Childhood Obesity

The scale of the problem

Epidemiology

We have entered the 21st century in the knowledge that more and more children in the UK are becoming overweight or obese. Data from a number of UK studies have indicated that there has been a marked increase, particularly since the 1980s. Data on 4–11-year-olds, from three independent cross-sectional surveys published in the British Medical Journal, showed that from 1984 to 1994 the percentage classified as overweight increased from 5.4% to 9% in English boys, and from 9.3% to 13.5% in English girls.¹

Data from the Health Survey for England indicate that in 2001 approximately 8.5% of 6-year-olds and 15% of 15-year-olds were obese. Information collected by the European Association for the study of Obesity (EASO) Childhood Obesity Taskforce also showed that the UK has one of the highest prevalence rates of overweight children in Europe.

Prevalence rates of overweight children in Europe

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Defining obesity in children

Unlike the universally accepted definition of adult obesity there is more variation in how ‘overweight’ and ‘obesity’ are defined in children. As childhood is a time of development, the body mass index (BMI) is not a static measurement. However, age- and gender-specific BMI centile charts, adjusted for growth, have been designed by the Child Growth Foundation.

The charts are available to order from Harlow printing Ltd. via the website www.healthforallchildren.co.uk

The SIGN guidelines for the management of obesity in children and young adults have recommended to apply the charts for both clinical and research purposes. For clinical use, obese children are defined as those with a BMI >98th centile of the UK 1990 reference chart for age and sex. Overweight children are those with a BMI >91st centile of the reference chart.²

Waist circumference centile charts for British children and adolescents have also been published.³ The combination of BMI with waist circumference measurement provides a more accurate assessment of adiposity. One paper, examining secular trends in waist circumference in British children, showed that waist circumference increased sharply among 11–16-year-olds between the years 1987–1997, indicating that abdominal
obesity has increased much faster than overall BMI. It is recommended that waist circumference be recorded routinely in British schoolchildren.

**Causes and risk factors**

As with adult obesity, any factors that cause energy intake to be greater than the energy expended can lead to obesity. The possible causes of childhood obesity include:

- Rare genetic factors
- Poor diet
- Physical inactivity

**Genetic factors**

There are a number of rare genetic conditions that lead to obesity including Prader–Willi, Cohen and Bardet–Biedl syndromes. In 1997, interest arose in the role of the hormone leptin. However, the number of children worldwide who have presented with a mutation in the gene encoding leptin is extremely small.

Undoubtedly, in some cases genes do play a role in the aetiology of obesity. However, the rate at which the prevalence of childhood obesity has increased indicates that this trend is unlikely to be underlined primarily by genetic factors.

**Diet and physical activity**

The way in which we have shaped our society is without question reflected in the health of today’s children. Large food corporations have long recognised the benefits of marketing aimed at children, who have become consumers in their own right. A trip around any major supermarket will reveal that many foods have become segregated (based on their packaging) into child-specific and adult-specific foods. Cartoon characters and celebrities are used to increase recognition and undoubtedly the appeal of certain foods.
In addition, much physical activity has been removed from the daily lives of children. The time spent in active play has been replaced by more sedentary pursuits, such as watching television and playing computer games.

- The number of primary school children who walk to and from school has fallen from 62% in 1989/91 to 56% today
- Participation in school sport (>2 hours per week) decreased from 46% in 1994 to 33% in 1999
- Watching television is the most popular sedentary activity for children of all ages, with over a quarter of 11–16-year-olds watching more than 4 hours a day
- Activity levels for teenage girls are particularly low with 64% of 15-year-old girls being classified as ‘inactive’

**Risk factors**

Risk factors for the development of childhood obesity have not been well researched in the UK. Potential factors include:

- Parental obesity
- Time spent in inactive pursuits such as television viewing
- Low socio-economic status

**Long-term effects**

For many obese children, obesity will continue into their adult lives. Habits established early in life are always more difficult to change, and for this reason it is important to take action to try to reverse the trend of weight gain. Apart from the difficulty in changing long established habits, health risks are likely to manifest themselves earlier if obesity continues into adult life.
Obesity in childhood increases the risk of developing a number of health problems:

