Unit 4: Contemporary Nutrition Issues

Good Health and Malnutrition (Overnutrition)
The decisions people make have social, economic, health and environmental consequences. Raising, investigating and debating contemporary nutrition issues enable individuals to make informed decisions and respond appropriately.

"The healthiest part of a donut is the hole. Unfortunately, you have to eat through the rest of the donut to get there!"
Outcomes Assessed:

**H2.1:** Evaluates the relationship between food, its production, consumption, promotion and health.

**H3.2:** Independently investigates contemporary nutrition issues.

**H5.1:** Develops, realises and evaluates solutions for a range of food situations.
<table>
<thead>
<tr>
<th>Students learn about:</th>
<th>Students learn to:</th>
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<tbody>
<tr>
<td><strong>Diet and health in Australia</strong></td>
<td>• explain the consequences of malnutrition</td>
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<tr>
<td>• physical effects and economic costs of</td>
<td>• independently investigate and report on the</td>
</tr>
<tr>
<td>malnutrition (under and over nutrition)</td>
<td>health of a group in Australia and develop</td>
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<tr>
<td>and diet related disorders</td>
<td>a strategy to promote optimum health through</td>
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<td></td>
<td>good nutrition for this group</td>
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<td>• nutritional considerations for specific</td>
<td>• plan diets and prepare foods/meals to address</td>
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<td>groups</td>
<td>dietary requirements of specific groups</td>
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<td>• the role of the individual, community</td>
<td>• discuss the relationship between nutritionally</td>
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<td>groups, the food industry, government</td>
<td>modified foods and health</td>
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<td>organisations and private agencies in</td>
<td>• discuss the role of ‘active non-nutrients’ in the</td>
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<td>promoting health</td>
<td>diet</td>
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<td>• the production/manufacture of</td>
<td>• debate the role of dietary supplements in a balanced</td>
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<td>nutritionally modified foods to meet</td>
<td>diet</td>
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<td>consumer demand including a range of</td>
<td>• describe the relationship between nutrient</td>
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<td>functional foods such as fortified foods</td>
<td>intake and dietary disorders</td>
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<td>• the role of ‘active non-nutrients’ in the</td>
<td>• discuss ethical issues related to the responsible</td>
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<td>diet, e.g. phytochemicals, probiotics and</td>
<td>advertising of food products</td>
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<td>fibre</td>
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<td>• the role of supplements in the diet</td>
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<td><strong>Influences on nutritional status</strong></td>
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<td>• health and the role of diet in the</td>
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<td>development of conditions, including</td>
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<td>obesity, diabetes, cardiovascular disease,</td>
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<td>food sensitivity/intolerance/allergies</td>
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<td>• lifestyle and the effect of cultural</td>
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<td>and social practices on nutritional status</td>
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<td>• media and ethical issues related to</td>
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<td>advertising practices on food consumption</td>
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<td>such as the promotion of ‘health’ foods</td>
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<td>and ‘fast’ foods</td>
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</table>
What is ‘Good Health?’
What is ‘Good Health’?

The United Nations World Health Organisation has defined good health as ‘a state of complete physical, mental and social well being and not merely the absence of disease and infirmity’.
What Affects Health?

Health is affected by:

- Nutrition, including alcohol intake
- Self-care behaviour, such as:
  - Hygiene
  - Safety
  - Habits (smoking and drug use)
  - Spiritual practices
- Physical and social functioning (daily physical and social activities)
- Level of social support
- Amount and regularity of physical activity
- Balance between stresses and relaxation/ recreation
- Socioeconomic status: occupation and education level
Adequate nutrition is essential to good health.

Australians do not have any difficulty in obtaining a range of foods, however, not all of these foods are good for health.

**An inappropriate diet can:**

- Make you feel less energetic, less alert or even unwell.
- Lead to deterioration of skin, hair, nails and teeth.
- Lead to change in body shape.

In the long term, a poor diet could increase the chance of developing diet-related disorders, such as; obesity, osteoporosis etc.
How do you Measure Up?

