GUIDELINE

Overweight and obesity in young children

Scope (Staff): Child Health
Scope (Area): CACH, WACHS

This document should be read in conjunction with this DISCLAIMER

Aim

This document aims to guide all CHNs to identify, assess, and assist parents to manage obesity in young children. The guideline sets out recommendations for both universal and targeted assessments of growth patterns, which is an integral component of the universal child health schedule, as outlined.

Background

Overweight and obesity are terms used to describe excessive body fat, resulting from a complex interaction between genetic, metabolic, behavioural and environmental risk factors that influence energy intake and energy output. Put simply, overweight and obesity develops from a long-term imbalance between energy intake (from food and beverages consumed) and energy output (physical exertion) that leads to fat accumulation.

The prevention of overweight and obesity is vital due to the long-term impacts of obesity and the current lack of insufficient, evidence-based treatment options to manage obesity once established. An individual’s physical and psychological make-up is influenced by societal, environmental, socio-economic, health and biomedical factors. It is important to understand these many factors when addressing the issue of overweight and obesity in children and families.

- The rates of overweight and obesity in Australia have been increasing over the last 20 years. In 2011-12:
- 25.1% of children aged 2–17 years were overweight or obese, comprised of 18.2% overweight and 6.9% obese.
- Overweight and obesity rates differed only slightly across children’s age groups, ranging from 22.8% for children aged 2 to 4 years, to 26.6% for children aged 12 to 15 years.
- The proportion of children aged 5-17 years who were overweight or obese increased between 1995 and 2007-08 (20.9% and 24.7%, respectively) and then remained stable to 2011-12 (25.7%).
- One in four children (25%) aged 5 – 17 years were reported to be overweight or obese. Out of these, 7.6% of children were obese.

Though the proportion of overweight and obese children has remained stable since 2007-08, the significant prevalence is of concern. Compared to girls, there are more boys who
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are obese (9% vs. 6%) but the prevalence of overweight is the same between genders (26% for boys and 24% for girls).³

In comparison to non-Aboriginal Australian populations, Aboriginals are more likely to be overweight or obese. In 2012-13:

- 30.4% (about 1 in 3) of Aboriginal children aged 2 – 14 years were overweight or obese according to their BMI.⁴

Of the 30.4%, the rates are broken down into the following age groups:

- 2-4 year olds (~15% overweight and 5% obese)
- 5-9 year olds (~15% overweight and 12% obese) – overweight levels the same as the previous age range however, the obesity rates doubled
- 10-14 year olds (~ 28% overweight and 11% obese) – overweight rates almost doubled and obesity rates the same as the previous age range.³

Two thirds (65.6%) Aboriginal people aged 15 years and older were overweight or obese (28.6% and 37.0% respectively).⁴ Morbidity and mortality from macro-vascular disease, associated with overweight and obesity is frequently seen in the young- middle aged Australian Aboriginal population (35 to 55 years), and is one of the main causes of their reduced longevity.⁵

The likelihood of overweight and obesity persisting from childhood into adulthood increases with the degree of adiposity (‘fatness’), age of the child and parental obesity. A systematic review of several studies tracking childhood overweight into adulthood reported⁶:

- 85% of overweight children aged 2 - 5 years became obese adults
- Between 76% and 78% overweight children aged 9 - 11 years became obese adults
- Between 86% or 90% overweight children aged 15 -17 years became obese adults.

Obesity and the associated long-term negative health outcomes have also been linked to faltered growth, where there has been subsequent accelerated weight regain. Being undernourished during the first two years of life and then gaining weight in later childhood and adolescence has been associated with a high risk of chronic disease.⁷,⁸ Long-term effects may be an outcome of the individual’s foetal and infant phenotype becoming biologically adapted to under-nutrition and then being exposed from age three or four years to a nutritional environment of high fat and refined carbohydrate. In this scenario the biochemical and phenotypic features of metabolic syndrome emerge in early adult life: insulin resistance, hyperglycaemia, hyperlipidaemia, hypertension, and central adiposity.⁹

Early childhood is one of the critical time periods for the establishment of physical activity behaviour with evidence showing an association between sedentary lifestyle patterns in childhood and overweight and obesity¹⁰. A recent survey conducted by the Australia Bureau of Statistics showed toddlers and pre-schoolers (aged 2-4 years) spent an average of 83 minutes in sedentary activities of watching TV, DVD’s or playing electronic games¹¹, which is above the national recommendation of one hour per day.

