Session 7

Nutrition and Dietary Planning in Childhood

Nutritional Medicine Department
Overview

• Nutritional requirements in childhood
• Factors influencing food intake
• Fussy Eaters
• Childhood obesity
• Nutritious and appealing meals and snacks for children of various ages
Nutritional Requirements for Children
# Australian Nutrient Reference Values for Children

## NUTRIENT REFERENCE VALUES FOR AUSTRALIA AND NEW ZEALAND

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender</th>
<th>Age Range</th>
<th>Thiamin</th>
<th>Riboflavin</th>
<th>Niacin</th>
<th>Pantothenic acid</th>
<th>Vitamin B6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>lower</td>
<td>upper</td>
<td>mg/day</td>
<td>mg/day</td>
<td>mg/day niacin equivalents</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>1y</td>
<td>3y</td>
<td>0.4</td>
<td>0.5</td>
<td>5</td>
<td>3.5</td>
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<tr>
<td>Children</td>
<td></td>
<td>4y</td>
<td>8y</td>
<td>0.5</td>
<td>0.6</td>
<td>6</td>
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</tr>
<tr>
<td>Boys male</td>
<td></td>
<td>9y</td>
<td>13y</td>
<td>0.7</td>
<td>0.9</td>
<td>9</td>
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</tr>
<tr>
<td>Boys male</td>
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<td>14y</td>
<td>18y</td>
<td>1</td>
<td>1.2</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Girls female</td>
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<td>9y</td>
<td>13y</td>
<td>0.7</td>
<td>0.9</td>
<td>9</td>
<td>4</td>
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<tr>
<td>Girls female</td>
<td></td>
<td>14y</td>
<td>18y</td>
<td>0.9</td>
<td>1.1</td>
<td>11</td>
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<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender</th>
<th>Age Range</th>
<th>Folate (as dietary folate)</th>
<th>Vitamin B12</th>
<th>Biotin</th>
<th>Choline</th>
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<tr>
<td></td>
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<td>µg/day</td>
<td>µg/day</td>
<td>µg/day</td>
</tr>
<tr>
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<td>120</td>
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<td>0.9</td>
<td>8</td>
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<tr>
<td>Children</td>
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<td>160</td>
<td>400</td>
<td>1</td>
<td>1.2</td>
<td>12</td>
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<tr>
<td>Boys</td>
<td>male</td>
<td>9y</td>
<td>13y</td>
<td>250</td>
<td>300</td>
<td>600</td>
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<tr>
<td>Boys</td>
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<td>14y</td>
<td>18y</td>
<td>330</td>
<td>400</td>
<td>800</td>
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<tr>
<td>Girls</td>
<td>female</td>
<td>9y</td>
<td>13y</td>
<td>250</td>
<td>300</td>
<td>600</td>
</tr>
<tr>
<td>Girls</td>
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<td>14y</td>
<td>18y</td>
<td>330</td>
<td>400</td>
<td>800</td>
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<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender</th>
<th>Age Range</th>
<th>Vitamin A (retinol)</th>
<th>Vitamin C</th>
<th>Vitamin D</th>
<th>Vitamin E (α-tocopherol equivs)</th>
<th>Vitamin K</th>
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<tr>
<td></td>
<td></td>
<td></td>
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<td>upper</td>
<td>EAR</td>
<td>RDI</td>
<td>UL</td>
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<tr>
<td>Children</td>
<td></td>
<td>1y 3y</td>
<td>210</td>
<td>600</td>
<td>25</td>
<td>35</td>
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<tr>
<td>Children</td>
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<td>35</td>
<td>NP</td>
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<td>Boys</td>
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<td>9y 13y</td>
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<td>40</td>
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<td>14y 18y</td>
<td>630</td>
<td>2,800</td>
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<td>40</td>
<td>NP</td>
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<tr>
<td>Girls</td>
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<td>9y 13y</td>
<td>420</td>
<td>1,700</td>
<td>28</td>
<td>40</td>
<td>NP</td>
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<tr>
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<td>14y 18y</td>
<td>485</td>
<td>2,800</td>
<td>28</td>
<td>40</td>
<td>NP</td>
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<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender</th>
<th>Age Range</th>
<th>Calcium</th>
<th>Chromium</th>
<th>Copper</th>
<th>Fluoride</th>
<th>Iodine</th>
<th>Iron</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>mg/day</td>
<td>μg/day</td>
<td>µg/day</td>
<td>mg/day</td>
<td>µg/day</td>
<td>mg/day</td>
</tr>
<tr>
<td>Children</td>
<td>1y</td>
<td>3y</td>
<td>360</td>
<td>500</td>
<td>2,500</td>
<td>0.7</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Children</td>
<td>4y</td>
<td>8y</td>
<td>520</td>
<td>700</td>
<td>2,500</td>
<td>1.5</td>
<td>8</td>
<td>65</td>
</tr>
<tr>
<td>Boys</td>
<td>male</td>
<td>9y</td>
<td>800–1,050</td>
<td>1,000–1,300</td>
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<td>1.3</td>
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<td>10</td>
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<td>14y</td>
<td>1,050</td>
<td>1,300</td>
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<td>10</td>
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<tr>
<td>Girls</td>
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<td>800–1,050</td>
<td>1,000–1,300</td>
<td>2,500</td>
<td>1.1</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Girls</td>
<td>female</td>
<td>14y</td>
<td>1,050</td>
<td>1,300</td>
<td>2,500</td>
<td>1.1</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

