Published in final edited form as:

Arch Dis Child. 2010 January ; 95(1): 1–2. doi:10.1136/adc.2009.157677.

Overweight in older children and adolescents: treatment or prevention?

Caroline M Apovian

In children and adolescents, overweight is defined as a body mass index for age greater than the 95th percentile of a reference population. Between 1980 and 2004 the prevalence of overweight in children and adolescents increased from 6% to 19% in the USA.¹ Overweight children and adolescents very often become obese adults.² Obesity seems to have complex and multiple aetiologies and because of this is very difficult to prevent or treat. Since prevention of this disease in this obesogenic environment has proven to be elusive, much focus has revolved around treatment of overweight and obesity for adults and children. This editorial will briefly comment on the use of antiobesity medicines as well as bariatric surgical procedures in older children or adolescents.

A recent article by Viner *et al*³ reports on rising antiobesity drug prescription rates in older children in the UK over the period between 1999 and 2006, a time in which childhood and adolescent obesity rates skyrocketed all over the world. At the time, the three medications approved for obesity treatment in adults in the UK were the gastric and pancreatic lipase inhibitor orlistat, the serotonin and noradrenergic reuptake inhibitor sibutramine, and the selective cannabinoid CB1 receptor antagonist rimonabant. In the UK these drugs are not licensed for use in children or adolescents. In the USA, rimonabant did not meet approval requirements by the Food and Drug Administration, and in addition to sibutramine and orlistat, the market includes the older drugs phentermine and diethyl-propion, approved in the 1970s for 3-month usage. Orlistat was approved for use in patients aged ≥ 12 years and sibutramine for patients aged ≥ 16 years. The UK data report that approximately 0.1 in 1000 of those aged ≤ 18 years were prescribed an antiobesity agent in the UK in 2006, or about 1300 annually, a 15-fold increase since 1999. It is indeed alarming at first, but then on closer look at the data, 40% of the subjects received only one prescription and only 25% of subjects receiving orlistat and 35% of subjects on sibutramine remained on the drug for longer than 3 months. This report confirms that either or both of the following are true: older children are non-compliant with lifestyle change, or the medications are not well tolerated in this age group, or both. The most likely scenario is that both are true. I for one breathed a sigh of relief when reading that caveat, because although this does represent a waste of resources, I do not think it is a good idea to create a young society dependent on drugs to combat the obesogenic environment around them. Although it will take some time, a better idea is to change the environment, not the brain of the person living in it.

In a sense, the problems seen in children with regard to both orlistat and sibutramine are also true in adults. Adults do not stay on a lifestyle change programme with or without medication for very long and it is also true that the side effects of both of these medications are difficult to tolerate.⁴ One would argue that the gastrointestinal side effects of orlistat are

Correspondence to: Caroline M Apovian, Section of Endocrinology, Diabetes and Nutrition, Boston University School of Medicine, Boston, Massachusetts, USA; caroline.apovian@bmc.org.

Competing interests: None declared.

Provenance and peer review: Commissioned; internally peer reviewed.

more intolerable than the blood pressure elevations seen with sibutramine. In addition, it is difficult to discern what is really going on because at least in the USA, these medications are not generally covered by insurance, and both orlistat and sibutramine cost >100 dollars per month in the USA. Therefore, at least in the USA, an equally plausible reason that patients stay on orlistat or sibutramine for only a few months is the price tag of these drugs that are paid out of pocket.

A landmark *New England Journal of Medicine* paper by Wadden *et al.*,⁵ clearly delineated that the antiobesity agent sibutramine causes significantly more weight loss when combined with a structured diet and a behavioural programme than when used alone or with just one of the other modalities. The authors of this UK article indicate that the side effects of these two drugs (orlistat and sibutramine) seem to be more distressing to those in their real world study than in those subjects who were part of the original long-term trials. It may be that (especially in regard to orlistat) if you are not properly counselled on behavioural change and diet and physical activity, you will not be reassured with significant weight loss and you will instead be fraught with unpleasant side effects due to a high-fat diet prompting a high dropout rate, as was seen in this study.

My bias would be that it is not that the drugs have a side effect profile that youth cannot tolerate and it is not that young people cannot make lifestyle change, it is that there is a lack of training on the part of the healthcare provider such that the proper education is not given to the young patient along with the prescription. In other words, medical care is not staying ahead of the game and the obesity epidemic and drug technology has overtaken medical education, and we need to catch up.

