

# Widespread misconceptions about obesity

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**A**lthough obesity can be a serious health threat, we lack effective strategies to address this condition on an individual and a societal level. Myths and misconceptions about obesity are pervasive in the media, popular culture, and scientific literature. As recently discussed in the *New England Journal of Medicine*, the promulgation of unsupported beliefs might yield poorly informed clinical decisions, inaccurate public health recommendations, and unproductive allocation of limited research resources.<sup>1</sup> Using Internet searches of popular media and scientific literature, we identified 7 misconceptions about obesity that we believe warrant attention. The objective of this article is to challenge readers to rethink how we should approach obesity and its management.

## Misconceptions

**Obesity is primarily caused by a lack of physical activity or by unhealthy dietary habits.** The positive energy balance underlying obesity is generally attributed to chronic excess energy intake or reduced physical activity. Unhealthy diet and physical inactivity are the “big 2” on which almost all preventive and therapeutic programs for obesity are focused, thereby neglecting other possible contributors to excess body weight. Although intuitively appealing, clear evidence (eg, individual-level epidemiologic data and randomized experiments) beyond ecological correlations is lacking for the big 2.<sup>2</sup> Many other putative contributors to the increase in obesity (eg, insufficient sleep, psychological stress, endocrine disruptors, medications, intrauterine and intergenerational effects, etc) have supportive evidence that is as compelling as, if not more compelling than, the evidence for the big 2.<sup>3,4</sup> These nontraditional or new determinants of obesity influence energy input and output; overeating and reduced energy expenditure are perceived as “symptoms” and not as the root causes of the excess weight.<sup>5</sup> On the treatment side, an accumulating body of evidence shows that insufficient sleep can impede weight loss and addressing sleep for weight management has recently been endorsed by the Canadian Obesity Network.<sup>6</sup> Overall, accumulating evidence suggests that health practitioners and clinicians might need to consider a broader range of influential factors (eg, medications, lack of time, psychological stress, fatigue, chronic pain) to

adequately identify and address the key factors responsible for the patient's obesity, which is likely a clinical sign of chronic caloric “retention” (similar to edema being a clinical sign of fluid “retention”).<sup>5</sup> This will enable health practitioners and clinicians to develop a personalized framework that addresses the root causes of patients' weight gain.

Physicians must move beyond the simplistic and generally ineffective recommendation to “eat less and move more” by investigating and addressing the determinants of increased energy intake, decreased metabolic rate, and reduced activity.

**Obese individuals are less active than their normal-weight counterparts.** It is very common to hear that obese people are lazy and should get off the couch. This discriminatory bias against those with excess weight is not only widespread among the lay public but also among health professionals, even those in regular contact with patients with obesity.<sup>7</sup> Yet, the most recent data from the Canadian Health Measures Survey, a study of a nationally representative sample that used accelerometers to measure physical activity, suggest otherwise. Based on objective measures, only 7% of Canadian children and youth<sup>8</sup> and 15% of Canadian adults<sup>9</sup> meet physical activity guidelines. When split by body mass index categories, obese girls average 11 159 steps per day, while normal-weight girls average 10 224 steps per day. Obese boys average fewer steps (10 256 steps per day) than their normal-weight counterparts (12 584 steps per day), but they have a larger body to carry. Translating this physical activity level into calories expended (kcal per day) would likely show that obese boys actually burn more calories on a daily basis.<sup>10</sup> Similar findings are observed for Canadian adults. Overall, the message is that there is a physical inactivity crisis in Canada—most people do not meet the recommended amount of physical activity required each day for health benefits—and every Canadian, regardless of body size, would benefit from an increase in physical activity and a decrease in sitting time.

Rather than focusing on burning calories, interventions should aim at reducing sedentary activities and increasing physical activities to improve overall health and general well-being.

