# *Obesity: A National Crisis*

## *A report prepared for The Social Affairs, Science and Technology Committee of the Canadian Senate*

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# *Overview*

## *Obesity is a disease*

***According to the World Health Organization, obesity is a complex chronic disease. Obesity is a reoccurring disease – leading individuals to "yo-yo" in weight often lifelong. Obesity causes the brain's fat regulatory system to be set higher, causing the body to maintain fat.***

## *Obesity is a killer!*

***A single Canadian study determined that nearly 10% of deaths in Canada were attributable to obesity. While others say that higher fat mass is correlated with a higher risk of early mortality.***

## *Obesity causes chronic disease*

***Obesity coincides with type II diabetes, asthma, sleep apnea, gallbladder disease, osteoarthritis, chronic joint pain, cancer (colorectal, kidney, breast, endometrial, ovarian and pancreatic), hypertension, stroke, congestive heart failure and coronary artery disease[9].***

## *Childhood obesity – An abuse issue*

***Child obesity has dramatically increased over the last decade to 12% of Canadian children. In total, 1 in 3 children are either overweight or obese. Obesity is a preventable disease, which parents subject children to by providing calorie dense foods and reinforce low activity levels.***

## *Not a matter of poor will power*

***Obesity continues to be highly stigmatized in our country. The obesity bias continues to consist of thinking that obese individuals have poor will power and lack motivation. Like any group requiring healthcare, these individuals deserve the same compassion and care as any other Canadian seeking disease management through the healthcare system.***

## *Quality of life*

***Obesity not only impacts the physical aspect of individuals, but also the mental wellness and socio-economic standing. Obesity has been linked with increased depression rates, psychiatric disorders, poor self-esteem, and job strain.***

## *Treatment strategies - what works & what does not?*

***Several strategies have been adopted including weight loss medications, programs, and surgeries to conquer obesity. While some strategies have been effective, others are not in the long-term. Very few preventative measures make up this list of interventions.***

## *Suggestions*

***A national strategy needs to be adopted in order to tackle the obesity epidemic. A public education initiative should be undertaken to dispel obesity bias and increase preventative measures. Multidisciplinary care and weight loss surgery should be at the forefront of the intervention strategies***

## *Obesity is a disease*

### *'Statistics Canada: Nearly 1 in 5 Canadians are obese'*

***Canadians are in an upward trend towards higher obesity rates. Centuries ago being overweight or obese was looked upon as a status of wealth and privilege. Now, rates of obesity are no longer rare. In the past decade a significant shift towards obesity occurred in both men and women. In 2012, 18.8% of the populations, equivalent to more than 7 million Canadians were reported to be obese[1]. With the introduction of technology, Canadians have become more sedentary. A more sedentary lifestyle, increased portion sizes, and industrialized food products ladened with high fructose corn syrup and salt are components of a poor lifestyle forced on the population by an avaricious food industry contributing to weight gain. Poverty and the availability of calorie dense food have been blamed for the obesity epidemic; however, the disparity across the rich and poor provinces does not necessarily confirm that assumption. What does seem to correlate is transportation. The larger***

[1] Statistics Canada. Overweight and obese adults (self-reported). 2012. Report No.: 82-625-X

***the population size within a city, the less likely the population will have higher rates of obesity[1].***

***While environmental factors are components in adult and childhood obesity, recent studies suggest a genetic component adding to the complexity of understanding of the disease. Parents that are obese pass these genes onto their children, who are then nurtured in an obesogenic environment, which perpetuates the cycle of obesity through the generations. Genetics as a conflicting factor to diet and exercise explains the variety of individuals that respond to programs, surgery, and prevention measures. Just as each person responds differently to a medication, the same can be said of weight loss treatments. Another factor that comes into play is the metabolic effect that obesity has on the regulatory system. It is believed that obesity causes the fat regulation part of the brain to be set at a higher setting. Regardless, that individuals try to exercise or change their lifestyle, obesity can reoccur. These individuals will continue to battle sustaining a lower weight for the rest of their lives.***

***The rates of obesity are said to only continue to increase. From 1994-1995 to 2010-2011 more than 1.6 million overweight individuals became obese. Another 2.8 million normal weight individuals became overweight[2]. As obesity rates creep up, the costs to the healthcare system and Canadian economy have steadily increased. Nearly a decade ago, obesity costs were 4.1% of budgeted health expenses[3]. With the current obesity trend, it is reasonable to assume that this portion of the budget has also increased substantially. Currently, being a normal weight Canadian is atypical.***