The solution is not to develop better drugs for childhood obesity; the solution is to teach paediatricians how to more effectively initiate behaviour change in child and family. In addition, paediatricians and other providers cannot do this alone, as obesity is escalating in epidemic proportions. The governments of the UK and the USA, as well as elsewhere in the world, should be working with academia, industry, and communities to institute public health approaches ensuring healthy eating and physical activity before weight gain occurs. Unfortunately, there is abundant evidence that this weight gain can occur very early in life, and thus parental teaching and a family approach is necessary to combat weight gain.⁶

Better drugs will become available in the near future, which will be more effective and safer. These will primarily be reserved for adults; however, it is inevitable that some will be tried in children. They will never be “cures” for obesity or a magic pill, however. And is it right to treat an environmental cause of obesity with drugs or is it better to combat the environment with a concerted collaboration among healthcare providers, government and industry to make it safer for children to eat in the UK and elsewhere? There is an accumulation of circumstantial evidence that makes us wonder whether the intrauterine environment sets the stage for a variety of ills in childhood and adulthood, most notably obesity and type 2 diabetes.⁷ Could obesity be caused by the fetus sensing the outside environment? Does failure to thrive eventually lead to obesity as the child over-reacts to the perceived lack of nutrients by overeating? These are the questions that need to be answered and addressed, in order to combat childhood obesity and type 2 diabetes.

For now at least, bariatric surgical procedures such as the Rouxen-Y gastric bypass and the laparoscopic adjustable gastric banding procedure are reserved for adolescents who have a body mass index >40 kg/m² or >35 kg/m² with serious comorbidity.⁸ These criteria are similar to guidelines for adult bariatric surgery and have evolved recently due to our recognition of the fact that childhood overweight may lead to decreased longevity for the next generation.⁹ In addition, the development of the laparoscopic adjustable gastric banding

procedure with less apparent operative and postoperative risk has made bariatric surgery a more accessible treatment pathway for many patients, including adolescents.¹⁰ However, although the number of adolescent bariatric surgery cases tripled in the USA from 2000 to 2003, only 771 cases were performed in 2003, which represented <0.7% of total bariatric procedures in the USA.¹¹

Just as bariatric surgery is reserved for those adolescents who have failed medical treatment and have comorbidities, so should medications be reserved for the same reasons. In fact, surgery should probably be entertained as a more effective and long-lasting measure than medications in adolescents because medications once stopped, will lead to rebound weight gain, as it does in adults. Long-term antiobesity drug use in adolescents is most likely not appropriate since there are no studies that last longer than several years, and the financial burden to that individual would also be sizable.

For all the reasons discussed in this editorial, antiobesity medications in children or adolescents will never be a solution; neither will bariatric surgery; the only solution for childhood obesity is prevention.

References

1. Ogden CL, Flegal KM, Carroll MD, et al. Prevalence and trends in overweight among US children and adolescents, 1999–2000. *JAMA* 2002;288:1728–32. [PubMed: 12365956]
2. Serdula MK, Ivery D, Coates RJ, et al. Do obese children become obese adults? A review of the literature. *Prev Med* 1993;22:167–77. [PubMed: 8483856]
3. Viner RM, Hisa Y, Neubert A, et al. Rise in anti-obesity drug prescribing in the UK: a population-based study. *British Journal of Pharmacy*. In press.
4. Khaodhiar L, Apovian CM. Current perspectives of obesity and its treatment. *Manag Care Interface* 2007;20:24–31. [PubMed: 17626588]
5. Wadden TA, Berkowitz RI, Womble LG, et al. Randomized trial of lifestyle modification and pharmacotherapy for obesity. *N Engl J Med* 2005;353:2111–20. [PubMed: 16291981]
6. Epstein LH. Family-based behavioural intervention for obese children. *International Journal of Obesity & Related Metabolic Disorders. Journal of the International Association for the Study of Obesity* 1996;20(Suppl 1):S14–21.
7. Gillman MW, Rifas-Shiman SL, Kleinman K, et al. Developmental origins of childhood overweight: potential public health impact. *Obesity* 2008;16:1651–6. [PubMed: 18451768]
8. Pratt JS, Lenders CM, Dionne EA, et al. Best practice updates for pediatric/adolescent weight loss surgery. *Obesity* 2009;17:901–10. [PubMed: 19396070]
9. Olshansky SJ, Passaro DJ, Hershow RC, et al. A potential decline in life expectancy in the United States in the 21st century. *N Engl J Med* 2005;352:1138–45. [PubMed: 15784668]
10. Apovian CM, Baker C, Ludwig DS, et al. Best practice guidelines in pediatric/adolescent weight loss surgery. *Obes Res* 2005;13:274–82. [PubMed: 15800284]
11. Tsai WS, Inge TH, Burd RS. Bariatric surgery in adolescents: recent national trends in use and in-hospital outcome. *Arch Pediatr Adolesc Med* 2007;161:217–21. [PubMed: 17339501]