<table>
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<tr>
<th>Physical health problems</th>
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<tbody>
<tr>
<td>Increased blood pressure</td>
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<tr>
<td>Hyperlipidaemia</td>
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<td>Type 2 diabetes</td>
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<td>Hyperinsulinaemia</td>
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<td>Adverse changes in left ventricular mass</td>
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<td>Earlier menarche</td>
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<td>Sleep apnoea</td>
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<td>Exacerbation of asthma</td>
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<th>Psychological health problems</th>
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<td>Low self-esteem</td>
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<td>Depression</td>
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<td>Disordered eating</td>
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<td>Psychosocial distress – many obese children experience teasing, social stigma and discrimination</td>
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It has been shown that obesity in childhood may have an adverse effect on future income and educational achievement in women.²
Assessment

The question of how to manage childhood obesity is one that perplexes health professionals, and many are cautious about whether to intervene. As with adult obesity, making a thorough assessment will help to establish the most suitable course of action for an individual child and their family.

In making an assessment:

- Take measurements of height and weight and plot this on the appropriate BMI centile chart
- Record measurements of waist circumference and refer to the appropriate centile chart*
- Note the child’s and the family’s weight history
- Consider whether there may be any underlying medical causes
- Assess patterns of eating and physical activity
- Collect information about the child’s physical and psychological health
- Determine the expectations from treatment of both the child and their parent/guardian

*There is no consensus about how to define paediatric obesity using waist measurement. For clinical use, the 99.6th or 98th centiles are suggested cut-offs for obesity and the 91st centile for overweight.3
The SIGN guidelines recommend referring the following groups to paediatric consultants:

- All children under the age of 24 months with BMI >99.6\textsuperscript{th} centile
- Children over 24 months with BMI >99.6\textsuperscript{th} centile who are at higher risk of obesity-related morbidity
- Children who have already developed a serious obesity-related morbidity e.g. hypertension, sleep apnoea, orthopaedic problems, hypoventilation syndrome and psychological morbidity
- Children with a suspected underlying medical cause of obesity

Factors, which may alert a health professional to an underlying medical cause of obesity include:

- Developmental delays
- Poor growth in height
- Dysmorphic features
- Hypogonadism
Treatment

There are few studies which report on the long-term effects of interventions to control weight in children. The Cochrane Review on interventions for preventing obesity in children concluded that there was a need for a much greater number of well-designed studies, which examine a range of interventions for childhood obesity. It has been identified that strategies which reduce sedentary behaviour and increase physical activity seem useful. In addition, behavioural interventions appear more successful when parents are included.

General approach to therapy

In 1998, a US expert committee was formed to develop recommendations for physicians, nurse practitioners and nutritionists to guide the evaluation and treatment of overweight children and adolescents. These recommendations include:

- Intervention should begin early
- The family must be ready for change
- Clinicians should educate families about medical complications of obesity
- Clinicians should involve the family and all caregivers in the treatment programme
- Treatment programmes should institute permanent changes, not short-term diets or exercise programmes aimed at weight loss
- As part of the treatment programme, a family should learn to monitor eating and activity
- The treatment programme should help the family make small gradual changes
- Clinicians should encourage and empathise and not criticise
- A variety of experienced professionals can accomplish many aspects of a weight management programme
Developing an intervention plan

If a primary care team has decided that a child has, in effect, ‘simple obesity’ and does not meet the criteria for referral to a specialist secondary team, then a suitable intervention plan needs to be devised.

It must be remembered that, as highlighted by Barlow and Dietz (1998), obesity is a chronic disease. Therefore, frequent visits, continuous monitoring and reinforcement will be required for success, **but will not ensure it.** They caution that:

“…providers who lack the time required to implement interventions or who find themselves annoyed or easily frustrated by obese children or the parents of obese children should refer these patients elsewhere for care because of the potential adverse effect the providers response may have on the child and family.”

The decision to intervene should be reached jointly by the health professional, the child’s carers and, in the case of older children, the child themselves.

- The support of parents/guardians and other family members (e.g. grandparents) is crucial if an intervention is to achieve success
- The focus of the treatment should be placed on changing eating habits and patterns of physical activity with weight maintenance as an acceptable goal
- Health professionals who care for these families should treat them with sensitivity and compassion

It is important that the term ‘dieting’ is avoided and that children are gradually and positively re-educated to change their eating habits. This can involve a change in the attitude for the whole family towards meals and patterns of snacking. The child should not be singled out from the rest of the family by having restrictive ‘rules’ about eating
applied solely to them. In addition, referring to certain foods as ‘treats’ or ‘bad foods’ is not a helpful way to develop a healthy attitude to food.

