Introduction

How often do you think about why you need to eat and what you are eating? Do you know how your body and health are affected by the food you eat? Although we know that some foods are not good for us, we might think that we have plenty of time to eat sensibly when we are older, but by then we might have developed a condition such as diabetes or coronary heart disease.

Health and social care workers must have a good understanding of the principles of nutrition so that they can maintain or improve their own health and that of service users or patients. You will learn what a balanced diet is and how an unbalanced diet can affect people’s health. You will think about how dietary needs change over the lifespan, and conditions that require people to follow specific dietary plans or advice. You will explore the dietary needs of people of different religions, and other factors that influence what people choose to eat.

Assessment: You will be assessed by a series of assignments set by your teacher/tutor.

Learning aims

In this unit you will:

A explore the effects of balanced and unbalanced diets on the health and wellbeing of individuals
B understand the specific nutritional needs and preferences of individuals.

I’m so glad I have learned something about nutrition. My dad had a heart attack last year, and the doctor told my mum it was because he was overweight and unfit. The whole family now thinks much more about what we eat and we are following a much healthier diet. We all take more exercise too. Doing it as a family has really helped Dad get better.

Jamie, 17-year-old Health and Social Care learner
The Impact of Nutrition on Health and Wellbeing
This table shows you what you must do in order to achieve a Pass, Merit or Distinction grade, and where you can find activities in this book to help you.

<table>
<thead>
<tr>
<th>Assessment criteria</th>
<th>Level 1</th>
<th>Level 2 Pass</th>
<th>Level 2 Merit</th>
<th>Level 2 Distinction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning aim A: Explore the effects of balanced and unbalanced diets on the health and wellbeing of individuals</strong></td>
<td>1A.1</td>
<td>Identify components of a balanced diet, giving examples of each.</td>
<td>2A.P1</td>
<td>Describe the components of a balanced diet and their functions, sources and effects. Assessment activity 6.1 See page 141.</td>
</tr>
<tr>
<td></td>
<td>1A.2</td>
<td>Identify three effects of an unbalanced diet on the health and wellbeing of individuals.</td>
<td>2A.P2</td>
<td>Describe the effects of an unbalanced diet on the health and wellbeing of individuals, giving examples of their causes. Assessment activity 6.1 See page 141.</td>
</tr>
<tr>
<td><strong>Learning aim B: Understand the specific nutritional needs and preferences of individuals</strong></td>
<td>1B.3</td>
<td>Identify the specific dietary needs of an individual.</td>
<td>2B.P3</td>
<td>Describe the specific dietary needs of two individuals at different life stages. Assessment activity 6.2 See page 154.</td>
</tr>
<tr>
<td></td>
<td>1B.4</td>
<td>Create, with guidance, a nutritional plan for a selected individual.</td>
<td>2B.P4</td>
<td>Create a nutritional plan for two individuals, with different specific nutritional needs. Assessment activity 6.2 See page 154.</td>
</tr>
</tbody>
</table>

English signposting
How you will be assessed

The unit will be assessed by a series of internally assessed tasks. You will be expected to show an understanding of nutrition across the lifespan. For example, the dietician at your health centre has planned a healthy eating week and has asked you to produce information for people that will provide a brief introduction to the components of a balanced diet, the effects on the body of an unbalanced diet, nutritional needs across the lifespan and specific dietary needs. You will also create a nutritional plan for two individuals.

Your assessment could be in the form of:
- a booklet
- a PowerPoint presentation to be shown on the TV screen in the waiting room
- case studies about individuals with specific dietary needs.
Essential nutrients

A balanced diet is made up of carbohydrates, proteins, fats, vitamins, minerals, fibre and water. Carbohydrates, proteins and fats are known as macronutrients because they are required in the body in large amounts.

Carbohydrates

Carbohydrates provide the main source of energy in the diet. These are sugars, starches and fibre. They include grains, pulses, fruit and vegetables, and should make up about 50 to 60 per cent of the diet.

