

Childhood obesity

A Family Problem

Overview of Childhood Obesity

1. Overview
2. Aetiology
3. Detection
 - Definition of childhood obesity
 - Recognising and raising the issue
4. Assessment
5. Management

Overview: Global Prevalence of Obesity

Obesity rates have been steadily rising in adults and children:

- In 2010, 43 million preschool children had overweight or obesity worldwide.
- This represents a 60% increase since 1990^a

a. de Onis M, et al. Am J Clin Nutr. 2010;92:1207-84

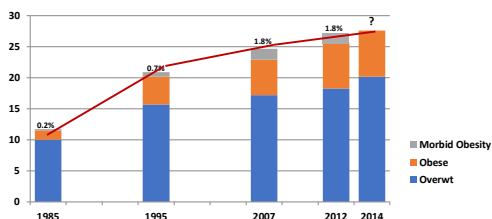
Overview: Global Prevalence of Childhood Obesity

Global prevalence of obesity in children and adolescents in both the developed and developing world is rising.

- 23.8% of boys and 22.6% of girls are overweight or obese in the developed world
- 12.9% of boys; 13.4% of girls are overweight or obese in the developing world

Ng M et al Lancet 2014; 384: 766-781

Proportion of overweight and obese Australian children (BMI)

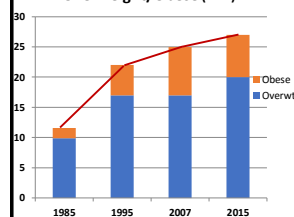


1985 Health & Fitness Survey; 1995 National Nutritional Survey; 2007 National Children's Nutrition & PA Survey; 2012/2014 Australian Health Survey

Children changing shape

Increased adiposity for the same weight & height

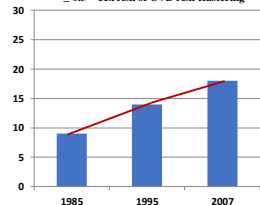
Overweight/Obese (BMI)



1985 Health and Fitness Survey; 1995 National Nutritional Survey; 2007 National Children's Nutrition & PA Survey
<http://www.ahe.gov.au/australianhealthandfitness/2015/children/2015/2015-2016-childrens-nutrition-and-physical-activity-survey>

Waist to height ratio ≥ 0.5

≥ 0.5 - 11x risk of CVD risk clustering



Garnett Obesity Reviews 2011

Aetiology: What causes obesity?

- Genes load the gun,
- Environment pulls the trigger and
- Age determines the outcome...



Aetiology: Genes and obesity

Type	Correlation Men	Correlation Women
Monozygotic		
Reared apart	0.70	0.66
Reared Together	0.74	0.66

Stunkard AJ et al. *N Engl J Med* 322:1483-7 1990



Aetiology: Genes and the intergenerational transmission of BMI and obesity

- Comparison of intergenerational transmission of body mass index (BMI) and obesity in a sample of adoptees relative to a matched sample of children.
- Findings: BMI and obesity are strongly correlated among biological parent child pairs, but there are no significant associations in these health traits among adoptive parent child pairs.
- The intergenerational elasticity of BMI for children to their parents is 0.2 in the matched biological sample, but indistinguishable from zero for adopted children

Timothy J. Clement, Owen Thompson. *Economics & Human Biology* Volume 23, December 2016, Pages 121–131
<http://www.sciencedirect.com/journal/economics-and-human-biology> S0167-6245(16)30077-9



Genetic predisposition to obesity



Samko H, Heo H, and Orsini PH (2012). Epidemiology of Obesity and Diabetes. In *Humans. Endocrinology* 153:1025-1030

Aetiology: Environment

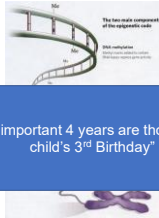
- The only significantly modifiable risk factor



Intrauterine environment

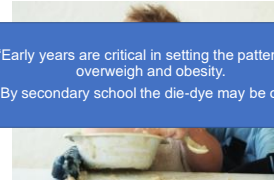


Epigenetics



"The most important 4 years are those prior to the child's 3rd Birthday"

Epigenetics



"Early years are critical in setting the pattern for overweight and obesity.
By secondary school the die-dye may be cast"

Aetiology: Extrauterine environment

- Inactivity



Extrauterine environment

- Inactivity



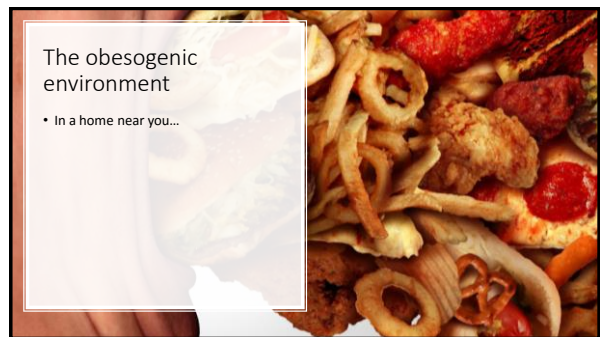
Aetiology: Food



Slide courtesy of Jason Halford, PhD, C. Psychol. (Health) A&BPS.

