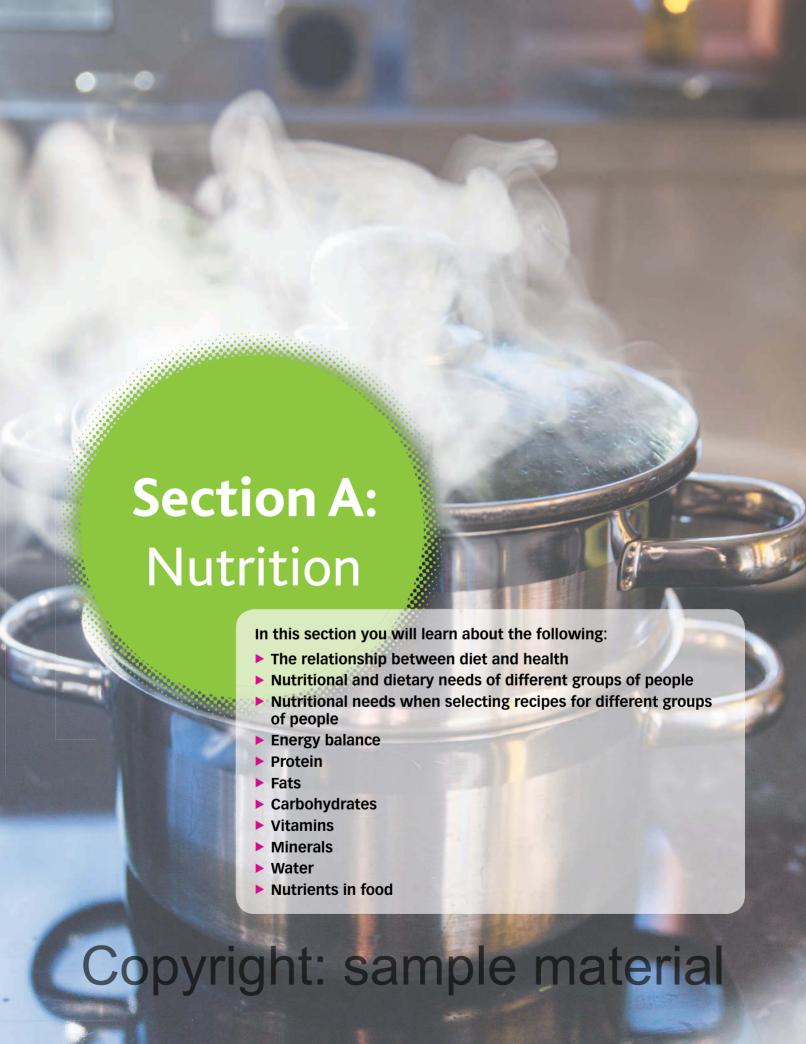


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Topic 1



The relationship between diet and health

→ WHAT WILL I LEARN?



By the end of this topic you should have developed a knowledge and understanding of:

- → what a balanced diet is and how to provide the correct combination of food and nutrients for good health
- → the government's guidelines for a healthy diet
- → major diet-related health issues caused by poor diet and lifestyle.

A balanced diet to provide the correct combination of food and nutrients

All living things need food in order to survive. We need to eat food in the correct balance for:

- providing the energy we need to survive, to keep us healthy and to help fight disease
- growth and repair of body tissue
- all bodily functions, which depend on the energy and trace elements found in the food we eat
- stopping us feeling hungry
- health and well-being, as we find eating a pleasurable and enjoyable experience.

A healthy balanced diet provides the correct combination of food and nutrients for growth and maintaining good health. There is not one single food that will provide the body with all the nutrients it needs. To have a **balanced diet** you need to eat a mixture of foods from each of the main food groups and the correct amount of energy to carry out daily activities.

KEY WORD



The Eatwell Guide

The **Eatwell Guide** is a pictorial food guide showing the proportions and types of foods that are needed to make up a healthy balanced diet. The Guide is produced by Public Health England.

The Eatwell Guide can be followed by most people with the exception of children under 2 years who have special dietary needs. Children between the ages of 2 and 5 should start to follow the Eatwell Guide. If you have special dietary needs you should always check with a dietician or doctor how to adapt the Eatwell Guide to meet your specific needs. The Eatwell Guide is all about balance and figure 1.1 shows the proportions of the different groups of



▲ Figure 1.1 The Eatwell Guide

KEY WORD

Eatwell Guide – a healthy eating model, to encourage people to eat the correct proportions of food to achieve a balanced diet.