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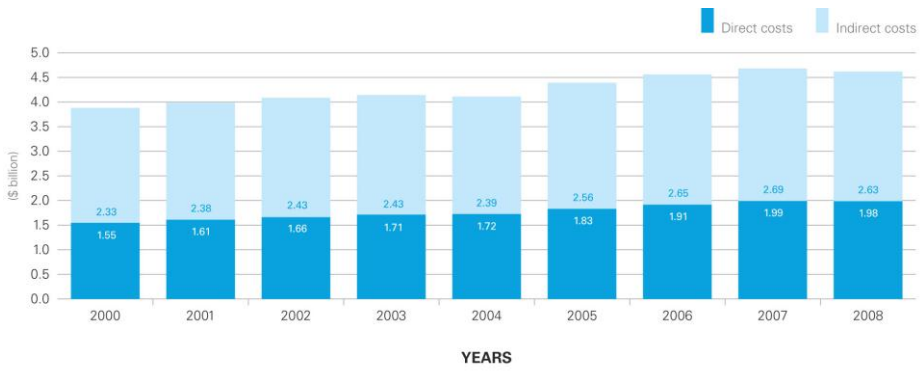
[1] Statistics Canada. Canadian Community Health Survey. 2014. Regional differences in obesity.
[2] Statistics Canada. Changes in body mass index (BMI) between 1994/1995 and 2010/2011. 2012. Report No.: Table 104-7030.
[3] Anis A, Zhang W, Bansback N, Guh D, Amarsi Z, Birmingham C. Obesity and overweight in canada: An updated cost-of-illness study. Obesity Reviews. 2010;11:31-40.

***Figure 1. Total cost of obesity to the Canadian public healthcare system from 2000 to 2008[1]***

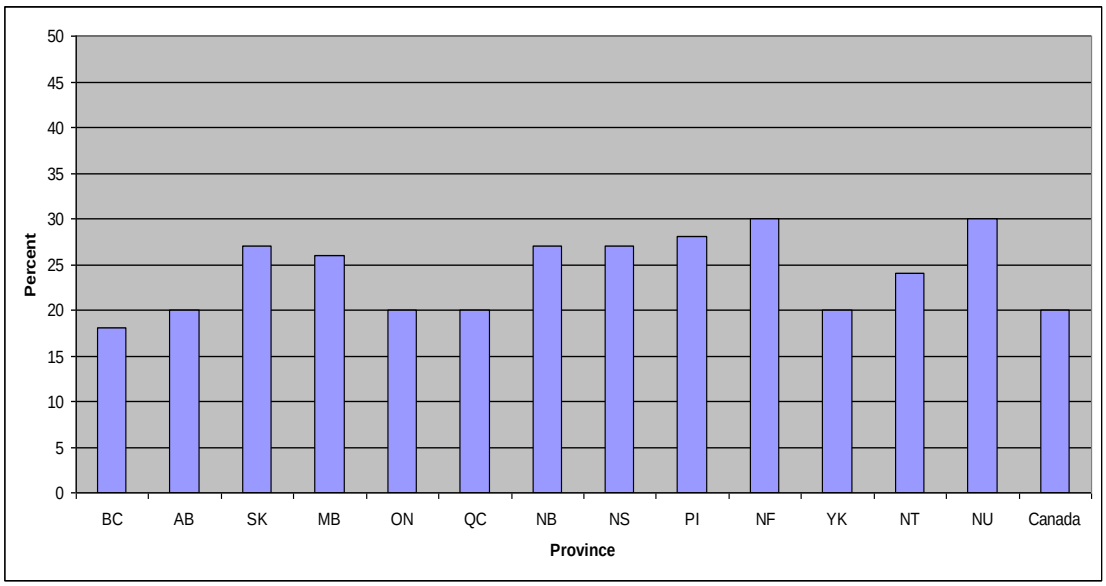



SOURCE: I. Janssen, unpublished manuscript for the Public Health Agency of Canada; based on analysis of the1994/95 and 1996/97 National Population Health Surveys; 2000/01, 2003, 2004, 2005, 2007 and 2008 Canadian Community Health Surveys (Statistics Canada); and Economic Burden of Illness 2000 Database (Public Health Agency of Canada).