The obesogenic environment

- In a home near you...



Early feeding practices

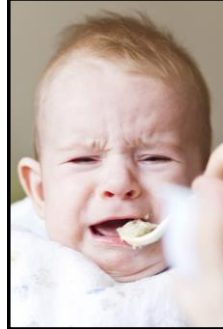
Feeding practices in early childhood fall well short of ideal (Chan 2010)

- Aged between 12-36 months
- Poor dietary quality:
 - Increased exposure non-core foods:
 - 12-18m = 1.9/d
 - 30-36m = 3.0/d
 - Reduced fruit & veg:
 - 18% no fruit
 - 15% no vegetables

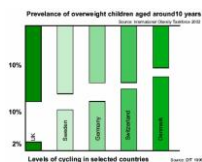


Early feeding practices

- Coercive feeding practices prevalent ≈ 75%
 - 45% 'often' make child finish meal
 - 46% offer alternative in response to familiar food refusal
- Emotional use food – ⅓ to ⅔ 'at least sometimes'
- 2/3 watched TV when eating

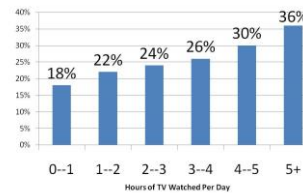


Inactivity



Screen time and childhood obesity

Prevalence of Obesity in Children by Hours of TV per day



- TV watching can promote obesity in several ways:

- displacing time for physical activity;
- promoting poor diets; (Advertising)
- giving more opportunities for unhealthy snacking (during TV viewing);
- by interfering with sleep.

The Obesity Prevention Source: Television Watching and 'Sit Time'
Harvard School of Public Health
<http://www.hsph.harvard.edu/obesity-prevention-source/obesity-prevention-source-and-secondary-prevention-and-obesity>

Whose at risk?

- The Boden Institute of Obesity, Nutrition, Exercise & Eating Disorders and the Menzies Centre for Health Policy, University of Sydney for the Australian National Preventive Health Agency



BOYS ARE MORE LIKELY THAN GIRLS TO BE ABOVE A HEALTHY WEIGHT

Whose at risk?

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AROUND 30% OF CHILDREN IN MORE SOCIALLY DISADVANTAGED GROUPS WERE ABOVE A HEALTHY WEIGHT COMPARED WITH AROUND 20% IN THOSE WITH HIGHER SOCIOECONOMIC ADVANTAGE



Aetiology Summary

Changing society has contributed to obesity

• Risk factors

- Unhealthy food choices and portion control
- Inactivity: Spending a lot of time on sedentary pursuits
- Obese parents
- Gender: Boys
- Low SES
- Low health literacy
- Sleep deprivation

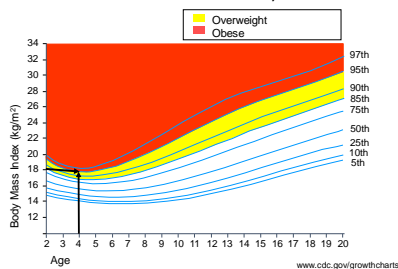
Detection

Definition – Body Mass Index

- Obesity – BMI¹ for age > 95th percentile
- Overweight – BMI¹ for age >85th percentile
- In children overweight and obesity are shifting targets

1. BMI: Weight (kg) / (height (m) x height (m))

Centers for Disease Control Growth Charts: Boys



Detection: Recognition

High prevalence rates in GP surgeries in Australia

• Recognition– very low by parents and practitioners

- BEACH Study of paediatric obesity in GP surgeries*
 - Annual, national random sample of 1000 GPs - 100 consecutive visits recorded for each GP
- In the 4 year period 2002-2006:
 - 42 515 encounters in children aged 2-17 years
 - Self-reported height & weight
 - 30% children overweight or obese
 - 0.5% children overall offered some form of weight management

Curtis M et al, Medical Care 2008

Detection

• High index of suspicion and close monitoring:

- Obese parents
- Low SES
- Boys at slightly higher risk than girls
- Remote vs urban
- Indigenous Australians
- Non English speaking background

Management

- Whole of society problem requires a whole of society solution
- Interventions are needed at all levels of society



And we need

WELL, THAT
DIDN'T WORK



Management

- Early life intervention:
 - FEEDING



Why early life interventions?