The **Eatwell Guide** is based on the five food groups (shown in Figure 1.1) and supports advice to reduce fat, salt, sugar and alcohol in the diet, and to increase fibre.

The Eatwell Guide is all about balance. Figure 1.1 shows the proportions of the different groups of foods you should eat. There are no good or bad foods – all foods can be included in a healthy diet as long as the overall balance of foods is right. All foods supply energy and nutrients – it is achieving the correct intake of those nutrients that is important for health.

Topic links: You will learn about the functions of different nutrients in Section A: Nutrition, Topics 3 and Topics 5—9.



Fruits and vegetables

- Many people do not eat sufficient fruits and vegetables
- Fruits and vegetables should be just over a third of the food eaten in a day
- We should eat at least five portions of a variety of fruit and vegetables each day
- Fruit and vegetables are a good source of vitamins, minerals and fibre
- Evidence shows that people who eat a lot of fruit and vegetables are less likely to develop diseases such as coronary heart disease and some types of cancer.

What is included:

- Choose from fresh, frozen, tinned, dried or juice
- All fruit and vegetables, including: apples, pears, oranges, bananas, grapes, strawberries, mango, pineapple, raisins, broccoli, courgettes, cabbage, peas, sweetcorn, lettuce, tomatoes, carrots, peas, beans, lentils.

Remember:

- that a portion of dried fruit is 30 g and can only count as 1 of your 5-a-day
- a portion of fruit juice or smoothie is 150 ml and also only counts as 1 of your 5-a-day
- limit fruit juice and smoothies to a combined total of 150 ml per day
- potatoes are not part of this group they belong in the Potatoes, bread, rice, pasta or other starchy carbohydrates.

Potatoes, bread, rice, pasta or other starchy carbohydrates



- Choose to eat wholegrain cereal products or higher fibre where possible, such as wholewheat pasta and brown rice
- Starchy food should make up just over a third of the food we eat
- Starchy foods are a good source of energy and provide use with other nutrients.

What is included:

- Bread, including: soda bread, rye bread, pitta, flour tortilla, baguettes, chapatti, bagels
- rice
- potatoes
- breakfast cereals, oats
- pasta, noodles
- maize, cornmeal, polenta
- millet, spelt
- couscous, bulgur wheat
- wheat, pearl barley
- yams and plantains.

Remember:

- Starchy foods are often combined with other ingredients, e.g. in breakfast cereals.
 Check the labels and choose the products lowest in fat, salt and sugar
- Consider the way you are cooking starchy foods, e.g. have oven chips rather than deep fried ones, try to avoid adding too much fat or creamy sauces as these contain lots of calories.





- Milk, cheese, yogurt and fromage frais are good sources of protein and some vitamins, and they are also good source of calcium, this helps to keep our bones strong
- You should eat some dairy or dairy alternatives every day
- There are many lower-fat and lower-sugar products which can replace those with a higher fat and sugar content for example, 1% fat milk, reduced-fat cheese or plain low-fat or fat-free yoghurt.

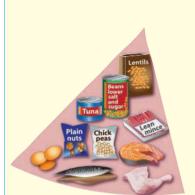
What is included:

- Milk
- cheese
- yogurt
- fromage frais
- quark, cream cheese.
- This also includes non-dairy alternatives to these foods.

Remember:

- Butters and creams are not included in this group as they are high in saturated fat and so they fit into the 'foods to eat less often and in small amounts'.
- Check the labels on food products as some are high in saturated fats. There are alternatives, e.g. reduced-fat cheese, yogurt and milk. Yogurts may be high in sugar, choose low-fat and sugar natural ones.





- These foods are a good sources of protein and other nutrients
- Beans, peas and lentils are low in fat and are good alternatives to meat
- It is recommended that we eat fish at least twice a week and that one of these is oily fish, such as mackerel
- Try to reduce red and processed meat to 70 g per day
- Some meat is high in fat (saturated)
- Choose lower-fat meat products, leaner cuts of meat, and trim off any visible fat and skin
- Use cooking methods that do not use any fat, and drain away fat. Grill, poach, steam, bake or microwave.

What is included:

- Meat, poultry and game, including: lamb, beef, pork, chicken, bacon, sausages, burgers
- White fish including: haddock, plaice, pollock, coley, cod
- Oily fish including: mackerel, sardines, trout, salmon, whitebait
- Shellfish including: prawns, mussels, crab, squid, oysters
- Eggs
- Nuts
- Beans and other pulses, including: lentils, chickpeas, baked beans, kidney beans, butter beans.