***'The Majority of provinces are above national BMI average'***

***Areas leading in obesity rates are the Maritimes provinces (25.9%-29.4%) and the Territories (24.5%-29.4%). British Columbia has the lowest self-reported rate (15.0%), while the Yukon, Québec, and Alberta hover at the national average (18.8%)[2]. Superficially it would appear that obesity is a poverty problem, but clearly the issue is more complex given the variability across the country.***

***Figure 2. Obesity rates by Canadian province[2].***




[1] Public Health Agency of Canada. Obesity in Canada: Health and Economic Implications. 2011.

[2] Statistics Canada. Overweight and obese adults (self-reported). 2013. Report No.:82-625-X

## *Obesity is a killer*

***Obesity has been linked to early all-cause mortality. Beyond the mortality risk factors that obesity causes through chronic disease, obesity i.e. extra fatty tissue itself is linked with higher early mortality rates. Two correlations have been suggested to cause the link: 1) increased body mass index=increased risk of mortality, and 2) increased abdominal fat=increased risk of mortality. Some reports have presented findings that as an individuals body mass index (their weight(kg)/height(m)$^2$) increases, the risk of morality also increases[1]. This places 14 million overweight or obese Canadians (50%) at risk of early all-cause mortality[2]. However, some argue that body mass index is not as relevant as the placement of the fatty tissue. A recent report demonstrated that having a few extra pounds, being overweight, may be beneficial for decreasing mortality risk. The cause of extra weight being a protective factor is unknown. A point to consider when looking at extra weight is the number of those individuals that will continue to put on weight and become obese. These overweight individuals are also more likely to spend more years in poor health than their normal weight counterparts[3]. Individuals that were obese were at greatest risk for early mortality[4]. Where individuals carry their weight is the major factor associated with early death. Abdominal fat has been linked with increasing the likelihood for disease, including diabetes and heart disease.***

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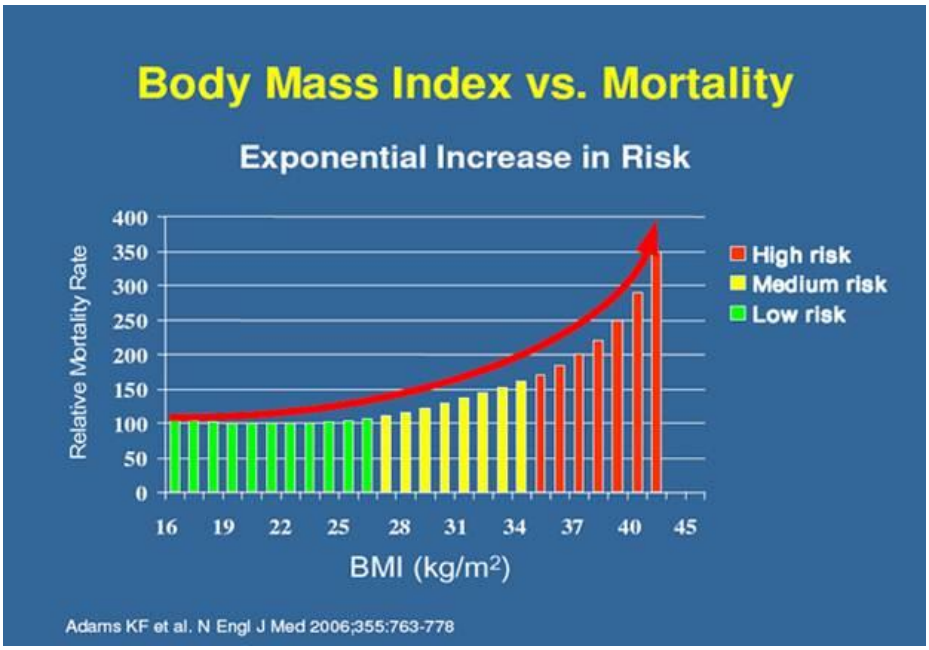
[1] Adams, KF; Schatzkin, A; Harris, TB; et al. Overweight, Obesity, and Mortality in a Large Prospective Cohort of Persons 50 to 71 years old. N Engl J Med 2006; 355:763-778.
[2] Statistics Canada. Overweight and obese adults (self-reported). 2013. Report 82-625-X
[3] Steensma, C; Loukin, L; Orpana, H; et al. Comparing life expectancy and health-adjusted life expectancy by body mass index category in adult Canadians: a descriptive study. Population Health Metrics 2013; 11:21.
[4] Flegal, KM; Kit, BK; Orpana, H; et al. Association of all-cause mortality with overweight and obesity using standard body mass index categories: a systematic review and meta-analysis. JAMA 2013;309(1):71-82.