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes □</th>
<th>No □</th>
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</thead>
<tbody>
<tr>
<td>Is your hair shiny and in good condition?</td>
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<tr>
<td>Do you have adequate energy for both work and recreation?</td>
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<td>Is your weight in the normal range for your height?</td>
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<td>Are your teeth free of discolouration?</td>
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<td>Are your bones straight and strong?</td>
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<td></td>
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<td>Do you enjoy spending time with family or friends?</td>
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<td>Is your mind active and alert, and are you able to concentrate for long periods of time?</td>
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<tr>
<td>Is your skin in good condition?</td>
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<td>Do you spend at least 30 minutes, most days, on physical activity?</td>
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<td>Do you have good posture?</td>
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</tbody>
</table>

Give yourself a point for each time you ticked ‘yes’.

Score:
- 8–10 You are in excellent health.
- 5–8 There is room for improvement.
- 1–5 There is definitely room for improvement.
## Students learn about:

**Diet and health in Australia**
- physical effects and economic costs of malnutrition (under and over nutrition) and diet related disorders
- nutritional considerations for specific groups
- the role of the individual, community groups, the food industry, government organisations and private agencies in promoting health
- the production/manufacture of nutritionally modified foods to meet consumer demand including a range of functional foods such as fortified foods
- the role of ‘active non-nutrients’ in the diet, eg phytochemicals, probiotics and fibre
- the role of supplements in the diet

## Students learn to:

- explain the consequences of malnutrition
- independently investigate and report on the health of a group in Australia and develop a strategy to promote optimum health through good nutrition for this group
- plan diets and prepare foods/meals to address dietary requirements of specific groups
- discuss the relationship between nutritionally modified foods and health
- discuss the role of ‘active non-nutrients’ in the diet
- debate the role of dietary supplements in a balanced diet
Malnutrition occurs when one or more nutrients are not supplied to the body in the correct amounts. This can cause overnutrition or undernutrition.

- Overnutrition
  - Obesity
  - Hypertension
  - Dental Caries
  - Cardiovascular Disease

- Undernutrition
  - Anorexia Nervosa
  - Bulimia Nervosa
  - Constipation/Diverticulitis
  - Anaemia
  - Osteoporosis
Overnutrition & Undernutrition

**Overnutrition:** A condition which occurs when an individual’s diet contains an excess of one or more nutrients.

**Undernutrition:** A condition that occurs when an individual’s diet is lacking one or more nutrients.
## Conditions linked with Over and Under Nutrition

<table>
<thead>
<tr>
<th>Overnutrition</th>
<th>Undernutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>Anorexia Nervosa</td>
</tr>
<tr>
<td>Dental Caries (Tooth Decay)</td>
<td>Bulimia Nervosa</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Diverticulitis</td>
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<tr>
<td>Type 2 Diabetes</td>
<td>Anaemia</td>
</tr>
<tr>
<td>Cardiovascular Disease</td>
<td>Osteoporosis</td>
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</table>
Obesity
What is Obesity?

**Obesity** occurs when the energy intake is greater than the energy expenditure through physical activity. The excess energy is stored in the body as adipose tissue (fatty tissue).

A body weighing 10-19% above the ideal weight is classified as overweight. A body weighing 20% or more above the ideal weight is classified as obese.

- 63% of Australian adults are overweight or obese.

- 25% of Australian children are overweight or obese.
What is the difference between ‘overweight’ and ‘obesity’.
Obesity increases with age.

Prevalence of overweight and obesity for various age groups

Source: ABS, Overweight and Obesity in Adults, 2004–05, 4719.0.
Causes of Obesity:

- **Hormones**: For a few people, Obesity may be due to defective hormone production in their thyroid, pituitary or sex glands or hypothalamus, changing how the body stores or burns energy. Also, some diseases require intake of certain medication which can promote weight gain.

- **Heredity**: Some strong genetic factors can affect how the body stores or burns energy.

- **Activity Level**: A reduction in energy expenditure (use of) without a reduction in energy intake will lead to weight gain.
Overeating behaviour is often believed to be a sign of a lazy or undisciplined person, however, many factors influence food intake.