Oils and spreads



- Some fat is needed in the diet but most people need to reduce their intake of saturated fat
- We should not use a lot of these products because they are often high in fat
- Chose low-fat spreads when possible
- These foods are often high in calories so reducing the amount eaten can also help to control weight.

What is included:

- Unsaturated oil, e.g. vegetable oil, rapeseed oil, olive oil, sunflower oil
- Soft spreads made from unsaturated fats.

Remember:

- Butter is not included in this section it is in the section 'foods to eat less often and in small amounts'
- Check the labels on foods and choose fats and oils high in unsaturated fats and low in saturated fat.

The Eatwell Guide also gives additional information on:

- Foods high in fat and sugars
- Hydration
- Food labelling

Foods high in fat and sugars



▲ Figure 1.2 Foods high in fat, salt and sugar



These foods are not needed in the diet and therefore should not be eaten very often. If you eat these foods and drinks you should eat them in very small quantities. Foods and drinks which contain a lot of fat and sugar are high in energy. You should check the food labels and choose foods which are low in fats, sugars and salt.

Hydration

Water, coffee, tea, lower fat milk, and sugar free drinks all contribute to meeting your needs of 6-8 glasses of fluid every day. Fruit juice and smoothies do count but they are also counted as free sugars. You should not have more than 150 ml of these a day.

Sugary drinks should be avoided and these should be swapped for sugar free and no added sugar varieties.

Alcohol also contains a lot of calories and adults should not consume more than 14 units a week.

Food labelling

A lot of foods have nutritional labelling on them. It often shows the nutritional information per serving. It also shows the contribution it makes to the daily amounts required.



The use of colour helps you to easily see whether they are high in saturated fat, sugar and salt.

Red = high

Amber = medium

Green = low

Cutting down on saturated fat

Reducing the amount of saturated fat eaten can:

- reduce the risk of heart disease
- lower blood cholesterol.

Men should have no more than 30 g saturated fat a day and women should have no more than 20 g per day.

Children need less than this. Children under five years of age should not have a low fat diet.

Cutting down on sugar

Reducing the amount of sugar can reduce the risk of:

- obesity
- tooth decay.

No more than 5% of the sugar we eat should come from free sugars. The chart below shows the amount of sugars recommended:

Table 1.2 How much sugar should we eat

Age	Recommended maximum free sugars intake	Sugar cubes
4-6 years	No more than 19 g/day	5 cubes
7-10 years	No more than 24 g/day	6 cubes
From 11 years, including adults	No more than 30 g/day	7 cubes

Source: Public Health England The Eatwell Guide March 2016

KEY WORDS

Free sugars – added to foods and drinks by manufacturers, cooks or consumers and found naturally in honey, syrups and fruit juice

Not free sugars – found naturally in products, e.g. in milk

Many foods that contain sugar include **free sugars**, which can be high in energy but contain very few other nutrients. This can cause weight gain, obesity and increase the risk of tooth decay.

Manufacturers, chefs and consumers add sugars to products and dishes to make them taste sweeter and more palatable. These are called free sugars. Sugars found naturally in honey, syrups and fruit juice are also known as free sugars.

Sugars which are found naturally in foods are not counted, for example:

- in fresh, dried or frozen fruits and vegetables
- in milk, cheese and natural yoghurt.

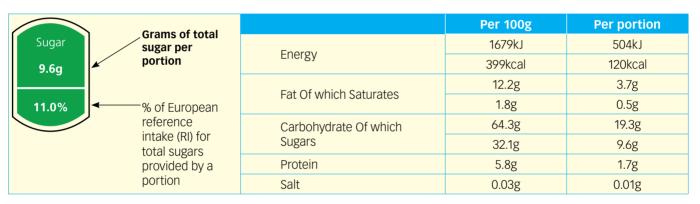
Although ingredients lists are required by law on food products it is sometimes difficult to spot the difference between a free sugar and an ingredient that is not free sugar.

The following is a list of some of the common free sugars:

- cane sugar
- honey
- brown sugar
- dextrose
- fructose
- sucrose
- maltose
- fruit juice concentrate
- corn syrup
- mollases

On the nutritional labelling on the cereal bar packet the amount of sugar in the product will include free sugars and not free sugars (see Figure 1.4). Look at the label on the food to see whether there are free sugars in the product and how high up the food label list they appear.