***Figure 3. The relative mortality rate as body mass index (kg/m²) increases[1].***




## *'Obesity causes chronic disease'*

***While we continue to lag behind our American counterparts in obesity rates in previous years (24.1% CAN vs 34.4% USA 2008), obesity still has a major impact on the Canadian healthcare system[2].***

***Obesity affects every aspect of human function. The most dangerous to human health and costly to the healthcare system is Type II Diabetes and hypertension. The prevalence of diabetes has increased in parallel to obesity rates. Diabetes is caused by fatty tissue releasing toxic materials that damage the pancreas and cause insulin resistance. More than 200,000 new cases of diabetes were diagnosed in 2008[3]. Diabetes is a life-threatening disease. Diabetes management can be complex and impacts quality of life, which may lead to depression. Diabetes can result in nerve damage, cardiovascular damage and renal failure, all of which can be life threatening. Metformin prescriptions, a medication for diabetes, have steadily increased over the years to 1.08 billion units per year in 2009[4].***

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[1] Adams, KF; Schatzkin, A; Harris, TB; et al. Overweight, Obesity, and Mortality in a Large Prospective Cohort of Persons 50 to 71 years old. N Engl J Med 2006; 355:763-778.
[2] Statistics Canada. Overweight and obese adults (self-reported). 2013. Report 82-625-X
[3] Statistics Canada. Burden of diabetes prevalence in Canada. 2008.
[4] Public Health Agency of Canada. Diabetes in Canada: Facts and figures from a public health perspective. 2011.

***Cardiovascular disease comprises 1 in 3 of all deaths in Canada[1]. Heart disease incurs a total cost of $20.9 billion every year in healthcare costs. High blood pressure, also known as the silent killer, is a major contributor to these heart disease costs. Long-term medications for high blood and high cholesterol have a significant impact on the amount Canadians spend on drugs. The Canadian Institute of Health Information demonstrated that in the past 20 years drug expenditures have only increased. Nearly $14 billion is paid for all drugs including cancer drugs by the Canadian government.***

***Several cancers have been linked to obesity, such as certain cancers in the gastrointestinal tract, female reproductive system, thyroid, and kidney. Excess fat produces and causes biological factors in the body to cause growth of tissues and stress on the body causing cancer. Lifestyle, diet and exercise, were determined to be the second leading cause of cancer after tobacco consumption. This equates to nearly 100,000 cases of cancer each year due to obesity. The Canadian government through the Canadian Institute of Health Research allocates more than $159 million dollars for cancer research to develop a cure.***

***A new struggle for the physicians specialized in bones, joints and muscles are the increase in joint replacements because of obesity. Joints deteriorate over time normally; however, the time to joint replacement is significantly sooner in the obese population because of excess weight straining the joints. Obese individuals are more likely to have a joint surgery by the time they're 40.***

## *Childhood obesity – an abuse issue*

***"Because of the increasing rates of obesity, unhealthy eating habits and physical inactivity, we may see the first generation that will be less healthy and have a shorter life expectancy than their parents." - former U.S. Surgeon General Richard Carmona.***

***An estimated 1.6 million Canadian children are overweight or obese: 1 in 5 are overweight, and 1 in 10 are obese, amounting to 30% of children in Canada.***

***Childhood obesity has a direct link to adult obesity, leading to early onset of chronic diseases such as diabetes and depression. Obesity is a preventable disease. By overfeeding children highly saturated foods and sustaining a low activity level, parents are causing their children to become obese and subject to all of the chronic diseases mentioned above. While this cannot be categorized as a form of neglecting basic needs,***

[1] Heart and Stroke Foundation of Ontario. Statistics. 2008.