**Diets work in the long term.** Approximately two-thirds of people who lose weight will regain it within 1 year, and almost all of them will regain it within 5 years.<sup>11</sup> Although dieting (ie, caloric restriction) to lose weight is

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a difficult task, the maintenance of lost weight requires the patient to deploy even greater efforts. Rather than a simple lack of willpower, the relapse of most individuals to their previous weight after otherwise successful weight loss is largely driven by the coordinated actions of metabolic, neuroendocrine, autonomic, and behavioural changes that oppose the maintenance of reduced body weight.<sup>12</sup> The few individuals successful at maintaining weight loss (at least 13.6 kg for at least 1 year) generally have common behaviour and strategies that include consuming low-energy, low-fat diets; engaging in high levels of physical activity; consistent self-monitoring of body weight and food intake; eating breakfast regularly; and demonstrating a high level of dietary restraint.<sup>13</sup> It is highly unlikely that some of this behaviour can be emulated by most of the population with excess weight. There is also concern that unhealthy weight control methods (eg, fasting, meal skipping, laxatives, diuretics, stimulants) might ultimately lead to a larger weight regain and pose a risk to both mental and physical health.<sup>14,15</sup> Thus, although sustained weight loss with diet alone can be possible for some individuals,<sup>16</sup> agreeing on realistic weight-loss expectations and sustainable behavioural changes is critical to avoid disappointment and nonadherence.

Weight regain (relapse) should not be framed as failure but as an expected consequence of dealing with a chronic and complex condition like obesity.

**Weight loss does not have significant adverse effects.** The strong biological response to weight loss (even the recommended 5% to 10% of baseline weight) involves comprehensive, persistent, and redundant adaptations in energy homeostasis that underlie the high recidivism rate of obesity treatment.<sup>12</sup> The multiple systems regulating energy stores and opposing the maintenance of a reduced body weight illustrate that fat stores are actively defended. Among the adverse effects of weight loss, it is well known that body fat loss increases the drive to eat, reduces energy expenditure to a greater extent than predicted, and increases the tendency toward hypoglycemia.<sup>17</sup> Weight loss is also related to psychological stress, increased risk of depressive symptoms, and increased levels of persistent organic pollutants that promote hormone disruption and metabolic complications, all of which are adaptations that substantially increase the risk of weight regain.<sup>17</sup> In addition, there is considerable concern about the negative effect of “failed” weight-loss attempts on self-esteem, body image, and mental health.<sup>18</sup> Thus, clinicians should document and consider the powerful biological counter-regulatory responses and potential undesired effects of weight loss to maximize the success of their interventions. Obesity is a chronic condition and its management requires realistic and sustainable treatment strategies.

Successful obesity management requires identifying and addressing the obesity drivers as well as the barriers to and potential complications of weight management. Family physicians should discuss the possible adverse effects of weight loss with their patients and actively look for these effects in patients trying to lose weight.

**Exercising is better than dieting to lose weight.** There is now a consistent body of evidence showing that exercise alone, despite a range of health benefits associated with regular exercise, results in rather modest weight loss (less than 2 kg on average).<sup>19,20</sup> One of the explanations is that exercise is often accompanied by an increase in sedentary activities and appetite and a decrease in dietary restraint that counteract the increased energy expenditure of exercise. However, increased exercise has been shown to reduce visceral adiposity (even with minimal changes in body weight).<sup>21</sup> Individuals who include regular exercise and active living as part of a weight-loss program are more likely to improve their overall health and keep the weight off.<sup>22</sup> This latter finding might be attributable to the effect of regular exercise on caloric intake rather than on caloric expenditure per se.<sup>23</sup>

Exercise alone generally promotes modest weight loss; however, individuals who exercise regularly might improve their overall health independent of weight loss and are more likely to keep their weight off.