### Nutrient Reference Values

- **Calcium**: mg/day
- **Chromium**: μg/day
- **Copper**: mg/day
- **Fluoride**: mg/day
- **Iodine**: μg/day
- **Iron**: mg/day


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deadend.endeavour.edu.au
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<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender</th>
<th>Age Range</th>
<th>Magnesium</th>
<th>Manganese</th>
<th>Molybdenum</th>
<th>Phosphorus</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td>lower</td>
<td>upper</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EAR</td>
<td>RDI</td>
<td>UL</td>
<td></td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td>1y - 3y</td>
<td>65</td>
<td>80</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td>4y - 8y</td>
<td>110</td>
<td>130</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>male</td>
<td>9y - 13y</td>
<td>200</td>
<td>240</td>
<td>350</td>
<td>380</td>
</tr>
<tr>
<td>Boys</td>
<td>male</td>
<td>14y - 18y</td>
<td>340</td>
<td>410</td>
<td>350</td>
<td>1,055</td>
</tr>
<tr>
<td>Girls</td>
<td>female</td>
<td>9y - 13y</td>
<td>200</td>
<td>240</td>
<td>350</td>
<td>1,055</td>
</tr>
<tr>
<td>Girls</td>
<td>female</td>
<td>14y - 18y</td>
<td>300</td>
<td>360</td>
<td>350</td>
<td>1,055</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>3,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4,000</td>
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**Australian Nutrient Reference Values:** [www.nrv.gov.au](http://www.nrv.gov.au)
# Australian Nutrient Reference Values for Children

**NUTRIENT REFERENCE VALUES FOR AUSTRALIA AND NEW ZEALAND**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender</th>
<th>Age Range</th>
<th>Potassium</th>
<th>Selenium</th>
<th>Sodium</th>
<th>Zinc</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>lower</td>
<td>upper</td>
<td>Al UL</td>
<td>EAR RDI UL</td>
<td>Al UL</td>
<td>EAR RDI UL</td>
</tr>
<tr>
<td>Children</td>
<td>1y</td>
<td>3y</td>
<td>2,000 NP</td>
<td>20 25 90</td>
<td>200–400 1,000</td>
<td>2.5 3 7</td>
</tr>
<tr>
<td>Children</td>
<td>4y</td>
<td>8y</td>
<td>2,300 NP</td>
<td>25 30 150</td>
<td>300–600 1,400</td>
<td>3 4 12</td>
</tr>
<tr>
<td>Boys</td>
<td>male</td>
<td>9y 13y</td>
<td>3,000 NP</td>
<td>40 50 280</td>
<td>400–800 2,000</td>
<td>5 6 25</td>
</tr>
<tr>
<td>Boys</td>
<td>male</td>
<td>14y 18y</td>
<td>3,600 NP</td>
<td>60 70 400</td>
<td>460–920 2,300</td>
<td>11 13 35</td>
</tr>
<tr>
<td>Girls</td>
<td>female</td>
<td>9y 13y</td>
<td>2,500 NP</td>
<td>40 50 280</td>
<td>400–800 2,000</td>
<td>5 6 25</td>
</tr>
<tr>
<td>Girls</td>
<td>female</td>
<td>14y 18y</td>
<td>2,600 NP</td>
<td>50 60 400</td>
<td>460–920 2,300</td>
<td>6 7 35</td>
</tr>
</tbody>
</table>