***allowing children to develop preventable chronic illness is worthy of considering whether it is abuse.***

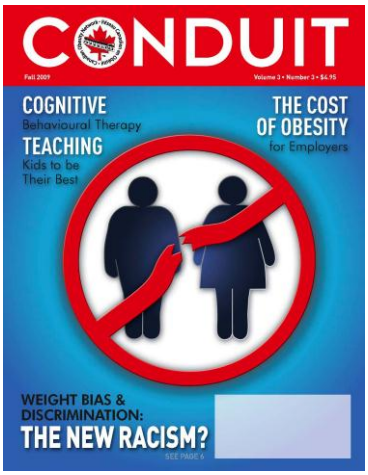
***Figure 4. Media description of childhood obesity.***


## *Not a matter of poor will power*

***Obesity bias is the discrimination of an individual based on their weight. Curing obesity is not simply a matter of eating less and exercising more. Obesity is a complex disease that reoccurs without ongoing and sustained interventions. Regardless, a bias exists stemming from the belief that obesity is a physical state brought on by lack of will power and perceived laziness. Many individuals that are obese lead hectic lives as anyone else, but are 12 times more likely to feel criticized and less valued in the workplace than normal weight individuals[1]. In particular, women are a target for weight bias. Others will experience ostracism or bullying from their peers and even healthcare providers. Children and teens are also more likely to experience peer bullying at school. Many believe that obese individuals are responsible and in control of their disease: "they did it to themselves". Just as we treat smokers/ex-smokers for cancer and heart disease or people in the car accident that forgot their seat belt, we need to extend the same level of care to obese individuals with a disease. Like any other person struggling with a disease, they deserve our compassion.***

[1] Friedman, RR and Puhl, RM. Weight Bias: A Social Justice Issue. Yale Rudd Center. Report 2012.

*Figure 5. Media description of weight bias.*



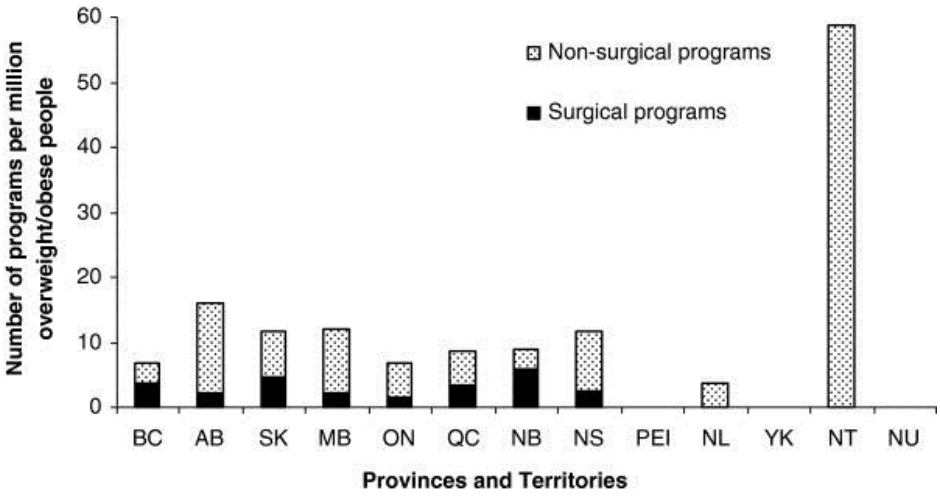

## *Quality of life*

***Obesity negatively impacts quality of life attributed to depression, low self-esteem, high public distress, workplace bias, deteriorating health, disability, and decreased sex life. Even individuals without associated diseases have a significantly lower quality of life. As body mass index increases, quality of life decreases. Weight loss can improve quality of life significantly.***