Glucose is a simple sugar which is found in fruit, plants and the blood of animals. Glucose syrups are used in the manufacture of cakes, sweets and jams. These are digested more quickly than starches, so they can be absorbed and used more easily, but they cause peaks and troughs in blood glucose levels, so energy levels are much less stable. Table sugar is sucrose, a combination of two simple sugars, glucose and fructose.

Starches are found in wholemeal cereals, such as oats, wheat, barley, rye and rice. This group also includes potatoes, root vegetables, some fruits, and pulses and beans, such as lentils, baked beans and chickpeas. Some starches are refined and are present in foods such as pizza, which are often high in fat so should be limited in the diet.

When carbohydrates are eaten and digested, they break down into glucose, which is what we need to provide energy for the body. The glucose is absorbed into the bloodstream and a hormone called insulin is released by the pancreas to control the absorption of glucose into the cells.

Polysaccharides or fibre cannot be digested by the body but play an important role in adding bulk to faeces and helping to prevent constipation. A daily intake of 25g of fibre is recommended.
Proteins

Protein is needed in the body for growth and repair. Proteins are made up of chains of amino acids and nine of them are essential. This means that you must obtain them from the food you eat because they can’t be made in the body.

Proteins can be divided into animal and vegetable sources. Animal proteins include meat, fish, cheese and eggs, and contain all of the essential amino acids. Studies show that eating lots of red and processed meat can contribute to stomach and bowel cancer. Plant proteins include pulses such as nuts, beans, peas and soya or tofu. They are high in fibre, vitamins and minerals, and low in fat. They contribute to disease prevention and good health, but do not contain all of the essential amino acids.

Texturised vegetable proteins (TVP) and mycoprotein are developed from plant proteins and are used by vegetarians and vegans. They can be produced as slices, chunks, mince, burgers and sausages. Both will take up the flavour of other foods they are being cooked with.

Fats

The main sources of fat in the Western diet come from animal and dairy products. These are called saturated fats and are solid at room temperature, for example butter, margarine and fat on meat, and they can contribute to heart disease. Plant fats are usually liquid at room temperature, for example olive and sunflower oils. They are known as unsaturated fats. They are less likely to contribute to heart disease, because they do not have the same effect of blocking the blood vessels as animal fats. Olive oil helps to protect against heart disease.

Essential fatty acids are very important in the prevention of heart disease. They are the Omega 3 and Omega 6 fatty acids. Omega 3 is found in oily fish, such as mackerel, sardines, fresh tuna (not tinned), salmon, pumpkin seeds, linseed, soya, walnuts and leafy green vegetables. Omega 6 fatty acids are found in sunflower, grape seed and corn oil as well as cereals, eggs and poultry.

Did you know?

Fats have several important functions in the body:
- They are a concentrated source of energy in the diet.
- They help to provide insulation against the cold by preventing heat loss.
- They protect body organs, such as the kidneys.
- They help to transport and store vitamins A, D, E and K.
- They provide taste to food and make it easier to eat.
Essential nutrients

Vitamins and minerals are known as micronutrients because they are needed in quite small amounts, but they are nevertheless essential to health. You will learn about the main vitamins and minerals in this topic.

Vitamins and minerals

Vitamins cannot be made by the body and they are essential to life. There are two types of vitamins: water-soluble and fat-soluble.

Water-soluble vitamins are the B vitamins and vitamin C. They cannot be stored in the body, so we must have a daily intake of foods containing them.

Activity

Dietary intake

Make a list of everything you have had to eat and drink in the past two days. With a partner, decide which food groups your food came from. When you have done this, join up with another pair and discuss the following:

1. Do you think your two-day food intake was balanced?
2. What did you eat too much of?
3. What could you have eaten more of?

Keep your list and notes of your discussion as you will need them later on.

Vitamins and minerals

Vitamins cannot be made by the body and they are essential to life. There are two types of vitamins: water-soluble and fat-soluble.

Water-soluble vitamins are the B vitamins and vitamin C. They cannot be stored in the body, so we must have a daily intake of foods containing them.