How Food Label Reference Values (DV) Compare to the Nutritional Recommendations for Children

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>DV</th>
<th>Nutrient Recommendations by Age (DRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-3yrs</td>
<td>4-8yrs</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>1,000</td>
<td>500</td>
</tr>
<tr>
<td>Vitamin A (IU)</td>
<td>5,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Vitamin C (mg)</td>
<td>60</td>
<td>15</td>
</tr>
<tr>
<td>Sodium (mg)</td>
<td>2400</td>
<td>1000-1500</td>
</tr>
<tr>
<td>Cholesterol (mg)</td>
<td>300</td>
<td>&lt; 300 for over 2</td>
</tr>
</tbody>
</table>

Estimated Energy Requirement

• Individual children’s energy needs vary widely depending on their growth and physical activity.
  – A 1 year old child needs about 3300 kJ/day
  – An active 6 year old needs about 6600 kJ/day
  – An active 10 year old needs about 8500 kJ/day.

• Total energy needs increase slightly with age but energy needs per kilogram of body weight decline gradually.
• Refer to NRV Energy for EER tables

(www.nrv.gov.au)
Protein RDI

<table>
<thead>
<tr>
<th>Age</th>
<th>Girls (g/kg bw/day)</th>
<th>Boys (g/kg bw/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 yrs</td>
<td>1.08</td>
<td>1.08</td>
</tr>
<tr>
<td>4-8 yrs</td>
<td>0.91</td>
<td>0.91</td>
</tr>
<tr>
<td>9-13 yrs</td>
<td>0.87</td>
<td>0.94</td>
</tr>
</tbody>
</table>

(NHMRC, 2006)
Protein

- Protein deficiency is uncommon in Australian children
- Those who may be at risk:
  - Fussy eaters
  - Strict vegans
  - Children with multiple food allergies
  - Children with behavioural problems
  - Inadequate access to food (e.g. lower socioeconomic groups or those living in remote locations)

(Gracey, 1991)
Lipids

No NRV for total fat has been established but general recommendations are:

- Fat should provide 50% of total energy up to 1 year of age.
- Fat should provide 40% of energy for children from 1 to 2 years.
- Fat should provide 30% of energy for children from 2 to 18 years.

(Whitney et al., 2011)
Lipids

• Minimise intake of foods high in saturated fats, trans fats and cholesterol.
• Ensure adequate intake of linoleic acid, alpha-linolenic acid and EPA/DHA/DPA.
• Some studies have shown associations between lower levels of LC-omega-3 FA in children and higher incidence of ADHD, allergies and asthma.
• Refer to FSANZ recommendations regarding fish consumption by children to minimise exposure to mercury.
Calcium

• Calcium is an essential nutrient for all children to help grow strong bones and reduce the risk of developing osteoporosis.
• Research suggest that many children and teenagers are not receiving their recommended daily intake.
• Calcium can continue strengthening bones until the age of 20 to 25 years when peak bone mass is reached.
• Children with cow’s milk allergy or lactose intolerance could be at risk of deficiency.
Iron

• Children between one and three years of age are at higher risk for iron deficiency anaemia.
• Rapid growth period requires increase in haemoglobin and total iron mass.
• Iron assists the transport of oxygen around the body - low iron status has been linked to poor concentration, irritability, tiredness, and behavioural problems.
• Iron helps fight infection - low iron has been associated with poorer immune responses.
• Iron plays a significant role in energy metabolism.