**Everyone can lose weight with enough willpower.** It is common to hear that weight loss is a matter of willpower and compliance with the weight-reducing program. However, the magnitude of weight loss is very different among individuals with the same weight-loss intervention and prescription, and the same compliance to the program—one size does not fit all. Thus, for some people (especially those who have already lost some weight), simply putting more effort into a weight-loss program will not always result in additional weight loss given the different compensatory adaptations to weight loss.<sup>12</sup> For example, the decrease in energy expenditure that occurs during weight loss is highly variable between people and might dampen efforts to lose additional body fat. Such compensatory mechanisms might sometimes fully counteract the 500 kcal per day decrease recommended in most dietary interventions, making it very difficult for such “poor responders” to lose weight.<sup>24</sup>

Physicians should remember that obesity is not a choice and weight-loss success is different for every patient. Success can be defined as better quality of life, greater self-esteem, higher energy levels, improved overall health, or the prevention of further weight gain.

**A successful obesity management program is measured by the amount of weight lost.** Given the importance of obesity as a public health problem, there is widespread

effort to encourage people with excess weight to attempt weight loss. However, a growing body of evidence suggests that a focus on weight loss as an indicator of success is not only ineffective at producing thinner, healthier bodies, but could also be damaging, contributing to food and body preoccupation, repeated cycles of weight loss and regain, reduced self-esteem, eating disorders, and social weight stigmatization and discrimination.<sup>25</sup> There is also concern that “anti-fat” talk in public health campaigns might further promote weight bias and discrimination.<sup>26</sup> Therefore, it might be time to shift the focus away from body weight to health and wellness in public health interventions. Recently, the Canadian Obesity Network launched a tool called the 5As of Obesity Management ([www.obesitynetwork.ca/5As](http://www.obesitynetwork.ca/5As)) to guide primary care practitioners in obesity counseling and management.<sup>27</sup> Minimal intervention strategies such as the 5 As (ask, assess, advise, agree, and assist) can guide the process of counseling a patient about behaviour change and can be implemented in busy practice settings.<sup>28</sup>

Obesity management should focus on promoting healthier behaviour rather than simply reducing numbers on the scale. The 5As of Obesity Management is a practical tool to improve the success of weight management within primary care.

## Conclusion

This article briefly addresses some misconceptions about obesity and attempts to promote novel ways of thinking in this field of research and practice that appears highly prone to preconceived ideas, dogma, and biases. Simplistic notions based on “energy in and energy out” have proven largely ineffective both when dealing with individuals and with populations. This might be owing to the fact that current interventions do not take into account the complex biopsychological responses to defend body weight or the notion that only overconsumption of food and physical inactivity are the root causes of obesity.

