What are the treatment options for childhood obesity?

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In the management of childhood obesity, family-based lifestyle interventions aimed at long-term behavioural change in the areas of diet and physical activity can produce significant reductions in weight. In those more severely affected, nonconventional treatments such as very low energy diets, medications and bariatric surgery may be considered as adjuncts .

Obesity, the most common chronic health problem in childhood, presents a challenge both from the perspective of prevention and treatment. Despite recent plateauing of prevalence in several countries, including Australia,[1] almost one in four school-aged children in Australia is either overweight or obese.[2,3]

Children with weight issues present more frequently to GPs than children within the normal weight range. However, concern about weight per se is not usually the reason for the visit, and very few children are offered treatment because of numerous perceived barriers (see the box on this page).[4]

Childhood obesity tracks strongly into adulthood; the loss of what many consider as 'puppy fat' around puberty is not supported by the literature. Hence, addressing the issue early is important if reductions in the potential health burdens associated with adult obesity, such as type 2 diabetes, cardiovascular disease, metabolic syndrome and cancer, are to be achieved. Not only does an obese child have an increased risk of longer-term health concerns, but health may be affected in the short term. Complications, including obstructive sleep apnoea (which may

Perceived barriers to raising the issue and treatment of childhood obesity

- Parent/child/young person sensitivity
- Lack of time and potentially a complex, difficult problem
- Lack of parent/patient motivation
- Lack of effective interventions
- Inadequate training
- Lack of support services

Key points

- **Almost one in four school-aged children in Australia is overweight or obese.**
- **Complications of obesity include obstructive sleep apnoea, limitation of mobility, metabolic derangement and psychosocial problems such as bullying and low self-esteem.**
- **The aims of treatment of patients with obesity are to reduce adiposity and diminish or eliminate obesity complications.**
- **Significant reductions in weight can be achieved using family-targeted lifestyle intervention programs (a combination of dietary, physical activity and behavioural modification).**
- **In children more severely affected, additional strategies such as short-term restrictive diets or pharmacotherapy may be required.**

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Helpful hints for children to achieve weight loss

- Make water the main drink
- Eat breakfast most days
- Eat one meal a day together as a family with the TV off
- Spend at least one hour a day outside being physically active
- Keep 'screen time' to less than two hours a day
- Monitor weight regularly
- Develop a bedtime routine aiming for 9 to 11 hours of sleep (depending on age)

lead to impaired concentration from poor sleep quality as well as metabolic abnormalities), limitation of mobility from musculoskeletal disorders, metabolic derangement such as insulin resistance and psychosocial problems such as bullying, social isolation and low self-esteem, can result. These complications are more likely to occur in children who are more severely affected.

Treatment strategies

The aims of treatment of children who are obese are to reduce adiposity and diminish or eliminate obesity complications. A more detailed discussion of this topic is provided in two recent articles published in *Medicine Today*[5] and *Nature Reviews Gastroenterology and Hepatology*.[6]

General management principles of obesity are as follows:

- accurate assessment of obesity and its complications
- definition of treatment goals
- family involvement: encouraging behaviour change for all the family
- long-term changes in diet, physical activity and sedentary behaviour.

Body mass index (BMI; weight [kg] divided by height [m]^2) can be used as a method of body fat measurement because BMI correlates well with the degree of body fatness, and is noninvasive, cheap and easily reproducible. Serial measurements are most helpful. For overweight children (BMI in the 85th to 95th centile), weight maintenance will be the aim as the child grows in height, whereas for those in the obese range (>95th centile), and especially for those who have obesity complications, weight loss will be important. Although there is a strong genetic predisposition to obesity, this becomes manifest in an obesity-conducive environment. Thus alteration of the environment to facilitate energy balance is paramount.

Conventional: lifestyle interventions

Significant, although small, reductions in weight outcomes can be achieved for children involved in family-targeted lifestyle intervention programs, compared with standard care or control. These programs use a combination of dietary, physical activity and behavioural modification.[7]

Parental involvement and behaviour modification

For most overweight and obese children lifestyle intervention will form the foundation of treatment. As parents act as role models and are the gatekeepers to the family food and activity environments, it is important to work with them to help create changes in family habits. Numerous studies support the use of family-based interventions that can lead to long-term (two to 10 years) relative weight loss.[7-10]

The behaviour modification strategies used to bring about change include goal setting, stimulus control and self-monitoring. Goals should be specific, realistic, relevant and timely. Alterations in the environment, such as removal of televisions from the bedroom, can assist in encouraging healthier choices (see the box on this page for some more helpful hints for weight loss). As parents and other family members of the obese child may have weight issues themselves, monitoring weight for all family members helps track the success (or not as the case may be) of the implementation of changes. In paediatric obesity management trials, improved weight outcomes are associated with the inclusion of a greater array of techniques.[10]

Dietary management

Interventions with a dietary component are effective, although more high-quality studies are needed to determine optimal treatment strategies.[11] The promotion of regular meals, consumption of water, vegetables, fruit and more nutrient-rich foods, and eating together as a family should be encouraged, together with a reduction in unhealthy meal/snack options, portion size and consumption of sugar-sweetened beverages. There is no evidence linking healthy eating plans aimed at weight loss with the development of an eating disorder.