An ingredients list on a food label always starts with the highest quantity and finishes with the smallest.



▲ Figure 1.4 Ingredients and nutritional information from a cereal bar

Figure 1.4 shows the ingredients in a cereal bar: can you spot the free sugars on the label?

Some of the sugars will be from:

- dried fruits and raisins not free sugars
- glucose syrup, sugar, honey free sugars.

Remember sugary drinks are not needed in and we should change these to water, low fat milk or sugar free drinks.

Cutting down on salt

Reducing the amount of salt can:

- reduce blood pressure
- reduce the risk of heart disease
- reduce the risk of a stroke.

Adults should have no more than 6 g salt per day and children should have less.

Topic link: Section A Topic 3

How much food do I need

Topic link: Section A Topic 4 Energy Balance

Everyone needs different amounts of energy to maintain a healthy body weight. The amount of energy we need depends on many different factors. One of the main ones is how active we are. If we do not use all the energy we consume it will be stored as fat.

Table 1.3 shows the daily energy requirements.

Table 1.3 Daily Energy requirements

Age	ge Daily energy requirements			
	Males		Females	
	Kcals	KJ	Kcals	KJ
1	765	3201	717	3000
2	1004	4201	932	3899
3	1171	4899	1076	4502
4	1386	5799	1291	5402
5	1482	6201	1362	5699
6	1577	6598	1482	6201
7	1649	6899	1530	6402
8	1745	7301	1625	6799
9	1840	7699	1721	7201
10	2032	8502	1936	8100
11 and over	2500	10,460	2000	8368

Source: Public Health England The Eatwell Guide March 2016

✓ KEY POINTS



- ✓ No more than 35 per cent of our food energy should come from fat.
- ✓ No more than 11 per cent of food energy should come from saturates.
- ✓ Carbohydrates should supply 50 per cent of our food energy.
- ✓ No more than 5 per cent of food energy should come from free sugars.

(British Nutrition Foundation. 2015)

TEST YOURSELF



- 1 Explain why the green and yellow sections of the Eatwell Guide are the largest.
- 2 Explain why the purple section of the Eatwell Guide is the smallest.
- **3** Why is it important that we do not call the section 'Bread, rice, potatoes, pasta and other starchy foods' the carbohydrate section?

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9

Stretch and challenge

- 1. Use one or more of the following websites to find out further information about the Eatwell Guide.
- www.nhs.uk/livewell/healthy-eating
- www.foodafactoflife.org.uk
- www.nutrition.org.uk
- 2. Investigate why there are concerns about the amount of free sugars eaten.

PRACTICAL ACTIVITY



Teenagers often eat snack meals.

Prepare, cook and serve a snack meal for a teenager.

Explain how you have adapted your ingredients so that it fits the Eatwell Guide.

The government's guidelines for a healthy diet

The government's recommendation is to use the Eatwell Guide as a model for healthy eating. The plate shows visually how different foods contribute to a healthy balanced diet. The size of the segment is linked to the government's recommendations for a diet that would provide children over five and healthy adults all their recommended nutrients.

The government has also produced other guidance linked to healthy eating, including the Department for Health's **eight tips for healthy eating** and the **five-a-day campaign**.

The eight tips for healthy eating

The eight tips for healthy eating are clearly linked to the Eatwell Guide.

- 1 Base your meals on starchy foods.
- 2 Eat lots of fruit and vegetables.
- 3 Eat more fish aim for two portions a week; one of these should be oily.
- 4 Cut down on saturated fat and sugar.
- 5 Eat less salt adults should eat no more than 6 g per day.
- 6 Get active and try to maintain a healthy weight.
- 7 Don't get thirsty drink plenty of water.
- 8 Don't skip breakfast.

Five-a-day

To encourage us to eat more fruit and vegetables, the UK government introduced the 'five-a-day' campaign. This is to ensure that you get a variety of vitamins, minerals, trace elements and fibre in your diet. This will include the antioxidants and plant chemicals you need for good health.



▲ Figure 1.5 Fruits and vegetables can be eaten in a variety of ways

One adult portion is made up of 80 g of fruit or vegetables. Eating them fresh, frozen, canned or dried are all excellent ways of achieving your five-a-day. However, recent research has suggested that we now need to eat much more than five portions of fruit and vegetables a day.