- **Psychological Factors:** Food can cause many pleasurable feelings. A habit of using food as a comfort or reward can lead to problems in some people, particularly when energy-dense foods are chosen. Depression, stress and loneliness can also lead to overeating.

- **Environmental Factors:** An individual’s environment can make a big difference to their food habits. It is easier to eat when fresh, healthy food is readily available and when you have enough money to buy it. If you lack money, facilities or cooking skills and live far away from food shops, it is difficult to prepare food at home and takeaway becomes an easier option. Similarly, living in a high crime area or a place where there is little access to parks, walking tracks and sporting groups, can also lead to weight gain.
Assessment of Obesity:

In women, adipose tissue is usually distributed around the bust, hips, thighs, waist and upper arms, whereas, in men, it is mainly concentrated around the waist. There are many tests which have been developed to determine how much adipose tissue is too much.

- **Subjective Tests:** Observing a person’s body shape and overall appearance can give a rough idea of how much adipose tissue they have. This does have possible bias.
Waist Circumference and Waist-to-Hip Ratio:

**Waist Circumference:** These methods look only at someone’s body shape and do not assess overall body fatness. Fat around the middle of the body, where the organs are, is called **central obesity** and is associated with a higher risk of health problems. A large waist circumference indicates central obesity.

**Waist-to-Hip Ratio:** Mainly used for adults and uses a tape measure. An ideal waist-to-hip ratio is about 0.7 for women and 0.9 for men. A ratio greater than this may indicate central obesity.

\[
\text{waist-to-hip ratio} = \frac{\text{waist circumference}}{\text{hip circumference}}
\]
Skinfold Tests: Special calipers are used by professionals to measure the thickness of skin folds at particular sites on body; these measurements are then compared with tables of normal values. This makes it possible to determine how much of a person’s weight is adipose tissue. In men, adipose tissue is normally around 15-20% and women around 20-25% of body weight. Obesity-related health problems occur when it is 25-30% above body weight.
Conditions linked with Overnutrition - **OBESITY**

- **Body-Mass Index (BMI)**: The BMI is calculated as follows:

\[
BMI = \frac{\text{weight (kilograms)}}{\text{height} \times \text{height (metres)}}
\]

The BMI can be interpreted according to the following classifications. However, it does not take into account extra muscle, ethnicity or body shape.

<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>BMI</th>
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<tbody>
<tr>
<td>Severely underweight</td>
<td>&lt;17.9</td>
</tr>
<tr>
<td>Underweight</td>
<td>18–19.9</td>
</tr>
<tr>
<td>Acceptable weight</td>
<td>20–24.9</td>
</tr>
<tr>
<td>Overweight (grade I obesity)</td>
<td>25–29.9</td>
</tr>
<tr>
<td>Obese (grade II obesity)</td>
<td>30–34.9</td>
</tr>
<tr>
<td>Morbidly obese (grade III obesity)</td>
<td>40 or more</td>
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</table>
Physical Effects of Obesity:

Obesity can cause significant health problems because of:

- The extra workload for the heart in pumping blood around a larger body.
- Strain on the body’s joints, particularly the knees, hips and ankles.
- Fatigue from simple physical tasks, because the body requires more energy to move.

Obesity can increase the risk of the following conditions. Most of these can cause premature death:

- Diabetes
- Gallbladder Disease
- Cardiovascular Disease
- Hypertension, leading to Stroke
- Hiatus Hernia
- Respiratory Disorders
- Musculoskeletal Disorders (such as arthritis)
- Some Cancers
Economic Effects of Obesity:

- Cost of hospital treatment
- Surgery
- Medicine
- Toll on ability to work
- Absenteeism

Hypertension
What is Hypertension?

Hypertension (High Blood Pressure) is thought to contribute to nearly all Australian deaths caused by diseases of the heart and circulatory system. Too much sodium in the diet is a major contributing factor.

Sodium and Potassium work together to keep the balance of fluid inside and outside cells. When there is too much sodium, the body retains water and the body has to work harder to pump the blood under increased pressure. This means that blood circulation is less efficient, and the arteries become less elastic.

