Obesity and BMI issues - From a Gastroenterologist's Viewpoint

If you are reading this, there is a chance that you have been directed by myself, to understand the terms "obesity", "BMI", and the medical issues related to the identification of the excess BMI, with specific attention to the gastroenterology issues. These issues may have been brought up, directly related to the reason for which you were referred to me, or I may have addressed the issue, to try and help you and your primary care practitioner improve and address situation.

This paper addresses definitions, why a gastroenterologist is interested in obesity, why people gain weight, some aspects of treatment, and the three gastroenterology or liver diseases directly influenced by weight and obesity.

A lot has been written in the past 5-10 years, and in August of 2020, an important clinical guideline was published in the CMAJ by a large expert group in Canada. However there is still considerable controversy, and in some areas, a significant resistance to the use of the BMI, the term obesity itself. Some of this criticism is directed against experts and authors including those affiliated with Obesity Canada, sometimes even related to funding issues or associations for those same researchers.

I understand the concerns with misuse of BMI, and indeed, the measurement was designed and developed to compare groups of patients, or subjects, in studies. However there is no doubt that increased BMI is associated with poor medical outcomes, and for an individual patient, there are exceptions in both directions, people with high BMI's that are still healthy, and people with normal BMI's that have metabolic disease, or risk factors, including internal fat deposition, for those diseases.

At this time, there is still a statistical and strong association between increased BMI, especially over 30, and the development of diseases including type 2 diabetes, degenerative spinal and joint disease, hypertension, coronary artery disease, fatty liver, and several cancers. As always, association does not imply causation.

Definitions:

Obesity is a medical diagnosis, i.e. a chronic disease, defined by a BMI of greater than or equal to 30, and is different from being overweight, by definition of the value of the BMI, but also because of the consequences to a person's health.

Overweight is having a BMI of 25-29.9, and is not thought to be a significant health risk, other than a risk for moving into the category of obesity, since many patients, and most people, are slowly gaining weight as we get older.

BMI is a number, found by calculating the ratio of weight in kilograms to the square of the height in meters. This number gives an estimate of body fat, and equally, gives an estimate of developing certain diseases.

There are BMI calculators on the Internet, we use this one most often:

http://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm

This one includes some links for interpreting the BMI, and assessing weight and other risk factors in different ways as well.

Unfortunately, much of the medical literature has used the BMI, before many criticisms were recognized, and in particular, much of the gastrointestinal and liver research and recommendations related to excess BMI have used the BMI, rather than the waist circumference. There is obviously a significant correlation between BMI and waist circumference, but there are discrepancies, and limitations of each measurement in certain circumstances.

It appears that the waist circumference is almost certainly a more accurate measure of cardiovascular risk. Nevertheless, concerning gastrointestinal and liver disease, we will continue to use the BMI.

Obesity can be graded, into 3 grades, type 1 (BMI 30-34.9), type II (BMI 35-39.9) and type III (BMI greater than or equal to 40).

A more useful measure of the clinical relevance of obesity, or even "overweight", is the Edmonton Obesity Staging System, developed by Dr. Sharma, at the University of Alberta (http://www.drsharma.ca/wp-content/uploads/edmontonobesity-staging-system-pocket-card.pdf).

This is a clinical tool which looks at 4 stages, as opposed to the 3 classes, and identifies symptoms and signs, psychological as well as physical factors, associated diseases, and functional limitations.

Dr. Sharma has a website full of useful and reputable information:

www.drsharma.ca

Why is a gastroenterologist interested in obesity?

1) All doctors are committed to looking at patients in a holistic manner, and cannot ignore other health issues, some of which may be even more important than the reason that you were referred to me.
2) Some patients might hope that the source of obesity or weight issues would be identified by a gastroenterologist, who might have special interest or knowledge in dietary issues and disorders of absorption or malabsorption (see below).
3) Obesity is associated with increased risks of disease and death, many of which are not directly related to issues in gastroenterology and liver disease. These include hypertension, heart disease, diabetes, osteoarthritis, depression, several different cancers and sleep apnea.
4) Obesity is also associated with significantly increased development and severity of a number of gastrointestinal and liver diseases, especially:
   i)gastroesophageal reflux, and complications of reflux including esophageal cancer
   ii)fatty liver disease, and complications of fatty liver disease including cirrhosis and liver cancer, and
   iii)colon cancer.