Table 1.4 Guidelines on one portion of a 'five-a-day' source

Fruit or vegetable	One portion
Small-sized fresh fruit	Two or more small fruit (e.g. two plums, two satsumas, two kiwi fruit, three apricots, six lychees, seven strawberries or 14 cherries).
Medium-sized fresh fruit	One piece of fruit (e.g. apple, banana, pear, orange or nectarine).
Large fresh fruit	Half a grapefruit, one slice of papaya, one slice of melon (5 cm slice), one large slice of pineapple or two slices of mango (5 cm slices).
Dried fruit	A portion of dried fruit is around 30 g. Remember – dried fruit is high in sugar. Try to swap dried fruit for fresh fruit.
Tinned fruit in natural juice	One portion is roughly the same quantity of fruit that you would eat for a fresh portion.
Green vegetables	Two broccoli spears or four heaped tablespoons of cooked kale, spinach, spring greens or green beans.
Cooked vegetables	Three heaped tablespoons of cooked vegetables, such as carrots, peas or sweetcorn, or eight cauliflower florets.
Salad vegetables	Three sticks of celery, a 5 cm piece of cucumber, one medium tomato or seven cherry tomatoes.
Tinned and frozen vegetables	Roughly the same quantity as you would eat for a fresh portion.
Pulses and beans	Three heaped tablespoons of baked beans, haricot beans, kidney beans, cannellini beans, butter beans or chickpeas. Remember, however much you eat, beans and pulses count as a maximum of one portion a day.
Juices and smoothies	One 150 ml glass of unsweetened 100% fruit or vegetable juice can count as a portion. But only one glass counts.
Ready-made foods	Fruit and vegetables contained in shop-bought ready-made foods can also count toward your 'five-a-day'. Always read the label.







▲ Figure 1.6 Labels used on food packaging showing the contribution the food makes to the 'five-a-day'

Some food products are labelled to show how many contributions they make to your 'five-a-day'. Figure 1.6 shows examples of labels.

PRACTICAL ACTIVITY



- 1 Prepare a savoury dish which would contain at least two of your 'five-a-day' portions of fruit and vegetables.
- 2 Explain how this dish would also contribute to meeting your other dietary needs.

RESEARCH ACTIVITY



Using a nutritional program investigate the amount of fibre found in a range of fruit and vegetables.

KEY POINTS



- Base your diet on the eight tips for healthy eating.
- ✓ Include at least five portions of fruit and vegetables a day in your diet.
- Remember fruit juice and dried fruit can only count as one portion of fruit and vegetables.

TEST YOURSELF



- 1 State eight guidelines we should follow for healthy eating.
- 2 Why is it important that we have at least five portions of fruit and vegetables a day?
- 3 Which vegetable does not count as one of your five-a-day?

Major diet-related health issues caused by a poor diet and lifestyle

There are a number of diseases and conditions caused by having a poor diet and lifestyle.

KEY WORD

Obese – excessive fatness, measured as ratio of weight to height.

Obesity

The number of people who are overweight or **obese** in the UK is increasing. Table 1.2 shows the changes in the numbers of people who were overweight and obese in 1993 and 2013.

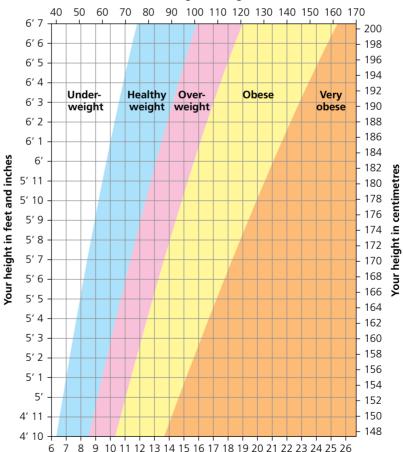
Table 1.2 Increase in the number of overweight and obese adults between 1993 and 2013

		1993	2013
Overweight	Men	41%	46%
	Women	32%	32%
Obese	Men	13.2%	26%
	Women	16.4%	23.8%
Overweight and	Men	57.6%	67.1%
obese	Women	48.6%	57.2%

(Source: Statistics on Obesity, Physical Activity and Diet England 2015, page 12)

People are now taking less exercise than in previous years, but are still eating the same amount of food. This means that their weight gradually increases and the ratio of their weight in relation to their height is high.

Your weight in kilograms



CODYIGATE Verght against height chart for men and women over 18 years

13

KEY WORD

Diabetes – a metabolic disorder caused by the poor absorption of glucose. This can be due to the failure to produce insulin (in type 1 insulin-dependent diabetes) or the poor response of tissues to insulin (in type 2 non-insulin-dependent diabetes). Type 1 (diabetes mellitus) develops in childhood. The onset of type 2 is usually from middle age onwards.