32% of Australian adults have Hypertension.
Conditions linked with Overnutrition - **Hypertension**

**Causes of Hypertension:**

- High Sodium Intake
- Obesity
- Stress
Assessment of Hypertension:

Blood pressure is measured using two different numbers.

- **Systolic Pressure:** The pressure when the heart pumps the blood is about 120mm Hg in healthy young adults.
- **Diastolic Pressure:** The pressure when the heart is at rest, in between pumps is about 80mm Hg in young adults.

A normal blood pressure would be expressed as ‘120 over 80’. Someone has high blood pressure if their systolic pressure is above 140mm Hg or their diastolic pressure is above 90mm Hg.
Conditions linked with Overnutrition - **Hypertension**

**Physical Effects of Hypertension:**

Some problems that can result from Hypertension include:

- Heart Failure
- Reduced blood flow to the brain, causing a Stroke
- Kidney Disease
- Aneurysm (blockage to the blood flow)

**Economic Effects of Hypertension:**

- Cost of hospital treatment
- Surgery
- Medicine
- Toll on ability to work
- Absenteeism
Dental Caries
What is Dental Caries?

Dental Caries are commonly called tooth decay. They occur when the enamel softens and then breaks down, allowing the dentine to decay. When a nerve is exposed, toothache occurs.
Role of the Diet in Dental Caries

Dental caries occur when carbohydrate is available to the bacteria that occur naturally in the mouth. The bacteria ferment the carbohydrate, producing acids, which dissolve the tooth enamel.

The bacteria also produce an insoluble polysaccharide called plaque, which forms a film on the teeth.

High sugary foods and acidic foods such as; fruit juices and soft drinks (including diet soft drinks and soda water) can also contribute to dissolving the enamel.

Rinsing your mouth thoroughly after eating and drinking can also help to protect your teeth. In addition, foods high in calcium should also be consumed.
Physical Effects of Dental Caries:

Dental caries cause significant problems, including:

➔ Bad Breath due to bacteria
➔ Toothaches
➔ Damaged or lost teeth
➔ Difficulty chewing tough or crunchy foods and this can lead to a diet that is low in fruit, vegetables and fibre.

Economic Effects of Dental Caries:

● Associated costs including dental fillings, crowns and dentures.
Cardiovascular Disease
What is Cardiovascular Disease (Coronary Heart Disease)?

Hardening of the arteries (arteriosclerosis) is caused by a collection of fat (cholesterol) along artery walls, resulting in narrowing of arteries, restricting blood flow to the heart.
Conditions linked with Overnutrition - Cardiovascular Disease

Physical Effects of Cardiovascular Disease:

- Heart attacks can result from restricted oxygen supply to heart muscle.
- Strokes can also occur if blockage is in the brain.

Economic Effects of Cardiovascular Disease:

- Most expensive disease in terms of amount of people suffering that need to be treated.
- Expensive in terms of medication and surgery costs.
- Recuperative time is long.
- Time off work is extensive.
Economic Effects of Overnutrition

Costs for Individuals:

- **Medical Costs:** Treatment, e.g: prescriptions and supplements, surgery costs, hospitals, doctors, weight loss programmes, dental, monitoring equipment, checks and health insurance.

- **Work Absenteeism:** Income may be affected and job security threatened.

- **Extra Household Costs:** Such as modifications of the home, special foods, employing others for household chores. This can place financial hardship on both individuals and families.

- **Emotional Stress and Anxiety:** These place strains on individuals and families, loss of self-esteem and independence and possible consequential counselling.
Costs for Society:

- **Strain on Health System:** There is an increased need for hospital beds, private beds, psychological services, rehabilitation services and community services, such as community transport.
- **Workplaces:** There is often a loss of productivity and the cost of hiring and retraining staff to replace sick workers.
- **Educational Costs:** Education is needed to prevent disorders.
- **Government Allowances:** Sickness and disability allowances are needed for those who can no longer work or have used up their sick leave. A carer's allowance is provided for those who have to care for the sick.

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Economic Effects of Overnutrition