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Sources in diet</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_1</td>
<td>Bread, nuts, cereals, flour, meat, eggs, potatoes, poultry, milk</td>
<td>Converts carbohydrate to glucose; helps digestion; aids correct functioning of nerves; required for building of blood; essential for growth.</td>
</tr>
<tr>
<td>B_2</td>
<td>Milk, liver, kidney, cereals, yeast, meat extract, eggs, cheese</td>
<td>Converts glucose to energy.</td>
</tr>
<tr>
<td>B_3</td>
<td>Meat extract, yeast extract, wholemeal bread, eggs, liver, cereals</td>
<td>Converts glucose to energy; maintains healthy skin and nervous system; required for cell metabolism.</td>
</tr>
<tr>
<td>B_5</td>
<td>Animal products, cereals, legumes</td>
<td>Converts glucose and fat to energy; maintains healthy immune system.</td>
</tr>
<tr>
<td>B_6</td>
<td>Meat, green vegetables, bran, wholemeal flour, eggs, bananas</td>
<td>Required for protein metabolism; converts tryptophan to niacin; essential for formation of haemoglobin.</td>
</tr>
<tr>
<td>B_9</td>
<td>Yeast, leafy green vegetables, meat, avocado, bananas</td>
<td>Produces red blood cells and tissue cells; required for normal growth; maintains healthy digestive tract.</td>
</tr>
<tr>
<td>B_12</td>
<td>Widely distributed in animal foods</td>
<td>Involved in manufacture of red blood cells in bone marrow; maintains nervous system.</td>
</tr>
<tr>
<td>C</td>
<td>Blackcurrants, citrus fruits, green vegetables, peppers, tomatoes</td>
<td>Required in formation of bones and teeth; essential in building of blood; required for wound healing; maintains immune system, and healthy skin and gums.</td>
</tr>
</tbody>
</table>
Fat-soluble vitamins are A, D, E and K. They dissolve in fat in the body, which is why we need to consume fat in our diet. They are stored in the body in the liver.

### Activity: Vitamin names

As well as letters and numbers, water-soluble vitamins also have names. Carry out some research to find out these names.

Minerals are also known as micronutrients because, like vitamins, they are only needed in very small amounts in the body. They are found in the earth and in the sea. They are necessary for many processes in the body and these are shown in the table below.

### Table 6.3 Sources and functions of minerals.

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Sources in diet</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium</td>
<td>Milk, cheese, bread, flour, seafood, nuts and green vegetables. For some, the bones in canned fish are important</td>
<td>Builds strong bones and hard teeth; essential for blood clotting; helps muscles and nerves to work; activates certain enzymes; requires vitamin D for absorption.</td>
</tr>
<tr>
<td>Sodium</td>
<td>Naturally in eggs, meat, vegetables, milk. Added to many processed foods, such as meat and canned food</td>
<td>Maintains body fluid balance and blood pressure; excess is linked to high blood pressure; aids muscle contraction and nerve transmission.</td>
</tr>
<tr>
<td>Iron</td>
<td>Meat (offal), bread, flour, cereal products, potatoes and vegetables</td>
<td>Needed by all cells; needed to form haemoglobin in red blood cells and myoglobin in muscles; absorbed by body relative to need; vitamin C increases absorption of iron.</td>
</tr>
</tbody>
</table>

Water

The human body is made up of about two-thirds water, and we cannot survive for more than a few days without it as it is needed for many processes. The European Food Safety Authority (EFSA) recommends that men have 2.5 litres a day and women 2 litres a day.
The five food groups and their functions

As well as thinking of food as belonging to different nutrient groups, you can also think of different types of food. The Food Standards Agency identified the five different food groups in The Balance of Good Health (2001), and this information is given below.

Meat, fish and alternatives

This group is used in the body for growth and repair. It includes meat, poultry, fish, eggs, nuts, beans and pulses. Meat includes bacon and salami and meat products such as sausages, beefburgers and pâté. These are all quite high-fat choices. Beans and pulses are in this group and they are a good source of protein for vegetarians. Fish includes frozen and tinned fish, such as sardines and tuna, fish fingers and fishcakes. Aim to eat at least one portion of oily fish, such as sardines or salmon, each week. The main nutrients are iron, protein, B vitamins (especially B₁₂), zinc and magnesium.