- Early life environment profound effect on social, cognitive and behavioural life trajectories
- Applies to health outcomes – metabolic, obesity risk
- Prenatal and early life period → epigenetic effects → obesity risk
- Early feeding practices compound genetic predisposition and prenatal factors
- **Intervention while biology and behaviour are still 'plastic'**

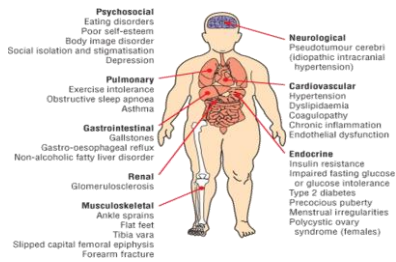
Why target early feeding practices?

- Start early to:
 - Program taste & texture preferences
 - Preserve nascent capacity to self regulate intake
 - Develop good rather than change bad habits
- Feeding practices influenced culture & tradition - evolved in time of relative food scarcity (Birch, 2006)
 - Need new approaches adapted to contemporary 'obesogenic' food environment

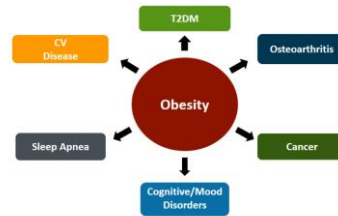
Why early life interventions?

- Current risk
- Future risk

Childhood obesity: why worry?

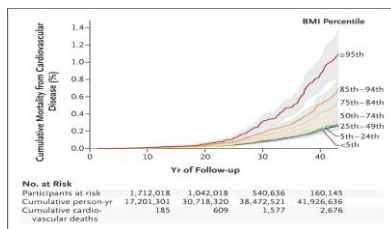


Obesity as a Risk Factor for a Range of Comorbid Conditions^[a,b]



a. Pi-Sunyer X. *Postgrad Med*. 2009;121:21-33.
b. Calle EF, et al. *N Engl J Med*. 1999;341:1097-1105.

Obesity during adolescence associated with a substantially increased risk of cardiovascular outcomes in middle age, particularly death from coronary heart disease.



TwigG et al. *N Engl J Med* 2015

GP Management

Raising the issue: A sensitive matter

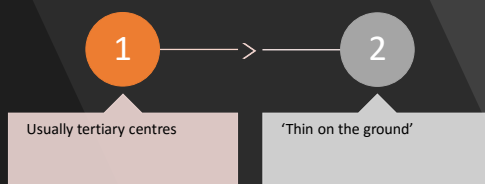
Possible strategies

When to refer:

- If they have a BMI well above the 95th percentile on CDC growth charts or the 97th percentile on WHO growth charts;
- They are younger than two and above the 97th percentile on WHO growth charts.
- If they are gaining weight rapidly;
- They may have serious related comorbidities that require weight management (e.g. sleep apnoea, orthopaedic problems, risk factors for cardiovascular disease or type 2 diabetes, psychological distress);
- If an underlying medical or endocrine cause is suspected, or there are concerns about height and development.



Programs for at risk/very obese



The Super 7

- 1** Drink Water: Instead of Juice or Soft Drink
- 2** Eat Breakfast Every Day
- 3** Eat Breakfast on a Family Table: No TV, No Phone
- 4** Be Physically Active for at Least an Hour a Day
- 5** Sleep Sufficient Time (9-11 Hours): Computers, Smart Phones, etc. Look them in the Eye for 1 Hour
- 6** Get Plenty of Sleep Each Night: Limit to 1 hour and 15 minutes a night, even on weekends
- 7** Schedule Yourself: Spend a Week and Record It in a Notebook

Weekly Weights Record
Use weekly Weights to help the whole family 'Tune Off' to better health.

Record the weights of yourself and family members every week to track the effectiveness of your healthy lifestyle!

Week	Child 1	Child 2	Child 3	Parent 1	Parent 2
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Blue Off! to better health

the hospital at home

Health Partnerships

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PEACH Parenting Eating Activity Child Health

- Free family lifestyle group program for parents of 5-11y olds above health weight range
- Aims to build parents' skills and confidence to manage the 'obesogenic' environment to eat better and be more active as a family
- Evidenced-based; internationally recognised
- Fills a service gap – almost nowhere for families to go

Logan City Council

University of the South Pacific

a university for the real world

Health Partnerships

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Take home messages

- Prevalence of paediatric overweight and obesity continues to be a concern especially at the more severe end of the spectrum
- The health risks are numerous for both overweight and obese
- Children with obesity use health services more than their normal weight or overweight peers, resulting in significant increased costs
- Childhood obesity, without intervention, tracks into adulthood and every attempt should be made in the early years to promote healthy lifestyle interventions for optimal health for all.