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Adolescent Bariatric Surgery: The Canadian Perspective

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ABSTRACT

Canada faces a similar epidemic of obesity in their adolescent population as other Western countries. However, the development of programs to treat obesity and manage its sequelae has evolved in a unique way. This is in part due to differences in health care funding, population distribution, public demand, and availability of expertise and resources. In this article, we will describe the evolution of adolescent bariatric care in Canada and describe the current programs and future directions. The focus will be on the province of Ontario, the site of the first adolescent bariatric program in the country.

Introduction

The prevalence of obesity in Canada has followed a similar trajectory to other Western countries over the past decades, and an increasing amount of attention has been focused on the implications of obesity on population health. However, the development of programs to treat obesity has been somewhat different in Canada than in the United States due to a number of factors. The objective of this article is to describe the evolution of this field in Canada, with a focus on development of an adolescent bariatric program in Ontario, Canada.

The Canadian health care system

Canada is divided into 10 provinces and three territories. The Canada Health Act is a federal statute that requires the provinces and territories to provide universal health care access for all Canadians.[1] Health care funding and budgets are administered at a provincial/territorial level, using a single-payer system in which only treatments that are approved by the government insurance plan are available. Operations or therapies not covered by provincial governments may still be available within the private sector, but the cost for these procedures is charged to the patient. The single-payer provincial funding system has allowed each province or territory to develop its own strategy for the management of obesity and its associated comorbidities within their unique populations. Since bariatric surgery has only recently been recognized as an effective treatment, there is variability in how provinces have invested in the infrastructure and personnel to provide this option. In addition, provincial/territorial ministries of health will often regionalize specialized care and limit the number of centers that can provide complex or expensive care. Well-developed examples of this strategy include cardiac surgery, transplantation, and complex cancer operations, such as esophagectomy and Whipple procedures.[2–4] Regionalization for high-cost care is usually associated with specific additional government funding for those activities, since hospitals in the Canadian health care system usually operate on a fixed global budget. Therefore, a hospital will not profit from delivering high-cost care, and indeed, the delivery of such care is a financial disincentive to the institution. This is in distinct contrast to the American system in which programs such as bariatric surgery are often seen as sources of income generation for the hospital, which can result in a proliferation of such programs.

Obesity rates in Canada

The prevalence of adult obesity in Canada has been on the rise over several decades, with generally higher rates in the eastern

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and northern regions of the country (Figure 1).[5] Overall, an estimated one in four Canadian adults is obese (24.3–25.4%), although the most recent statistics do show some stabilization of rates of obesity.[5] Because obesity rates vary by region, each province/territory has invested different levels of funding and effort into the development of programs to address this issue. In 2006, direct costs of overweight and obesity in Canada were estimated at 6 billion dollars.[6]

Diagnosis of overweight and obesity in children and adolescents is based on body mass index (BMI); however, as children are growing, BMI cutoffs for the definition of overweight and obesity vary with the age and sex of the child. In Canada, the World Health Organization (WHO) growth charts are recommended for the assessment of growth in children. Overweight is defined as a BMI between the 85th and 97th percentile and obesity greater than the 97th percentile, which corresponds with the adult cutoffs for overweight and obesity.[7,8]

Children appear to have a lower prevalence of obesity than adults, but rates remain unacceptably high. Overall, the prevalence of obesity and overweight in children between the ages of 6 and 17 years was 8.6% and 17.1%, respectively.[9,10] Boys are more affected than girls and obesity increases with age as shown in Table 1.[11]

Obesity management in Ontario

Most of the larger Canadian provinces now provide adult obesity management programs, including bariatric surgery, while the smaller provinces and three territories do not have large enough populations to justify comprehensive programs of their own. The Canada Health Act stipulates that health care must be accessible and portable, so patients from these provinces and territories can be referred to centers in the larger provinces. Of the provincial programs, Ontario has one of the more developed infrastructures for bariatric surgery in Canada and serves as an example of how this process has developed.