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### Competing interests

None declared

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## References

- Casazza K, Fontaine KR, Astrup A, Birch LL, Brown AW, Bohan Brown MM, et al. Myths, presumptions, and facts about obesity. *N Engl J Med* 2013;368(5):446-54.
- Sørensen TI. Challenges in the study of causation of obesity. *Proc Nutr Soc* 2009;68(1):43-54. Epub 2008 Dec 15.
- Tremblay A, Chaput JP. About unsuspected determinants of obesity. *Appl Physiol Nutr Metab* 2008;33(4):791-6.
- Keith SW, Redden DT, Katzmarzyk PT, Boggiano MM, Hanlon EC, Benca RM, et al. Putative contributors to the secular increase in obesity: exploring the roads less traveled. *Int J Obes (Lond)* 2006;30(11):1585-94. Epub 2006 Jun 27.
- Sharma AM, Padwal R. Obesity is a sign—over-eating is a symptom: an aetiological framework for the assessment and management of obesity. *Obes Rev* 2010;11(5):362-70. Epub 2009 Nov 17.
- Chaput JP, Tremblay A. Adequate sleep to improve the treatment of obesity. *CMAJ* 2012;184(18):1975-6. Epub 2012 Sep 17.
- Schwartz MB, Chambliss HO, Brownell KD, Blair SN, Billington C. Weight bias among health professionals specializing in obesity. *Obes Res* 2003;11(9):1033-9.
- Colley RC, Garriguet D, Janssen I, Craig CL, Clarke J, Tremblay MS. Physical activity of Canadian children and youth: accelerometer results from the 2007 to 2009 Canadian Health Measures Survey. *Health Rep* 2011;22(1):15-23.
- Colley RC, Garriguet D, Janssen I, Craig CL, Clarke J, Tremblay MS. Physical activity of Canadian adults: accelerometer results from the 2007 to 2009 Canadian Health Measures Survey. *Health Rep* 2011;22(1):7-14.
- DeLany JP, Kelley DE, Hames KC, Jakicic JM, Goodpaster BH. High energy expenditure masks low physical activity in obesity. *Int J Obes (Lond)* 2013;37(7):1006-11.
- Wadden TA. Treatment of obesity by moderate and severe caloric restriction. Results of clinical research trials. *Ann Intern Med* 1993;119(7 Pt 2):688-93.
- Maclean PS, Bergouignan A, Cornier MA, Jackman MR. Biology's response to dieting: the impetus for weight regain. *Am J Physiol Regul Integr Comp Physiol* 2011;301(3):R581-600. Epub 2011 Jun 15.
- Ogden LG, Stroebele N, Wyatt HR, Catenacci VA, Peters JC, Stuhrt J, et al. Cluster analysis of the National Weight Control Registry to identify distinct subgroups maintaining successful weight loss. *Obesity (Silver Spring)* 2012;20(10):2039-47. Epub 2012 Apr 3.
- Utter J, Denny S, Robinson E, Ameratunga S, Crengle S. Identifying the 'red flags' for unhealthy weight control among adolescents: findings from an item response theory analysis of a national survey. *Int J Behav Nutr Phys Act* 2012;9:99.
- Hayes S, Napolitano MA. Examination of weight control practices in a non-clinical sample of college women. *Eat Weight Disord* 2012;17(3):e157-63.
- Franz MJ, VanWormer JJ, Crain AL, Boucher JL, Histon T, Caplan W, et al. Weight-loss outcomes: a systematic review and meta-analysis of weight-loss clinical trials with a minimum 1-year follow-up. *J Am Diet Assoc* 2007;107(10):1755-67.
- Chaput JP, Doucet E, Tremblay A. Obesity: a disease or a biological adaptation? An update. *Obes Rev* 2012;13(8):681-91. Epub 2012 Mar 14.
- Talen MR, Mann MM. Obesity and mental health. *Prim Care* 2009;36(2):287-305.
- Thorogood A, Mottillo S, Shimony A, Filion KB, Joseph L, Genest J, et al. Isolated aerobic exercise and weight loss: a systematic review and meta-analysis of randomized controlled trials. *Am J Med* 2011;124(8):747-55.
- Wing RR. Physical activity in the treatment of the adulthood overweight and obesity: current evidence and research issues. *Med Sci Sports Exerc* 1999;31(11 Suppl):S547-52.
- Ross R, Bradshaw AJ. The future of obesity reduction: beyond weight loss. *Nat Rev Endocrinol* 2009;5(6):319-25.
- Hill JO, Wyatt HR, Peters JC. Energy balance and obesity. *Circulation* 2012;126(1):126-32.
- Chaput JP, Sharma AM. Is physical activity in weight management more about 'calories in' than 'calories out'? *Br J Nutr* 2011;106(11):1768-9.
- Tremblay A, Royer MM, Chaput JP, Doucet E. Adaptive thermogenesis can make a difference in the ability of obese individuals to lose body weight. *Int J Obes* 2013;37(6):759-64. Epub 2012 Jul 31.
- Bacon L, Aphramor L. Weight science: evaluating the evidence for a paradigm shift. *Nutr J* 2011;10:9.
- Puhl RM, Heuer CA. Obesity stigma: important considerations for public health. *Am J Public Health* 2010;100(6):1019-28. Epub 2010 Jan 14.
- Vallis M, Piccinini-Vallis H, Sharma AM, Freedhoff Y. Modified 5 As. Minimal intervention for obesity counseling in primary care. *Can Fam Physician* 2013;59(1):27-31 (Eng), e1-5 (Fr).
- Plourde G, Prud'homme D. Managing obesity in adults in primary care. *CMAJ* 2012;184(9):1039-44. Epub 2012 May 14.

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