The national recommendations for sedentary behaviour are:
• *Infants, toddlers and pre-schoolers (all children birth to 5 years)* should not be sedentary, restrained, or kept inactive, for more than one hour at a time, with the exception of sleeping.

• *Children younger than 2 years of age* should not spend any time watching television or using other electronic media (DVDs, computer and other electronic games).

• *For Children 2 to 5 years of age*, sitting and watching television and the use of other electronic media (DVDs, computer and other electronic games) should be limited to less than one hour per day.\(^\text{12}\)

**Effects of overweight and obesity**

Many parents are not fully aware of the health risks associated with overweight and obesity and hence are less likely to raise the issue when visiting the community health nurse, GP or paediatrician.\(^\text{13}\) However, childhood overweight and obesity is a medical condition having both immediate and long-term physical and psychosocial consequences.

Psychosocial consequences include\(^\text{4}\):

- Low self-esteem and behavioural problems such as eating disorders
- Social discrimination, including stigmatisation and bullying.

Physical consequences include\(^\text{14}\):

- Sleep apnoea
- Gastrological and orthopaedic conditions
- Non-fatty liver disease (NFLD)
- Early onset of hypertension, dyslipidaemia and type 2 diabetes.

**Risk factors and possible causes**

Obesity is a reflection of an interrelationship between biological, social and environmental factors.\(^\text{1}\) These non-modifiable or modifiable risk factors are listed below.

**Non-modifiable risk factors**

**Ethnicity**

- Middle-Eastern and Pacific Island populations\(^\text{15}\)
- Aboriginal populations\(^\text{1}\)
- Adults from the Southern and Eastern Europe and Oceania regions\(^\text{1}\)
- Migrants pre-disposed to obesity due to their ethnicity are more likely to develop obesity and related health consequences following migration to a more “obesogenic” environment.\(^\text{1, 16}\)

**Socio-demographic circumstances**

- Parental education background is associated with socio-demographical status of children.\(^\text{17}\) Socio-demographically disadvantaged children are at greater risk of
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There is an inverse relationship between parental income/education level and obesity.\(^1\,15\)

Medical conditions

- Some medical conditions are associated with obesity including; Down syndrome, Prader-Willi syndrome and Duchenne muscular dystrophy.\(^18\)
- Some endocrine diseases result in secondary obesity including; hypothyroidism, Cushing’s syndrome, growth hormone deficiency, growth hormone resistance and pseudo-hypoparathyroidism.\(^18\)

Genetic influences

- There are some genes that are linked with obesity. Obese parents have been found to be more likely to produce obese children, whilst lean parents seem to offer weight-protective genes to prevent children from becoming overweight.\(^16\)
- Birth weight
- Infants born either small or large for gestational age have a greater risk of obesity during infancy.\(^1\)

**Modifiable risk factors**

Growth velocity

- Rapid weight gain in the first weeks or months of life.\(^1\)
- Early adiposity rebound which occurs at a rapid rate and to a great extent indicates subsequent risk of obesity development.\(^1,\,16\)

Infant feeding

- Breastfeeding initiation and continuation for a minimum of 6 months reduces the risk of overweight and obesity in childhood, adolescence and adulthood.\(^1\)
- If infant formula is given, bottle feeding according to need is appropriate. Suggested quantities for various ages on the packaging are a guide only. Infant formula should be made up according to the instructions on the packaging to ensure correct concentration.