(Iannotti et al., 2006)
Iron

• Children who have iron deficiency anaemia (IDA) in their infancy might have permanent risk of developmental disability, regardless of continuous iron supplementation.

• IDA and iron deficiency are known to have irreversible effects on neurological, motor, and behavioural development, regardless of improvement in anaemia achieved by adequate iron intake after the diagnosis.

• So ensuring adequate iron intake during pregnancy, infancy and childhood is essential.
Vitamin D

• Vitamin D deficiency has re-emerged as a significant pediatric health issue, with complications including hypocalcaemic seizures, rickets, limb pain and fracture.
• A major risk factor for infants is maternal vitamin D deficiency. For older infants and children, risk factors include dark skin colour, cultural practices, prolonged breastfeeding, restricted sun exposure and certain medical conditions. (See next slides for more detail.)

(Working Group of the Australian and New Zealand Bone and Mineral Society, Endocrine Society of Australia and Osteoporosis Australia 2005)
Causes of Vitamin D Deficiency in Children and Adolescents

• Reduced intake or synthesis of vitamin D3
  – Being born to a vitamin D-deficient mother; most commonly veiled or dark-skinned women, or women of Asian background who actively avoid exposure to sunlight
  – Prolonged breastfeeding
  – Dark skin colour
  – Reduced sun exposure — veiled or modest clothing, chronic illness or hospitalisation, intellectual disability, and excessive use of sunscreen
  – Low intake of foods containing vitamin D.
Causes of Vitamin D Deficiency in Children and Adolescents (cont.)

- Abnormal gut function or malabsorption
  - Small-bowel disorders (e.g., coeliac disease)
  - Pancreatic insufficiency (e.g., cystic fibrosis)
  - Biliary obstruction (e.g., biliary atresia)
- Reduced synthesis or increased degradation of 25-OHD or 1,25-(OH)2D
  - Chronic liver or renal disease
- Drugs: rifampicin, isoniazid and anticonvulsants
## Dietary Planning Boys

<table>
<thead>
<tr>
<th>Food Group</th>
<th>2-3 yrs Serves/day</th>
<th>4-8 yrs Serves/day</th>
<th>9-11 yrs Serves/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables and legumes</td>
<td>2 ½</td>
<td>4 ½</td>
<td>5</td>
</tr>
<tr>
<td>Fruit</td>
<td>1</td>
<td>1 ½</td>
<td>2</td>
</tr>
<tr>
<td>Grain (cereal) foods</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans</td>
<td>1</td>
<td>1 ½</td>
<td>2 ½</td>
</tr>
<tr>
<td>Milk, yoghurt, cheese and/or alternatives, mostly reduced fat</td>
<td>1 ½</td>
<td>2</td>
<td>2 ½</td>
</tr>
</tbody>
</table>

(Source: Australian Govt., 2013)
Dietary Planning Girls

<table>
<thead>
<tr>
<th>Food group</th>
<th>2-3 yrs Serves/day</th>
<th>4-8 yrs Serves/day</th>
<th>9-11 yrs Serves/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables and legumes</td>
<td>2 ½</td>
<td>4 ½</td>
<td>5</td>
</tr>
<tr>
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<td>1</td>
<td>1 ½</td>
<td>2</td>
</tr>
<tr>
<td>Grain (cereal) foods</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans</td>
<td>1</td>
<td>1 ½</td>
<td>2 ½</td>
</tr>
<tr>
<td>Milk, yoghurt, cheese and/or alternatives, mostly reduced fat</td>
<td>1 ½</td>
<td>1 ½</td>
<td>3</td>
</tr>
</tbody>
</table>