The recommendation is to eat moderate amounts and choose lower-fat versions, such as meat with the fat cut off, poultry without the skin and fish without batter. Cook these foods without added fat. Beans and pulses are good alternatives to meat as they are naturally very low in fat.

Fruit and vegetables

The main nutrients in fruit and vegetables are vitamin C, carotenes, folates, and some carbohydrate. They also provide fibre in the diet. Fresh, frozen and tinned fruit and vegetables, dried fruit and fruit juice are all included in this group. Beans and pulses can also be eaten.

The advice is to eat lots – at least five portions a day. Beans, pulses and fruit juice count as one portion, however much you eat or drink in a day. You should eat a wide variety of fruit and vegetables of as many different colours and types as possible. Try to avoid adding fat or rich sauces to vegetables (e.g. butter on potatoes), and sugar or syrupy dressings to fruit (e.g. chocolate sauce on banana).
Bread, other cereals and potatoes

This group is mainly made up of carbohydrate-rich food and provides much of the energy needed in the diet. Other nutrients in them are calcium and iron, B vitamins and fibre. Cereals are foods such as breakfast cereals, pasta, rice, oats, noodles, maize, millet and cornmeal. This group also includes yams and plantains. Beans and pulses can be eaten as part of this group.

You should eat a lot of foods in this group, and try to eat wholemeal, wholegrain, brown or high-fibre versions where possible. Avoid having them fried too often and adding too much fat (e.g. thickly spread butter, margarine or low-fat spread on bread), or adding rich sauces to pasta.

Milk and dairy foods

This food group includes milk, cheese, yoghurt and fromage frais, but not butter and cream. The main nutrients are calcium, protein, vitamins A, B₁₂ and D. They are needed in the body to build strong bones and teeth and maintain healthy skin and eyes. The recommendation is to eat or drink moderate amounts, and choose lower-fat versions whenever you can.

Lower-fat versions mean semi-skimmed or skimmed milk, low fat (0.1 per cent fat) yoghurts or fromage frais, and lower-fat cheeses. Check the amount of fat by looking at the information on the labels. Compare similar products and choose the lowest; for example, 8 per cent fromage frais may be labelled ‘low fat’, but it is not actually the lowest available.

Foods containing fat/foods and drinks containing sugar

Foods containing fat include margarine, butter, other spreading fats and low-fat spreads, cooking oils, oil-based salad dressings, mayonnaise, cream, chocolate, crisps, biscuits, pastries, cakes, puddings, ice cream, rich sauces and gravies.

Foods containing sugar include soft drinks, sweets, jam and sugar, as well as foods such as cakes, puddings, biscuits, pastries and ice cream.

The main nutrients are fats, including some essential fatty acids, and fat is needed in the body to transport vitamins A, D, E and K, which are the fat-soluble vitamins. Some products also contain salt or sugar. Sugar is described by some people as ‘empty calories’, because it contains calories, but few, if any, nutrients.

You should eat foods containing fat sparingly and look out for low-fat alternatives. Foods and drinks containing sugar should not be consumed too often as they can contribute to tooth decay.

All foods and drinks containing sugar should be consumed mainly at mealtimes to reduce the risk of tooth decay.
Components of a balanced diet (4)

Recommended Daily Intakes (RDIs)

A balanced diet will depend on the types of food you eat and your nutritional needs. The wider the variety of foods eaten, the more nutrients you will get from them. It is now known that some health problems are caused by dietary intake, such as too much fat causing heart disease and too much salt contributing to strokes.

Benefits of a balanced diet

- Less likely to suffer from nutrition related diseases such as diabetes and heart disease
- The body will not have to work so hard to do everyday tasks
- Hair and skin look good
- Less likely to be overweight
- Good concentration and energy levels

Figure 6.1 Can you think of any other benefits of a balanced diet?