Why do people gain weight?

Unfortunately, this is still a very complex issue, and is being studied by a variety of specialists, and is obviously multifactorial. It is overly simplistic, and offensive, to state that one needs to eat less and exercise more, and we now know that exercise is not a way to lose weight, but is certainly a

way to be healthier for any given weight, and has very significant health benefits, unrelated to weight loss (see an excellent educational cartoon (visual lecture, called 23 ½ hours) by Dr Mike Evans:

https://www.youtube.com/watch?v=aUaInS6HIGo&feature=youtu.be

Most people who struggle with their weight, and inadvertent weight gain, are taking in too many calories (primarily through fat or sugar or both), and there are very strong influences, related to the marketing and advertising of various foods, the availability and cheapness of calorie-dense foods, and the availability and cost of "healthy" food choices. There are very complicated chemical and hormonal issues related to satiety (the feeling of being full), and the effect of various foods (and drinks, especially fruit juices and pop/soda) on satiety and various hormones and nerve pathways that influence weight and caloric intake. Unfortunately, there are very rarely any hormonal measurements or diagnoses that can be identified, in most people who are struggling with a weight problem.

There is no recognised condition of "over-absorption" of calories, so unfortunately there is no gastrointestinal disease that we can identify.

Recently there has been some fascinating research into the intestinal microbiome, specifically the bacteria, and possibly viruses and other living organisms, in the gut, and their effect on absorption and handling of energy. There are experiments on mice looking at fecal transplant between overweight and underweight animals, in both directions, and the possible transmission of obesity, or of factors associated with increasing or decreasing weight. There have been anecdotal reports in humans, after fecal transplantation for other diseases, of the recipient gaining weight if the fecal transplant came from a person with obesity. These areas of research have not yet translated into any meaningful human treatment.

There are **no magic diets** for weight loss, and if weight loss is fast, more than 2-4 pounds a week, there is a significant risk that the weight loss will

not be sustained, and a person will “rebound”, or experience a “yo-yo effect”, and these people often end up significantly heavier over a period of time.

One of the best pieces of dietary advice has been condensed to 7 words:

“Eat food. Not too much. Mostly plants.” by Dr Michael Pollan, and further explanation is at the following link:

http://michaelpollan.com/reviews/how-to-eat/

He does have a book on this, as well as others. Another very reputable and useful book is by Dr Yoni Freedhoff, director of the BMI (Bariatric Medical Institute) in Ottawa (he also was a co-author of the 2020 guideline). His book, “The Diet Fix: Why Diets Fail and How to Make Yours Work”, is full of useful wisdom and a plan, and his website is a wealth of information:

http://bmimedical.ca/science-and-medicine

There are often psychological factors, and the problem of obesity is best addressed by a multi-disciplinary team, including the family doctor or nurse practitioner, a dietitian, and possibly a psychologist or a psychiatrist, in a few unusual cases.

If obesity reaches a certain level, stage II, associated with other obesity-related diseases, or stage III, even before any obesity-related diseases have occurred, then assessment for bariatric surgery is certainly an option, and your family doctor or nurse practitioner can refer you. We recommend the Humber River Regional Program. I would caution you against spending a large amount of money on the laparoscopic band, and other so-called less invasive measures, that are currently not funded by Provincial healthcare (OHIP), usually for reasons of unproven effectiveness.

Gastroenterology and Liver Disorders directly related to obesity

I will discuss, briefly, the 3 most important disorders I see on a daily basis, directly influenced by obesity, and sometimes even by being overweight.

These are gastroesophageal reflux disease, fatty liver disease, and colon cancer.