Parental influences

- Parental feeding practices and children’s response to the feeding experience are correlated to their weight status for example meal time behaviours.\(^16,\,19\)
- Poor control over the child’s food intake is associated with childhood obesity.\(^20,\,21\)
- Parenting styles in feeding practices may predict their child’s eating behaviours, and include authoritarian, authoritative and permissive parenting.\(^21\)
- Neglectful parenting, including the parent being emotionally disengaged, is associated with childhood obesity.\(^21\)

Dietary and lifestyle behaviours

- Short childhood sleeping duration in infancy is shown to be a significant predictor of child and adult obesity.\(^22\)
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- Children who do not consume breakfast are more likely to be overweight and have a higher BMI.²³
- Children who spend more than the recommended maximum of 2 hours a day engaged in sedentary behaviour, including screen-based activities, are likely to have reduced energy expenditure and are therefore prone to childhood obesity.¹
- Passive over-consumption of food may occur during sedentary activities, further explaining its correlation with obesity development.²¹
- Children with excessive energy intake have a greater risk of childhood obesity.¹ Increased consumption of energy dense, nutrient poor (high fat and sugar snacks/beverages) contribute to positive energy balance and thus weight gain.¹,²⁵,²⁶
- Extensive advertising (media and supermarket checkouts) and attractive packaging of energy dense foods encourage consumption amongst young children, giving rise to subsequent weight gain if parents give in to ‘pester power’ marketing.²⁷
- Obesogenic environmental conditions contribute to the expression of obesity-related genes.²⁷

Identifying overweight and obesity

Monitoring of growth is an important means to identify whether a child is growing and developing normally or deviating from normal parameters.²⁷ Early identification of overweight and obesity in children is vital, as long-term childhood eating and physical activity habits are formed before the age of five years.²⁶ Furthermore, healthy lifestyle behaviours provide lifelong health benefits.

For growth monitoring to be meaningful, serial measurements should be taken and plotted onto a growth chart over a period of time.²⁸ It is important that children and adolescents are consistently monitored against the same chart over time, and not across different charts. Caution should be taken to ensure that the same charts are used when comparing prevalence figures for overweight and obesity between different states and territories.¹

Along with growth measurement, the child should always be assessed according to their overall health, wellbeing, and developmental progress. Consideration of the combined factors of overall rate of growth, or growth trajectory, the actual position on the growth chart, and clinical judgement, including a knowledge of the child’s history, are required to determine whether further investigation is required.²⁹

CHNs should conduct additional monitoring and referral should be considered where a child’s weight velocity increases within or across a percentile and is not tracking in proportion to length/height.³⁰

Infants and children up to 2 years of age

For infants and children aged up to 2 years, growth is monitored based on age, length and weight. Head circumference might also be measured as part of an assessment of a child’s overall health and wellbeing. The rapidity of weight gain and whether the infant is breast or formula fed are considerations.¹

Studies of childhood growth are increasing, revealing that rapid growth in infancy is associated with a greater risk of later life obesity. These have found that children who
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display an early and rapid weight gain in infancy have a greater risk of being overweight or obese during childhood, and into adulthood, than children who do not.  

Children aged more than 2 years

In the absence of nationally agreed growth charts to monitor children aged 2–18 years, either the US CDC or the WHO charts are used in current Australian practice. It is important that the child is consistently measured on the same type of chart for ongoing serial measurements.

If a more targeted approach is needed, BMI charts are sometimes useful as an adjunct to height and weight-for-age growth charts. The BMI percentile chart is not a diagnostic tool but indicates the relative position of the child in relation to others in the same stage of development. A number of considerations should be taken into account when interpreting the BMI-for-age percentiles such as early or late onset of puberty, unusual body fat distribution, highly developed muscles and ethnicity. 

BMI is calculated by dividing the weight (kg) by the height (m), squared: Body Mass Index (BMI) = \[
\frac{\text{Weight (kg)}}{\text{Height (m)}^2}
\]

Where BMI charts are indicated the following definitions apply.

- overweight is defined as BMI >85th centile on BMI chart
- obesity is defined as BMI >95th centile on CDC BMI chart or >97th centile on WHO BMI chart.

Further information on growth monitoring is available within ‘Growth in Childhood’ located in the Community health policies, procedures and guidelines manual.

For guidelines and assessments for older children and adolescents, refer to the following document: Overweight and obesity in primary school-aged children.

General Principles

The relationship between the CHN and the family plays a crucial role in promoting healthy outcomes for children.