Being overweight is unhealthy because it puts a strain on the organs of the body. It can cause heart disease, high blood pressure, **diabetes**, osteoarthritis, varicose veins, breathlessness and chest infections. It also causes unhappiness, low self-esteem and may lead to depression.

The main cause of being overweight is eating more food than the body requires so that excess energy is stored as fat.

Topic link: You will learn more about how the body stores excess energy as fat in Section A: Topic 4 Energy balance.

Weight gain and weight loss

The number of people who are overweight or obese in the UK is increasing. People are now taking less exercise than in previous years, but are still eating the same amount of food.

The only way to lose weight is to reduce the number of calories consumed and combine this with increased physical exercise. Many people try to lose weight and the 'slimming industry' is a big part of the food market. There are clubs to help and support people by group therapy, slimming magazines and crash diets in the media, but they all rely on people controlling their intake of calories.



▲ Figure 1.8 A range of reduced-fat products

Meals for people who are trying to lose weight should include a variety of foods and follow the Eatwell Guide, reducing their intake of fat and sugar. We can buy reduced-fat, margarine-type spreads, salad dressings, low-sugar drinks, desserts, biscuits and yogurts. A calorie-controlled diet should consist of foods naturally low in fat, for example fruit and vegetables, white fish, poultry, skimmed milk and cheese, cereal, nuts and pulses.

People trying to lose weight should use low-fat methods of cooking, such as grilling, steaming, boiling and stir-frying.

Most foods have the amount of energy per 100 g printed on their nutritional label, so it is possible to count the calories. From December 2016 it will be the law to display nutritional information on the back of all pre-packed foods.

Stretch and challenge

Explain why there has been an increase in the number of overweight people between 1993 and 2013.

RESEARCH ACTIVITY



Visit a supermarket or look on a supermarket shopping website and investigate products aimed at adults on slimming diets.

Using the information from the labels, compare the calories and nutritional values with similar 'non-diet' products.

Collate the information in a chart.

INVESTIGATION ACTIVITY



Basic recipes can be adapted to reduce sugar content. Cakes made by the creaming method contain sugar.

1 Use the ingredients and method in the table to investigate whether you can successfully reduce the sugar content.

100% sugar	75% sugar	50% sugar	25% sugar
50 g self raising flour	50 g self raising	50 g self raising	50 g self raising
50 g sugar	flour	flour	flour
50 g fat	37 g sugar	25 g sugar	12.5 g sugar
1 egg	50 g fat	50 g fat	50 g fat
	1 egg	1 egg	1 egg

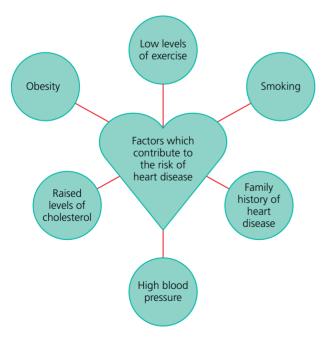
Method

- 1 Put oven on 180 °C / gas mark 5.
- 2 Put the sugar and fat into a mixing bowl and beat until light and fluffy.
- 3 Crack the egg into a small basin and beat with a fork.
- 4 Gradually beat the egg into the fat and sugar mixture.
- 5 Fold in the flour.
- 6 Divide mixture evenly between eight cake cases.
- 7 Bake for 10–15 minutes until golden brown and springs back when touched.
- 2 Compare the different cakes for size, texture, colour and flavour. Produce a chart to record your findings.
- 3 What advice would you give to people about reducing the amount of sugar in a creamed cake mixture?

PRACTICAL ACTIVITY



Adapt a cake recipe to reduce the sugar and include more fruit and vegetables.



▲ Figure 1.9 Factors which influence the risk of heart disease

Cardiovascular disease

Cardiovascular disease is a term used to describe different types of diseases of the heart and circulatory system. Blood flow to the heart, brain or body is reduced because of a blood clot or narrowing of the arteries. Coronary heart disease is one of the main types of cardiovascular disease.

Topic link: Section A: Topic 3 Nutritional needs when selecting recipes for different groups of people.

Coronary heart disease

In the UK, coronary heart disease (CHD) is a major health problem and one of the main causes of death.

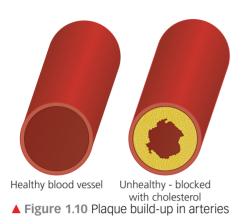
Causes of Coronary heart disease (CHD)

CHD is related to the amount of fat in the diet.