- Questions about food intake should be phrased in a non-judgmental way
- To help gain a better picture of eating habits, encourage the child and/or their parents to keep a track of their food and drink intake
- Highlight the importance of considering portion sizes, snacking habits and the energy density of foods
- Encourage a reduction in periods of physical inactivity – help the child to become more aware of the time currently spent playing computer games or watching television
- Discuss ways in which more physical activity can be built into the daily life of the child e.g. can the family go for more walks together, are there any clubs which the child could take part in, do they enjoy cycling, skating or swimming
- Arrange to review progress on a regular basis
- If appropriate involve other professionals e.g. dietitians, psychologists, school nurses, teachers, dentists

**Setting goals**

Parents, children and practitioners alike should understand that the treatment of obesity is a long-term process. However, setting short-term goals will help to provide focus and direction to the treatment. The major goal is to reduce the health risks associated with obesity, and ultimately to equip the child with the skills they need to manage their weight in adulthood. Any treatment plan should aim for permanent changes, and the steps taken should be small and gradual. A reward system (non-food based) may help to motivate children to achieve their goals and will act as a marker of accomplishment.
Parental responsibility

Parents need to consider:

- The types of foods that they have available at home
- Their attitude towards foods and snacks e.g. are certain foods used as rewards, do children have unregulated access to high fat/high sugar snacks?
- The structure of mealtimes at home e.g. does the family sit down to eat together?
- The lifestyle choices that they themselves make and the example they provide to their child
- How they can best encourage their child to make positive changes to their eating habits without allowing food to become a contentious issue

For many parents there is a real fear of how their relationship with their child will be affected by enforcing new practices with food. Habits are difficult to break, but not impossible to change, and parents should be encouraged to make very gradual but definite changes over a period of time. Changes should be positively enforced and children should be praised for their efforts to adjust their behaviour with food. Providing the child with a choice regarding the changes they wish to make and allowing them to come up with their own solutions will help them to accept responsibility and may make changes more successful in the long term.

To help identify what changes will be most appropriate, children and their parents should be encouraged to keep a record of eating habits. This could take many different forms and, for example, may initially be a record of how many times crisps, fizzy drinks or other target foods are eaten in a day or a week. Goals could be set to reduce the number of occasions on which certain foods are eaten and equally to increase the number of times other types of foods are eaten. Getting children to experiment with new
tastes will expand their range of choices, especially if alternatives to high fat and high sugar snacks are being sought.

Fad or restrictive diets are not appropriate for children and every effort should be made to ensure that the diet is nutritionally balanced. Childhood and adolescence is an important time of growth and development, and the dietary choices made should reflect this.

**Physical activity**

- Start by aiming to reduce the time spent in inactive pursuits, but make this a goal for the whole family and not just the child who is overweight
- Encourage more physical activity through play with other children, walking, physically active games, swimming, dancing, cycling or through participation in school or community sport
- Can any car journeys be replaced by walking?

Similar to recording eating habits, children could be encouraged to keep track of the amount of time they spend doing something active and the amount of time they are sedentary. The family could decide upon ways in which they could increase their levels of physical activity and set goals to achieve defined targets.

**Maintaining behavioural changes**

The long-term nature of obesity treatment should be emphasised and continually reinforced to children and their families. A system of support is vital if long-term weight maintenance is to be achieved.
Review appointments will help to monitor progress and reinforce previous goals

If parents can praise and positively reinforce desirable changes in their child’s behaviour then it is more likely that those behaviours will continue

Children who are encouraged to be active as part of their daily routine are more likely to continue the activity

Establishing family meal and snack times will encourage a more controlled pattern of eating

Changes which involve the whole family are more likely to be successful

Anticipating and learning from episodes of relapse will help to minimise their future impact

Summary

- There has been a rapid increase in the number of overweight and obese children in the UK. The short and long-term consequences are likely to have enormous implications for the future health of these children

- ‘Overweight’ and ‘obesity’ can be defined using appropriate BMI centile charts

- Once identified, the practitioner, child and family should decide on how to proceed

- The aims of the treatment should focus on resolving any co-morbidities, reversing the trend of weight gain and, when appropriate, weight loss

- Self-monitoring of both eating and physical activity habits is a key therapeutic tool

- More research is required to identify the best treatment strategies for infants, young children and adolescents, however, family-based interventions appear to offer the greatest chances of long-term success
• A system of support is vital if long-term maintenance is to be achieved

• The prevention of children becoming overweight and obese remains a priority
References