Intake and needs

People have different dietary needs and intake depending on a range of factors:

- Height, weight and gender
- Likes and dislikes
- The level of exercise taken
- A person’s health
- The type of job a person does
- Availability of food.

Are there any other factors that would determine what and how much a person needs to eat?
Dietary reference values

There are a variety of dietary reference values that can be used to identify different nutritional requirements for people of different ages and needs. They are shown in Table 6.4.

<table>
<thead>
<tr>
<th>Dietary reference value</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Average Requirement (EAR)</td>
<td>An estimate of the average need for food energy or a nutrient. Some people will need more than this average and some will need less.</td>
</tr>
<tr>
<td>Reference Nutrient Intake (RNI)</td>
<td>The amount of a nutrient that is enough for almost every individual, even those with high needs. The RNI is generally much higher than most people need. The RNI supplies enough of a nutrient for at least 97.5% of the population.</td>
</tr>
<tr>
<td>Lower Reference Nutrient Intake (LRNI)</td>
<td>The amount of a nutrient considered to be sufficient for the small number of individuals with low nutrient needs (only about 2.5% of the population).</td>
</tr>
</tbody>
</table>

In 2011, the Scientific Advisory Committee on Nutrition (SACN) published new guidelines on Estimated Average Requirements for the UK population. This is the average amount that individuals of average weight should consume. Table 6.5 shows the requirements in both megajoules and kilocalories.

Table 6.6 shows the recommended daily intakes for some common nutrients.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein (g)</td>
<td>42.1</td>
<td>41.2</td>
<td>55.5</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>1000</td>
<td>800</td>
<td>700</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>11.3</td>
<td>14.8</td>
<td>8.7</td>
</tr>
<tr>
<td>Zinc (mg)</td>
<td>9</td>
<td>9</td>
<td>9.5</td>
</tr>
<tr>
<td>Vitamin C (mg)</td>
<td>35</td>
<td>35</td>
<td>40</td>
</tr>
</tbody>
</table>


Activity

Use the tables above to answer the following:

1. At what age are male and female energy needs greatest?
2. Explain why girls’ and women’s iron requirements are higher than boys’ and men’s.
3. Why is a male’s protein requirement higher than a female’s?
What is a balanced diet?

A balanced diet helps to maintain a healthy body. If you eat the right foods in the right amounts, you should be the right weight for your height and not have too much body fat. This means that your body will work efficiently, you will feel happy and you will be less prone to diseases, such as diabetes, heart disease and cancer. The eatwell plate shows the recommended amounts of each food group that should be eaten. It is also important to keep an eye on portion sizes.

Another recommendation is to keep to the 80/20 rule. If you eat healthily 80 per cent of the time, you can eat less healthy foods 20 per cent of the time with little ill effect.

Raised immunity to infections

The body’s immune system helps to protect against disease. Fresh fruit and vegetables which contain vitamins A and E, and foods such as garlic and honey can help to maintain a healthy immune system. Foods high in zinc and omega-3 fatty acids also boost the immune system.

Greater energy levels

People who are overweight often have low energy levels. This is because they have to use up a lot of energy just to do a basic level of exercise, and have little or no energy to do more. Although we need to eat carbohydrates to give us the energy we need, it’s important to make sure we don’t eat too many, and get most of our energy from complex carbohydrates with a high fibre content. Getting into the habit of eating healthily will boost energy levels.
Increased concentration

Research shows that children who eat breakfast have better concentration levels and do better at school than those who don’t. Some believe that too many carbohydrates can lower concentration levels. Behaviour is also improved through a balanced diet. Studies carried out at the University of Southampton showed that children who had drinks with high amounts of additives were less able to concentrate and were more hyperactive than those who didn’t.

Faster healing of skin, tissues and mucus membranes

A diet that is rich in vitamins A, C and E aids the healing of the skin, tissues and mucus membranes. Vitamin C in particular helps to form connective tissue in cuts. It also assists in making red blood cells and fighting infection, especially colds. Vitamin E helps to make less scar tissue and break down blood clots.

Did you know?