## *Treatment strategies - what works and what does not?*

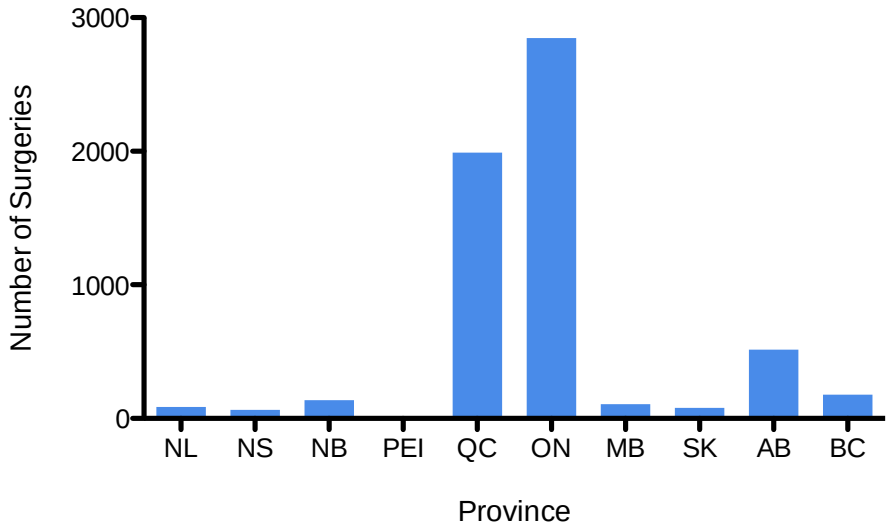
***Diet and exercise is simply not enough. While healthy living is an important aspect of maintaining a normal weight or preventing weight gain; it is not an effective strategy for maintaining weight loss in individuals that are already obese. Many people will try to lose weight several times and return to the heavier weight set point. Managing obesity surpasses diet and exercise; behaviour management is required. Psychological and social factors need to be taken into account by addressing emotional eating, abuse, stresses causing barriers for change, and psychiatric issues. Some individuals do not have access to resources as readily as others, or may not know where to start with diet and exercise in a feasible way. Others may refuse to seek intervention. Gender roles in society play a part in seeking intervention: women are more likely than men to reach out for help modifying lifestyle. Current treatment strategies include multidisciplinary weight loss clinics involving nurses, psychologists, dieticians, exercise specialists, and physicians. These clinics have been used in addition to support individuals through weight loss (bariatric) surgery.***

***Figure 6. Number of programs per million overweight or obese individuals within each Canadian province and territory[1]***




***Surgery is the only evidence-based strategy for sustainable weight loss, and chronic disease resolution. Surgery may not be for everyone. Patient selection is key for surgery to be a success***

***Figure 7. Number of bariatric procedures performed within each province in Canada[2].***




*Note. Bariatric procedures for residents of PEI are performed in another province*

[1] Fortin, MMR; Brown, C; Ball, GDC; et al. Weight management in Canada: an environmental scan of health services for adults with obesity. BMC 2014; 14:69.
[2] Canadian Institute of Health Information. Bariatric Surgery in Canada. Report May 2014.

***Bariatric surgeries are complex operations requiring a specific surgeon and surgical team skill set that at the present time relatively few surgeons have in Canada. The gastric bypass procedure has been around for several decades, but is a major operation. The sleeve gastrectomy is a technically easier procedure with slightly low complication rates, but may not be as effective as the bypass in the long-term. The gastric band, popularly known as 'Lap-Band', is the easiest procedure to perform, but has a failure rate upwards of 40%. Resources are slim for surgery and wait times can be more than 12 months, a wait time rivaling knee replacement. Consequently a proportion of individuals choose to travel to private clinics in Ontario or Mexico for surgery. The number of these individuals is unknown and not being tracked[1]. These Medical tourists are estimated to cost the government $37,000 per tourist in complication management fees and procedure reimbursement from the province[2].***

***Several weight loss medications have been manufactured such as Orlistat and Lorcaserin. However, to date these have not been shown to be effective.***

## *Suggestions*

***While healthcare is a provincial responsibility, the "patch work quilt" of provincial strategies attempting to address the obesity epidemic is clearly not working. A national strategy is called for. A two pronged approach is required.***

1. ***A public education campaign similar to those adopted for anti-smoking and car seat belt use is necessary. This would include overcoming the significant obesity bias both in the minds of the public and the physician community at large.***

2. ***A requirement for appropriate infrastructure incorporating multi and interdisciplinary clinics (nursing, dieticians, psychologists, exercise specialists, internists, and surgeons) with linkages to community based care.***

***Simply taxing junk food is not enough.***

***Finally, bariatric surgery should be the treatment for appropriately selected individuals that are already obese.***

[1] Sheppard C, Lester E, Karmali S, de Gara C, Birch D. The cost of bariatric medical tourism on the Canadian healthcare system. American Journal of Surgery. 2014;207(5):743-7.
[2] Sheppard C, Lester E, Chuck A, Kim D, Karmali S, de Gara C, Birch D. Medical tourism and bariatric surgery: Who pays? Surgical Endoscopy. 2014:Epub ahead of print.