1) Gastroesophageal reflux disease (for more detail see my other health information sheet on acid reflux):

Symptoms of reflux are felt by more than 30% of Canadians in any given year, but patients referred for specialist assessment for reflux are obviously a smaller number, and yet they reflect a significant number of patients seen by any gastroenterologist. The reasons for us to get involved can be to confirm the diagnosis and discuss long-term management, identify atypical reflux patients, and to prevent or treat complications of reflux which include chest pain, respiratory disorders, esophageal strictures, chronic bleeding, Barrett's and esophageal cancer (adenocarcinoma).

If a patient with reflux is overweight, or especially obese, then weight loss plays a critical role, and we often see dramatic improvement in control of acid reflux, even with small amounts of weight loss in the range of 10-15 pounds.

Esophageal cancer, specifically adenocarcinoma, which is clearly caused by acid reflux, is on the rise, probably related to the very common occurrence of reflux, and the epidemic of obesity. This type of cancer is difficult to treat, with a frequently poor outcome. Studies have shown that obesity alone is a risk factor for development of esophageal cancer, but mainly through the mechanism of acid reflux, and the patients who develop esophageal adenocarcinoma are more commonly male, and frequently are of white race, age over 50, smoking cigarettes, and obese.

2) Fatty liver disease

We are currently experiencing an epidemic of fatty liver disease, which includes 3 classes of patients. Fatty liver disease can because by alcohol, but in the patient taking little or no alcohol, fatty liver disease is called NAFLD (nonalcoholic fatty liver disease), or more recently MAFLD – (metabolic-syndrome associated fatty liver disease).

Many patients have a "fatty liver", identified on abdominal ultrasound done either for other reasons, or for right upper quadrant discomfort. A smaller proportion of patients, but still a very significant number across North America, have "steatohepatitis", which is a fatty liver complicated by inflammation, usually identified by increased liver enzymes on blood tests. If this is clearly unrelated to alcohol intake, it is called NASH (nonalcoholic steatohepatitis). These patients are at significantly increased risk for developing cirrhosis, even if they do not drink alcohol at all. A third group of patients, fortunately quite small at the moment, already have advanced liver disease, probably from periods of steatohepatitis in the past, and some of these patients are no longer overweight, but present with complications of cirrhosis. This is probably the commonest cause of "cryptogenic cirrhosis", which means cirrhosis of unknown cause, obviously in the absence of heavy alcohol, viral hepatitis, and any other chronic liver disease.

Unfortunately, fatty liver and steatohepatitis are very difficult to treat, and the only real treatment is weight loss. Research is ongoing for drugs to help treat steatohepatitis.

Steatohepatitis and cirrhosis, whether caused by fat (or alcohol or other underlying causes of liver disease), are risk factors for developing primary liver cancer (hepatocellular carcinoma), and this can be very difficult or impossible to treat if it presents at an advanced stage, or with complications, after a long silent period of growth.

Many patients with fatty liver disease are either asymptomatic, or are unlikely to develop serious consequences of liver disease in their lifetime, but are more likely to develop cardiovascular consequences of the obesity, related to the "metabolic syndrome" (i.e. the combination of obesity, increased waist circumference, hypertension, type 2 diabetes, insulin resistance, and hyperlipidemia, leading to heart disease).

3) Colon cancer

As a gastroenterologist, I spend a significant amount of time and energy trying to prevent colon cancer, mostly through patient education, exploration of family history, and high-quality colonoscopy and removal of polyps.

It is therefore interesting and important to note that obesity is an independent risk factor for colon cancer, and probably through some hormonal changes and possibly some dietary issues, it seems that polyps and colon cancer are more common as the BMI increases. It is difficult to sort out whether a specific diet or dietary pattern leads to both increased BMI and increased colon cancer risk, or whether increased BMI truly increases polyp development, polyp growth, or colon cancer development. The same applies to studies showing a link (i.e. an association) between breast cancer and obesity. Unfortunately we do not have any evidence that weight loss can reduce the cancer risk, but we do believe that colon cancer screening should be performed appropriately, especially in overweight and obese patients, and probably in this group, colonoscopy is preferable to fecal occult blood testing.

I would be happy to discuss any of these issues with you at your next appointment. I would suggest that you discuss your BMI with your primary care practitioner, especially if it is approaching or greater than 30, and monitor it carefully in the future.