The population of the province of Ontario is approximately 13.5 million, which represents close to 40% of the overall Canadian population of 35 million.[12] Obesity management in the province of Ontario has evolved rapidly over the last decade into a regionalized model based on centers of excellence. The stimuli for the development of this system included increasing evidence of efficacy for bariatric surgery in the medical literature and increasing demand from the public. There was also evidence that large numbers of Ontario residents were obtaining bariatric procedures in American hospitals, paid for by the provincial health insurance plan, or were having laparoscopic adjustable gastric banding procedures done in private clinics outside the government insurance plan. The Ontario Bariatric Network currently consists of four Bariatric Centres of Excellence encompassing 11 hospitals, including two pediatric hospitals. The adult centers have separate medical and surgical programs, while the pediatric centers are primarily medical with one offering bariatric surgery as an additional treatment option. There are also a larger number of referral/follow-up clinics associated with the medical and surgical centers. It is anticipated that 3000 patients will undergo bariatric surgery in Ontario in 2013. The Ontario Bariatric Network maintains a province wide web-based referral portal and registry to track outcomes. The administrative structure regularly evaluates progress and outcomes to develop best practices and optimize care.

Surgeons working within the network are funded to perform laparoscopic Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy. Laparoscopic adjustable gastric banding is not covered by the government at this point and only select centers perform duodenal switch with bilio-pancreatic bypass. Revisional surgery is also regionalized to a few centers. Despite this, there are still a number of private clinics that offer laparoscopic banding at the patients' expense. The number of patients utilizing these clinics appears to be decreasing rapidly in part due to recent publications showing high reoperation rates with laparoscopic banding procedures and with the increased availability of bariatric surgery within the government-funded system.[13,14] Some patients still prefer the private option of laparoscopic gastric banding due to

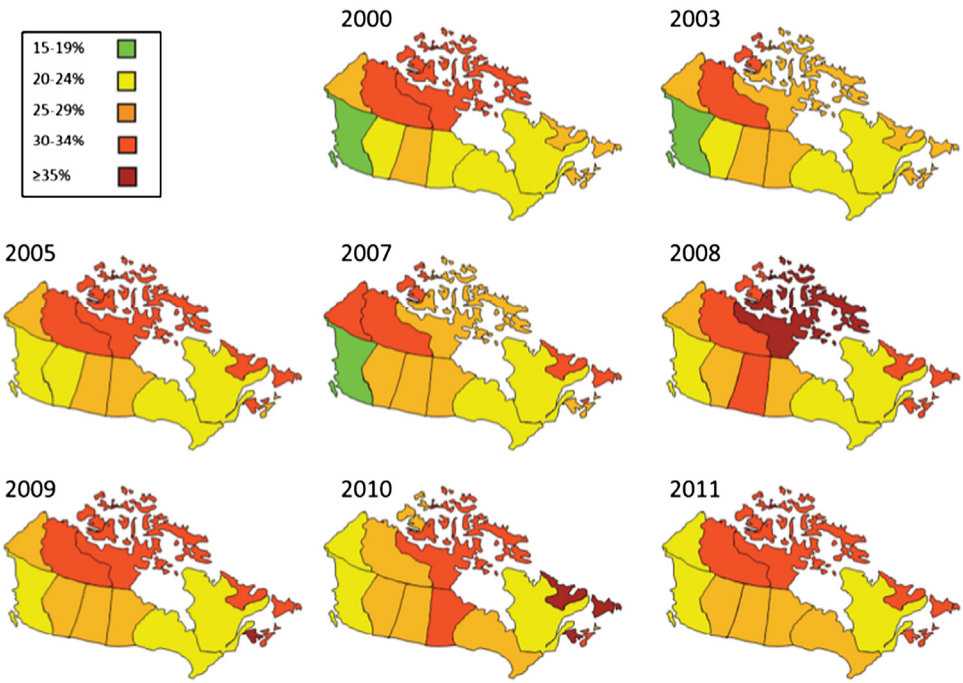

Fig. 1. Estimated prevalence of obesity in Canadian adults by province (2000–2011).[5] Adults with BMI $\geq$ 30 kg/m^2 in each province as calculated from the self-reported height and weight surveys conducted by the Canadian Community Health Survey and corrected to account for misreporting of height and weight.
Source: Used with permission from Gotay et al.[5]