Assessing infants and children in collaboration with their parents/carers at key developmental stages as part of the Universal child health contact schedule enables the CHN to:

- Conduct serial growth measurements and developmental assessments to monitor growth patterns important in identification of deviation from healthy growth trends.
- Recognise variations in growth at an early stage, thus facilitating earlier interventions with potential improvement of long term outcomes for the child.
- Support parents to be actively involved in their child’s growth and development, especially when deviation occurs, thus improving parent understanding and efficacy in their role.
- Provide information to parents in response to specific concerns.
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- Provide opportunities to increase parent awareness and knowledge of their child’s growth and development through delivery of key messages about parenting strategies, childhood growth and promotion of health.

- Promote positive parent-infant attachment and parent/infant/child interaction.

It should be re-emphasised that growth monitoring and early detection of deviation from normal expectations is not based solely on screening tools or limited to one point of time, rather should form part of a continual growth and developmental surveillance program and involve holistic assessment and observation of all relevant available information about a child.

Serial growth monitoring in conjunction with developmental assessment is important to identify deviation from normal expectations. Where overweight and obesity are identified, further assessment should be undertaken to determine the underlying cause so that appropriate strategies can be implemented to address the child’s needs. Early intervention will contribute to a decrease in the incidence of associated health concerns in later childhood and adulthood.

**Role of community health professionals**

Growth monitoring of infants and young children should be conducted as an integral component of the universal child health schedule as outlined within the Community health policy, procedures and guidelines manual.

Universal serial growth assessment should be undertaken at key critical developmental stages with the aim of confirming healthy growth, and for the early detection and prompt attention to any deviation from normal expectations.

Targeted growth assessment should undertaken more regularly where there is parental or professional concern regarding growth or development, or where there is any identified risk. Along with measurements the child should be assessed according to their overall health, wellbeing, treatment plan and progress at each schedule.

**Key points for assessment of overweight and obesity**

- Conduct serial growth measurements and developmental assessments to monitor growth patterns important in identification of deviation from healthy growth trends.

- Recognise variations in growth at an early stage, thus facilitating earlier interventions with potential improvement of long term outcomes for the child.

- Support parents to be actively involved in their child’s growth and development, especially when deviation occurs, thus improving parent understanding and efficacy in their role.

- Provide information to parents in response to specific concerns.

- Provide opportunities to increase parent awareness and knowledge of their child’s growth and development through delivery of key messages about parenting strategies, childhood growth and promotion of health.

- Promote positive parent-infant attachment and parent/infant/child interaction.
As childhood overweight and obesity persists into adulthood, early intervention to prevent excessive weight gain is critical. Parent/caregiver involvement is essential to the success of any overweight and obesity prevention or intervention.

Raising the issues with parents about their child’s weight status can be a sensitive topic.¹ Some parents recognise that their child has a weight problem, but many are not ready to address weight issues.³³

Parent/caregivers may respond to their child’s weight issue in a variety ways such as relief, surprise, distress, anger, denial, disbelief, taking offence, dismissing the issue or feeling judged and blamed.³⁴ Parents may also view the identification of a child’s extra weight as a criticism of their parenting rather than an opportunity for their child to begin achieving a healthy weight and lifestyle.³⁵ Suggestions to broach discussion for a child’s weight assessment include¹:

- Seeking permission from parents/caregivers to assess the child’s weight
- Explanation of the weight taking as part of an overall growth and development assessment (including height measurement)
- Explain how overweight and obesity are classified. If a child is identified as overweight or obese, the main focus is on a family-based approach to achieving healthy behavioural changes
- Avoid use of discriminatory or stigmatising language (e.g. chubby, heavy)
- Involve professionals (e.g. interpreter) to aid communication, if necessary.

Perceived parental/caregiver concern for his/her child’s weight is likely to influence positively on the prevention and management of childhood obesity.³³ It is therefore important to undertake a whole-family approach to promote positive feeding and healthy eating habits.

Health professionals should take the above points into consideration whilst addressing a child’s weight issues with his/her parents. The Department of Health online professional development training resource titled ‘Talking with Parents about Children’s Weight’ provides tips and ideas on how to broach weight-related topics with parents.