A diet high in saturated fats is also likely to be high in cholesterol. Cholesterol is a substance made in the liver and carried in the bloodstream. The cholesterol can build up and be deposited with other material as 'plaque' on the walls of the arteries, causing them to narrow. If the arteries

then become blocked by a blood clot or more plaque, the person has a heart attack which, if severe, can cause death.

The level of cholesterol in the blood depends on the amount of fatty acids in the diet. Saturated fatty acids can be replaced with polyunsaturated fats as alternatives to animal fat-based products. (Note that some low-fat spreads contain animal fat.) Soluble fibre is thought to remove cholesterol from arteries. This is discussed on page 55.



RESEARCH ACTIVITY



Your local health centre has asked for contributions to create a display on 'How to reduce your risk of heart disease'.

Produce suitable materials on one of the following:

- changes to your diet
 - foods to avoid
- recipe book ideas

changes to your lifestyle.

PRACTICAL ACTIVITY



Design and make a lower-fat luxury dessert suitable for someone who has CHD. Explain how you have modified your recipe.

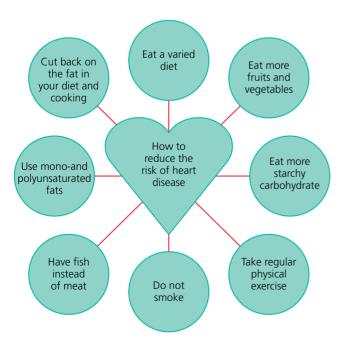
Stretch and challenge

Using a nutrition programme calculate the nutritional value of your dessert and explain how it contributes to the recommended daily intake of an adult who has CHD.

Figure 1.11 below shows the general advice on how to reduce the risk of heart disease.

Stretch and challenge

Discuss why coronary heart disease is a major cause of death in the western world.



High blood pressure

In the UK, coronary heart disease (CHD) is a major health problem.

To reduce the risk of high blood pressure (and heart disease), the general advice is to:

- eat more fruits and vegetables at least five portions a day
- eat a varied diet
- cut back on the fat in your diet and cooking
- eat more starchy carbohydrate
- use monounsaturated and polyunsaturated fats
- have fish instead of meat at least twice a week.
- A diet high in salt can also be linked to high blood pressure.

Does this sound familiar? It is the Eatwell Guide again!

Topic link: Section A Topic 3 nutritional needs when selecting for differnt groups of people, lowering the

e material

KEY POINTS



- CHD and high blood pressure is increasing.
- Obesity rates rising.
- ✓ Need to adapt diets to reduce the amount of fats and sugars.
- Use monounsaturated fats.

Diabetes

Diabetes is a medical condition where the glucose in the bloodstream is not balanced correctly. Glucose is carried in the blood to all body cells to supply them with energy. Insulin, a hormone produced by the pancreas, controls the amount of glucose in the bloodstream and stops it getting too high.

There are two types of diabetes:

- Type 1 this is usually diagnosed in children and is caused by the pancreas not producing enough insulin. Type 1 diabetics have insulin injections daily and need to have a carefully balanced diet.
- Type 2 diabetes is usually diagnosed in older people, though there are
 more younger people being diagnosed with this due to a poor diet. Diets
 high in sugar can lead to type 2 diabetes. Type 2 diabetes is treated with
 a healthy diet and increased physical activity. Once diagnosed, diabetics
 may also have to take medication or have insulin injections.

Meals for those with diabetes should follow the guidance in the Eatwell Guide, which includes high-fibre starchy carbohydrate foods such as potatoes, rice and pasta, but should be low in sugar and sweet foods. Sorbitol (artificial sweetener) can be used instead of sucrose and glucose.

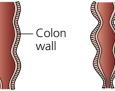
An increasing number of people have diabetes, particularly Type 2 diabetes. People with diabetes should maintain a healthy body weight. They should have a healthy diet that is low in saturated fat and salt and contains at least five portions of fruit and vegetables a day, and starchy foods such as bread, rice and potatoes.

► Figure 1.12 Those with diabetes must control their intake of sugar



(a) High-fibre diet Low-fibre diet

Development of diverticula in wall of colon







Small, hard faeces do not pass easily through colon



Inner lining of colon pushes and distorts colon wall

Diverticulitis

Diverticulitis is a condition which affects the large intestine. It is often linked to having a diet which is low in fibre (nonstarch polysaccharide [NSP]). The lining of the bowel becomes inflamed, infected and damaged.