Physical activity and sedentary behaviour management

Targeting sedentary behaviour may be as beneficial as aiming to increase physical activity.[12] Moreover, increasing incidental activity may be easier and cheaper to implement than increasing organised activities. Increasing activity levels in isolation can result in modest weight loss and improved metabolic parameters, and greater reductions in weight loss may be gained by the addition of a dietary component.[13] Physical activity of course has many other benefits.

Nonconventional: adjuncts to lifestyle interventions

In children who are more severely affected, including those with obesity-related complications, lifestyle-modification programs alone may not be sufficient and thus additional strategies may be needed. Treatment options are more limited in the severely obese child as compared with the severely obese adolescent.

Very low energy diets

Very low energy diets (VLEDs), in which energy intake is severely restricted to 800 kcal/day or less, may be used to induce rapid weight loss (6 to 15 kg over three to 12 weeks). Such diets generally use commercially prepared meal replacements (e.g. liquid shakes or

bars), but may also include normal food items, and are formulated to be nutritionally complete, providing a low carbohydrate (50 g glucose) intake to induce ketosis.

There is limited evidence to guide recommendations for use of VLEDs in adolescents. Concerns as to whether such energy restriction may affect linear growth seem unfounded; however, use of VLEDs in those under the age of 12 years is not recommended. Problems with VLEDs include difficulties adhering to such a restricted eating pattern and palatability of the meal supplements.

Drug therapy

Anti-obesity medications, as adjuncts to a comprehensive lifestyle intervention program, may have a role in the treatment of adolescent obesity but options are limited. Safety, efficacy and long-term consequences of these medications are uncertain and, although effective compared with placebo, weight loss is often only modest (around 5%).[7]

Phentermine, a centrally-acting appetite suppressant, is not recommended for use in adolescents or children (even though product information suggests it may be prescribed in those over 12 years of age).

Orlistat, a gastric and pancreatic lipase inhibitor, is not recommended in those under 18 years of age but may still be prescribed under medical supervision. Unpleasant gastrointestinal side effects (such as flatulence, steatorrhoea, faecal urgency or incontinence and abdominal pain) limit its use.

Metformin, a biguanide, may be prescribed in obese older children with clinical insulin resistance; use in this circumstance is off label and not for weight loss per se. Although there are currently no guidelines as to the optimal treatment protocol in such situations, a recent systematic review found that metformin improves markers of insulin sensitivity and reduces BMI in adolescents with clinical insulin resistance.[14] Slow or extended-release preparations are available that may assist with compliance and reduce the potential side effects (e.g. abdominal pain and diarrhoea).

Bariatric surgery

Bariatric surgery, a well-recognised form of therapy for severely obese adults, is only recommended for severely obese adolescents aged 15 years or older. Recommendations for Australia and New Zealand have been developed.[15]

Treatment of comorbidities

Obese children with obstructive sleep apnoea, confirmed on polysomnography, may require initiation of noninvasive respiratory support (continuous positive airways pressure [CPAP]). In those with tonsillar hypertrophy, adenotonsillectomy is recommended as first-line treatment. However, over 50% of children will have recurrence of symptoms postsurgery. Orthopaedic intervention for slipped capital femoral epiphyses will be required. Treatment for gastro-oesophageal reflux, constipation, asthma and severe depression are similar to that in children of a healthy weight, but overweight children may be more refractory to treatment until weight loss is achieved

Role of the GP in managing childhood obesity

- Recognise and raise the issue of obesity
- Provide basic nutrition and activity advice
- Use local services as much as possible (intervention will depend upon expertise and the resources available)
- Use the assistance of a dietitian or other health professional (e.g. psychologist, physiotherapist, exercise physiologist) if necessary. This is ideal for all patients, but cost issues are significant
- Refer the child to a paediatrician when:
  - there is severe obesity and comorbidities
  - there is a strong family history of comorbidities
  - an enhanced primary care plan is needed (e.g. if the child has comorbidities)

Useful websites on childhood obesity

- **Kid's Health: The Children's Hospital at Westmead – Fact Sheets**
  Available at: http://kidshealth.chw.edu.au/fact-sheets
- **NHMRC Clinical Practice Guidelines for the Management of Overweight and Obesity in Children and Adolescents**
  Available at: www.health.gov.au/internet/main/publishing.nsf/Content/obesityguidelines-index.htm
- **Healthy Kids Association**
  Available at: www.healthy-kids.com.au
- **Early Childhood Australia**
  Available at: www.earlychildhoodaustralia.org.au
- **The Parents' Jury**
  Available at: www.parentsjury.org.au

Conclusion

The absence of an established model of care or gold-standard management program for paediatric weight management should not deter initiation of treatment of an obese child. The role of the GP in managing childhood obesity and some useful web resources are included in the boxes on this page.

Current evidence supports the use of family-based lifestyle intervention programs and, in cases where conventional treatment is unsuccessful, the use of adjunctive therapy, such as short-term restrictive diets or pharmacotherapy, may be required. **ET**

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A list of references is available on request to the editorial office.

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