(Source: Australian Govt., 2013)
Daily intake of fruit and vegetables

- In 2014-15:
  - 68.1% of children aged 2-18 years met the guidelines for recommended daily serves of fruit,
  - 5.4% met the guidelines for serves of vegetables
  - only one in twenty (5.1%) children met both guidelines.
- Girls were more likely than boys to meet recommended intakes for fruit (71.8% compared with 65.0%).
- The proportions of girls and boys meeting recommended intakes for vegetables were similar (6.3% and 4.3%, respectively).
- On average, children aged 2-18 years consumed 2 serves of fruit and 1.9 serves of vegetables each day in 2014-15 (ABS, 2016).
Failure to Thrive

• Growth failure is the principal manifestation of malnutrition in children.
• Normal growth variations and errors in charting must be recognised and not labeled as malnutrition.
• Anthropometric assessment can differentiate wasting and stunting.
• A detailed history, physical exam and assessment for psychosocial deprivation are important.
• The most common dietary problem in Indigenous children is insufficient weaning foods.
Failure to Thrive

- In the primary care setting, major organic disease is uncommon (<5%) and can usually be suspected on clinical assessment.
- Routine hospitalisation with an expensive laboratory work-up to exclude rare causes is considered inappropriate medical practice in the absence of other manifestations of illness.
- Dietary improvement with home visits can improve growth in some community children.
- Micronutrient supplements (zinc and vitamin A) have improved growth in children living in poor circumstances.

(Jakobs et al., 2002)
Factors Influencing Food Intake

- Families
- Schools
- Peers
- Media
- Personal preference
Families/Eating Routines

• Adults and children who eat regular meals tend to have better diets and be closer to a healthy weight than those who “graze” throughout the day.

• One of the main barriers to planning regular and balanced meals is a busy lifestyle.
  – Dietary Planning meals has shown to long term improve the nutrition of children.

• Family meals are an important time to share and discuss the day's events. They also teach children what balanced meals look like.

• Not eating in front of TV. Research shows that children are more likely to over eat when they eat whilst distracted by computers or the TV.
School Food Environment

Factors that influence the school food environment:
• Policies that limit the availability of certain foods/drinks.
• Restricting the use of foods as rewards in the classroom.
• Setting standards for nutrition education.
• Restricting certain marketing practices.
• Adequate resources and capacity at the school.
• Having a supportive school community.
• Access to nutritional expertise locally.
• Access to nutritional programs that promote healthy eating.
• Having a favourable socio-demographic profile.

(Masse & de Niet, 2013)
Media/Food Marketing

• Marketing creates a desire for many less-than-nutritious foods.
• Snack foods—marketed not for their nutritional value, but for their fun and taste—often replace the healthier foods we could be eating.
• Foods advertised on television during children's shows tend to have very little nutritional value. Marketing often targets children through advertisements on TV, movies, fast-food restaurants, bonus toys etc.
• Children then pressure their parents to visit certain restaurants and buy foods for them based on whether they can obtain a desired toy.
• Marketing also caters to a busy lifestyle.
Pester Power!

Clip

https://www.youtube.com/watch?v=7VHUAW-xnnA
Availability of Food

• Food is so readily available in our culture, it is easy to eat without thinking about how hungry you really are, or how much you have already eaten that day.

• Experts believe the high availability of foods is responsible for the increasing numbers of overweight children and adults.

• Fast food restaurants are everywhere. In fast food restaurants, “super-sized” meals can lead us to purchase and eat more food than our bodies need.

• Even regular portions are very large compared to the past. Portion sizes are increasing.

• Structure to meal time – rather than ‘grazing culture’. This helps avoid unplanned fast food and vending machine purchases.
Cultural and Social Influences

• We may serve and eat foods because we were brought up eating them and find them comforting.

• Some people eat, or don’t eat, certain foods based on religious, political, or social beliefs.

