity, but this is complex. There are many treatment options available, each with a different set of pros and cons.

Have an ongoing dialogue with your physician about what treatments will be appropriate for you. Success can look different in each case. While the ideal target is to reach a healthy BMI, research shows that when individuals diagnosed with obesity lose just 5-10% of their body weight, e.g., 7-14 kg (15-30 lbs) in someone who weighs 140 kg (300 lbs), it can help reduce the risk of many weight-related conditions.

There are many hurdles to overcome, but it is a good thing to strive for a manageable treatment plan that can help you lose enough weight to improve your health.

For more information on obesity, including the gut microbiome, and any gastrointestinal or liver diseases and disorders, please contact our office or search for medically sound information on our website, [www.badgut.org](http://www.badgut.org). Subsequent issues of the *Inside Tract*® newsletter will cover more topics related to obesity, including bariatric surgery, obesity in children, and an in-depth look at the gastrointestinal and liver consequences of obesity.

## About the Gastrointestinal Society

The GI (Gastrointestinal) Society is a registered Canadian charity committed to improving the lives of people with gastrointestinal and liver conditions, supporting research, advocating for appropriate patient access to healthcare, and promoting gastrointestinal and liver health.

Want to learn more on this subject? The *Inside Tract*®, the GI Society's quarterly newsletter, provides the latest on digestive and liver research, disease and disorder treatments (e.g., medications, nutrition), and a whole lot more. If you have any kind of digestive problem, then you will want this timely, informative publication. **Subscribe today!**

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