Symptoms of diverticular disease include pain and discomfort in the abdomen and feeling bloated. Figure 1.13 shows what happens to your colon if you do not have a high-fibre diet.

KEY POINT



✓ Increase the amount of high fibre foods to prevent diverticulitis.

▲ Figure 1.13 Waste passing through the digestive system

KEY WORDS

Diverticular disease – caused by lack of fibre in the diet

Diverticulitis – a condition which affects the large intestine

Non starch polysaccharide

(fibre) - the part of food that is not digested by the body

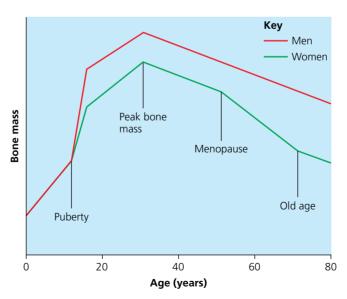
Osteoporosis – the bones start to lose minerals and their strength and break easily

Topic link: You will learn more about the effects of a deficiency in fibre in Section A: Topic 7 Carbohydrates.

Bone health (osteoporosis)

Healthy bones do not break easily. Calcium and other vitamins (vitamin D and phosphorus) and minerals are gradually added to children's, adolescents' and young adults' bones to strengthen them. Our bones are at their strongest between the ages of 20 and 35 when our peak bone mass is reached.

If we do not achieve peak bone mass then we are more likely to get osteoporosis. The bones start to lose minerals and their strength. If we lose too many minerals the bones become brittle and break.



Source: Adapted with permission from Medical Research Council Human Nutrition Research

▲ Figure 1.14 Changes in bone mass with age

The following will increase your likelihood of suffering from osteoporosis:

your genes – if other people in your family suffer from broken bones

- race Afro-Caribbean people suffer less from osteoporosis
- gender women suffer more than men
- smoking
- low body weight
- if you have had previous fractures
- some medicines
- high alcohol consumption.

Dental health

To maintain healthy teeth you need to have a balanced diet based on the Eatwell Guide. Tooth decay is caused when:

- the bacteria in your mouth (plaque) feed on the sucrose found in the food you eat to produce an acid
- the acid then causes small holes in your teeth (dental caries).
- Sugars found naturally in fruits and vegetables are not as harmful as they
 are less likely to lead to tooth decay and are easier for the body to absorb.
 However, juice removed from fruit contains sugars that can cause tooth
 decay, so you are advised to drink only one glass of fruit juice (150 ml) a day.

► Figure 1.15 Tooth decay can be caused by a poor diet



KEY POINT



Reduce sugar content of diet to reduce tooth decay.

KEY WORD

Anaemia – caused by lack of iron in the diet

Anaemia

Anaemia, caused by a lack of iron in the diet, is one of the most common nutritional problems worldwide. We need iron as it forms haemoglobin, which gives blood its red colour and carries oxygen round the body to the cells.

Women and children are the most at risk of developing anaemia. Teenage girls and women must make sure they have enough iron in their diet to cope with the loss of blood during menstruation. Pregnant women also need to have enough iron to support the baby's blood supply. Symptoms are tiredness and lack of energy.

Our bodies can store iron in the liver. The best sources of iron are:

- liver and kidney
- red meat
- oily fish

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In the UK, breakfast cereals and bread are fortified with iron. Iron obtained from red meat, known as haem iron, is more easily absorbed than that from vegetables. Vegetarians need to ensure that they get an adequate supply of iron from bread, pulses and vegetables. Iron absorption is reduced by the presence of tannins found in tea and coffee, and phytates found in unrefined cereals such as bran. Iron absorption is increased by eating non-haem, iron-rich foods with foods and drinks containing vitamin C.

Topic link: You will learn more about iron in Section A: Topic 9 Minerals.

KEY POINTS



- ✓ Anaemia caused by lack of iron.
- **✓** Women more likely to suffer from anaemia than men.

TEST YOURSELF



- 1 Describe what the term obesity means.
- 2 State three causes of heart disease.
- 3 State **four** changes that a person with heart disease should make to their diet.
- **4** Explain why it is better to eat unsaturated fats than saturated fats.
- **5** Explain the difference between Type 1 and Type 2 diabetes.
- 6 What are the symptoms of diverticulitis?
- 7 State **three** factors which could increase your risk of osteoporosis.
- 8 Lack of which mineral causes anaemia?