• Many ethnic foods can be very healthy, and they have developed over time because they supported life.
Chad: The Aboubakar family of Breidjing Camp. Food expenditure for one week: 685 CFA Francs or $1.23. Favorite foods: soup with fresh sheep meat.
Great Britain: The Bainton family of Clingbourne Ducis. Food expenditure for one week: 155.54 British Pounds or $253.15. Favorite foods: avocado, mayonnaise sandwich, prawn cocktail, chocolate fudge cake with cream.
India: The Patkars of Ujjain - Food expenditure for one week: 1,636.25 rupees or $39.27. Family Recipe: Sangeeta Patkar’s Poha (Rice Flakes).
Italy: The Manzo family of Sicily. Food expenditure for one week: 214.36 Euros or $260.11. Favorite foods: fish, pasta with ragù, hot dogs, frozen fish sticks.
Japan: The Ukita family of Kodaira City. Food expenditure for one week: 37,699 Yen or $317.25. Favorite foods: sashimi, fruit, cake, potato chips.
Turkey: The Celiks of Istanbul - Food expenditure for one week: 198.48 New Turkish Liras or $145.88. Favorite Foods: Melahat’s Puffed Pastries.
Australia: The Browns of River View - Food expenditure for one week: 481.14 Australian dollars or US$376.45. Family Recipe: Marge Brown's Quandong (an Australian peach) Pie, Yogurt.
Emotions

• Depression, anxiety, boredom, and stress often lead to unhealthy eating habits, both in adults and children.
• Sometimes attempts to change eating habits cannot succeed until we learn to manage the emotions and stress in lives.
• In children, ongoing stress can cause a change in normal growth, leading to too much or too little weight or height gain.
• Fixing the issue that is causing a child’s stress (rather than resorting to a weight-loss or weight-gain diet) will return a child to a normal growth pattern.
Fussy Eaters

http://www.theguardian.com/lifeandstyle/
Picky Eating Behaviours

• Picky eating behaviours are common in childhood.
• Appetites can be variable due to growth “spurts” – i.e. appetite and food intake can increase in advance of a growth spurt and then diminish.
Picky Eating Behaviours

• Shim et al., 2011 (sample of 129 mothers/pre-school children) found that introducing complementary foods before the age of 6 months had a 2.5 times higher odds of developing food neophobia and limited variety of foods compared to children who were exclusively breastfed for 6 months.

• Some children tend to reject new foods but may to learn to accept them with repeated exposure.

• Children have an innate preference for sweet and slightly salty tastes and tend to dislike bitter, sour and spicy foods.
Picky Eating Behaviours

• Some feeding problems that occur during the toddler years are typical of children who are later diagnosed with chronic conditions.

• Feeding problems such as low interest in eating, long mealtimes (over 30 minutes), preferring liquids over solids, and food refusal might be indicative of developmental delays or chronic conditions such as autism, ADHD, GORD or asthma.

• Is the child a picky eater or does the child have a feeding disorder?
Encourage Healthy Eating

- Avoid using food to control behaviour – i.e. *don’t use food as a reward or punishment.*
- Model good eating habits
- Recognise preference differences
- Introduce new foods gradually
- Encourage nutritious snacking – children generally need to eat smaller amounts more frequently than adults as they have small stomachs.
- Promote self-regulation – serving sizes should be age-appropriate allowing children to ask for more if desired.

(Brown, 2011)
Obesity in Children

www.oneperth.com.au
Obesity in children

Children aged 5-17 years - Body Mass Index, 2007-08 to 2014-15

In 2014-15, around one in four (27.4%) children aged 5-17 years in Australia were overweight or obese, comprised of 20.2% overweight and 7.4% obese (ABS, 2016).
Obesity – Statistics

• In 2014-15, 63.4% of Australians aged 18 years and over were overweight or obese (11.2 million people), comprised of 35.5% overweight (6.3 million people) and 27.9% obese (4.9 million people).
• A further 35.0% were of normal weight and 1.6% were underweight.
• While the prevalence of overweight and obesity increased in Australia between 1995 (56.3%) and 2011-12 (62.8%), there was no significant increase between 2011-12 and 2014-15.
• Overall, 70.8% of men were overweight or obese in 2014-15, compared with 56.3% of women (ABS, 2016).
Obesity – Statistics

- Rates of overweight and obesity increase with age.
- Of men aged 45 years and over, almost four in five (79.4%) were overweight or obese in 2014-15, while two in three women (65.7%) of the same age were overweight or obese (ABS, 2016).
Obesity – Statistics

• If weight gain continues the path it is following, by the year 2020, 80% of all Australian adults and a third of all children will be overweight or obese.