Key points for the management of overweight and obesity

**Weight management approach**

- It is recommended for overweight or obese children to have frequent and regular contact with relevant health professionals to actively manage their weight using the following strategies¹:
  - history and clinical
  - arranging referral for other health professionals, as required
  - promoting the benefits of healthy behaviours to parents/carers
  - discussion of the benefits of weight management.

- Weight maintenance takes precedence over weight loss for pre-pubertal overweight and obese children.¹,³⁵ This approach aims to maintain or slow down weight gain in a growing child, whilst preventing adverse growth impacts.¹ This
Overweight and obesity in young children would eventually lead to gradual decline of his/her weight status as growth ensues.

- Lifestyle behaviours amongst children are the main focus of weight management interventions.
- Involvement of the parents at all stages of the intervention.

*Lifestyle intervention*

Lifestyle behaviour change is recommended for overweight and obese children. Recommendations include:

1. **Encouraging healthy eating**
   - having family meals to facilitate positive parental role modelling
   - separate meal times from other activities (e.g. television watching) having healthy foods readily available at home
   - regular meal intake, appropriate pace of eating and listening to internal satiety cues (e.g. stop when feeling full).

2. **Encouraging being physically active every day (without adversely impacting growth)**
   - getting the whole family active and involved in activities
   - getting children involved in daily tasks (e.g. household chores and incidental activity).

3. **Reducing sedentary activities.**

Additional support may be required for families and children to access relevant information and programs which are beneficial for adherence to weight management treatment. Refer to Useful resources for families and children at the end of this chapter for available resources.

**Documentation**

- All relevant assessment findings are to be accurately recorded on the appropriate growth chart located within the child health record and PHR. Details of additional assessments and relevant history should also be clearly recorded. Summary information should also be entered into relevant electronic record systems according to local protocols. CHNs should refer to the appropriate record keeping guidelines for documentation storage and use.
- For those CHNs using HCARe clinical services data collection, growth assessment is recorded as a component of each scheduled universal contact using the health issue code for that contact.
- For non-scheduled additional contacts dedicated codes are used. These are outlined on the CACH website, under HCARe coding guidelines.
- Should a referral be required, physical and developmental assessment results and relevant history should be included to provide more relevant information.
Follow-up

- It is recommended to monitor an overweight or obese child regularly, either three-monthly or any time when a child makes contact with a community health service (e.g. child health nurse or general practice). Long-term monitoring is also essential to ensure the success of child obesity prevention or treatment intervention.

- Children identified as requiring referral to specialist services should be directed to appropriate public or private services as available. CHNs should maintain links with the referral services to ensure the needs of the client are being met. When specialist services are unavailable or inappropriate, the client may be offered continuing community health contact as appropriate and where resources are available.

- Clinical Pathways for growth are a useful guide to assist in determination of monitoring needs and direction of referral. Management plans will vary according to the contributing factors.

- Once consistent growth improvement is established, the child may be returned to the universal contact schedule. Alternatively, a targeted monitoring schedule may be used where ongoing risk is identified. If overweight/obesity recurs, then further plans should be developed with the parent/carer, including additional monitoring and support by the CHN and/or referral to relevant health professionals.

- Monitoring of growth should continue throughout childhood and adolescence. Guidelines and assessment strategies for monitoring growth are available for children over the age of 5 are listed in the Related policies, procedures and guidelines section below.

Related Professional Development

- Using WHO growth charts – CACH training website
- The Royal Children’s Hospital Melbourne Child Growth Learning Resource

### Related policies, procedures and guidelines

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## References


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28. Canadian Paediatric Society and Dietitians of Canada. Promoting optimal monitoring of


Useful resources for professionals

Better Health Company - Talking with Parents about Children’s Weight Website: http://www.talkingaboutweight.org/. This resource is funded by the Department of Health and provides guidance and tips on how to raise the issue of overweight and obesity with parents and caregivers.


Useful resources for families and children

Princess Margaret Hospital, Department of Endocrinology and Diabetes - Changes in Lifestyle Are Successful Partnership (CLASP) Program (for children aged 2 – 16 years) - Phone: (08) 9340 8090. The CLASP lifestyle and weight management program a multidisciplinary group-based and family- centred approach. This program targets at children with impaired glucose tolerance and other obesity-related co-morbidities. A doctor’s referral letter is required.
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