• A study in Queensland showed that up to 30% of Australian children have low fitness levels while 60% have poor motor skills.

• There is an indication that walking and cycling are used less for transportation by Australian children.
Assessment: BMI

- Body mass index-for-age percentile is recommended as the screening tool for assessment of paediatric overweight and obesity.
- Either the US-CDC chart or the WHO chart can be used but the same chart should be used over time for consistency to monitor growth.
- The US-CDC categorises overweight as BMI between the 85th and 95th percentiles, and obesity as above the 95th percentile.
- The WHO categorises overweight as between the 85th and 97th percentiles and obesity as above the 97th percentile.

(NHMRC, 2013)
Assessment: Waist:Height ratio

- A waist to height ratio of $\geq 0.5$ may be useful in predicting cardiovascular risk and may be used to guide consideration of the need for further investigation of CVD risk in children.

(NHMRC, 2013)
Assessment: Case History

• A full history including developmental health, physical and mental health, and health behaviours (including diet and physical activity patterns) should be undertaken as part of the assessment.

• A clinical assessment aims to identify possible causes for overweight or obesity and indicators of comorbidity.

(NHMRC, 2013)
Link Between Obesity in Childhood and Adulthood

• An elevated BMI in childhood is associated with a high risk of obesity in adulthood and its associated comorbidities, including:
  – type 2 diabetes
  – hypertension
  – stroke
  – polycystic ovary syndrome and depression in women.

(NHMRC, 2013)
Link Between Obesity in Childhood and Adulthood

• Older and more significantly overweight children and adolescents are more likely to remain overweight, to the same degree as an adult.

• Children and adolescents with a high BMI who become non-obese as adults reduce their risk of type 2 diabetes.

(NHMRC, 2013)
Link Between Obesity in Childhood and Adulthood

• Magarey et al. 2003, concluded that in children over 3 years, the child’s and parents’ weight were equally important predictors of adult obesity. As the child aged, his/her weight status became the best predictor.

• Researchers in another study found that even though there were considerable fluctuations in young children’s weight until the age of 6, the majority (82 per cent) of children who were overweight at 2 were also overweight at 20.

• They argued that interventions should be targeted towards children with overweight parents (Magarey et al., 2003).
Link Between Obesity in Childhood and Adulthood

• After assessing 18 relevant studies, Baird et al. 2005 concluded that children had an increased risk of becoming obese adults if, between the ages of 3 months and 2 years, they had rapid weight gain, were at the higher end of the distribution for BMI, or were classified as obese.

• The evidence presented above makes it clear that obesity in childhood increases the risk of obesity in adulthood (Baird et al., 2005)
Nutritious and appealing meals and snacks for children
Strategies for encouraging healthy eating

• Don’t attach emotion to food
  – Avoid positive and negative reinforcement with food, e.g. ‘If you do well, I’ll give you a lolly’ or ‘If you don’t stop behaving badly, you’re not having any ice-cream’
• Encourage children to get involved with cooking and preparing food.
• Try to avoid battles over food.
• Encourage where possible to grow and harvest food with your children
  – e.g. having a strawberry plant in the garden.
• Make healthy food fun and enjoyable!
Strategies for encouraging healthy eating

cleanandscentsible.com  sassydealz.com  hative.com
Strategies for encouraging healthy eating
Tutorial Activity
Tutorial Part A

1. Search for, and briefly evaluate, recipe books and recipe websites offering suggestions for children’s meals. List your top 3 recipe books and top 3 recipe websites.

2. Working in small groups develop a 5 day diet plan for a 4 year old boy who is a “picky eater”. Ensure that all nutrient needs are met.
Tutorial Part B

Read the recommendations for treatment of childhood overweight and obesity in:

Summarise the key points relevant for nutritionists and naturopaths.
References


References (cont.)


References (cont.)


2002 Dietary Reference Intakes (DRIs) updates from the Food and Nutrition Board of the National Academy of Sciences.
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