The Balance of Good Health is based on the Government’s Eight Guidelines for a Healthy Diet. It forms the basis of the Food Standards Agency Nutrition Strategy. If people follow the recommended amounts and make sure that they choose different foods, this should ensure that they have a balanced diet.

The Government’s Eight Guidelines are:

- Base your meals on starchy foods.
- Eat lots of fruit and vegetables.
- Eat more fish.
- Cut down on saturated fat and sugar.
- Eat less salt – no more than 6g a day.
- Get active and try to be a healthy weight.
- Drink plenty of water.
- Don’t skip breakfast.
Malnutrition

Malnutrition can take different forms: too much nutritional intake can result in over-nutrition and obesity, and too little nutritional intake can result in under-nutrition or starvation.

Over-nutrition

Coronary heart disease – This can occur through eating too many animal proteins that are high in saturated fats. To maintain a healthy heart, people are advised to eat two to three meals containing oily fish such as salmon, mackerel, sardines or fresh tuna (not tinned) per week, and plenty of fresh fruit and vegetables. Regular exercise that raises the heart rate and maintaining a healthy weight will help to prevent this.

Weight gain and obesity – Any food that is eaten in excess will be converted to fat and stored in the body, which leads to weight gain and obesity. A healthy balanced diet together with exercise will help people to lose weight. Maintaining the correct weight for your height might require a lifestyle change, such as changing what you eat and taking regular exercise.

Type 2 diabetes – This is also known as late or adult onset diabetes, but it is seen today in children as young as nine years old. It is caused by eating too much fat and sugar. The pancreas is either unable to produce enough insulin for the cells to absorb glucose from the blood, or the body becomes resistant to the insulin that is produced. Symptoms of type 2 diabetes include thirst, excessive urination and extreme tiredness. It can be controlled by diet alone, or by diet and medication. Type 2 diabetics do not normally need insulin.

Stroke – A stroke occurs when brain cells die because the oxygen supply has been interrupted or stopped. Strokes are often caused by high blood pressure and one of the main causes of this is eating too much salt, but obesity and lack of exercise can also contribute to high blood pressure.

Under-nutrition

Specific nutrient deficiencies – This can result from a general lack of nutrients or a particular nutrient. It is not often seen in developed countries, but can be common in developing countries.

Diets low in thiamin (vitamin B₁) and magnesium may also cause low concentration span. A diet rich in fruit and vegetables, fatty acids, bread and meat will help poor concentration and behavioural problems.
A vegetarian diet is usually high in fibre and low in fat and this makes it a healthy diet. As long as vegetarians are aware of the need to combine vegetable-based foods to make **high biological value proteins**, they can get all the nutrients they need.

Vegans can suffer from vitamin B₁₂ deficiency as this is mainly found in animal products, although yeast extract is a good source, and provided vegans know about healthy eating choices, they can obtain everything they need from this diet. Nutritionists tend to advise that a vegan diet is not suitable for young children because it contains so much bulk that is filling that they may not eat enough to get the energy they need. However, a vegan diet containing a wide variety of foods will allow children to grow and develop normally, although they are likely to be lighter and leaner than meat-eating children.

### Assessment activity 6.1

You have a part-time job at a local leisure centre and the manager is planning a ‘get healthy week’ for the people who use the facilities. There will be a variety of activities, including presentations and taster sessions. The manager wants you to help him prepare a booklet about balanced diets to be available for people to take home.

1. **Using the information you have learned so far and carrying out further research, start your booklet by providing a table identifying and describing the components of a balanced diet and their functions, sources and effects on the body.**

2. **Create an eye-catching page that describes the effects of an unbalanced diet.** Make sure that you link these effects to the causes: for example, a stroke is caused by high blood pressure due to a high salt intake.

3. **Compare the effects of balanced and unbalanced diets on the health and wellbeing of individuals.** Provide two case studies, one about someone who has a balanced diet and the other about someone who has an unbalanced diet, describing the effects of each and comparing them. Include an assessment of the long-term effects of a balanced and unbalanced diet on the health and wellbeing of individuals.

### Tips

Remember that an unbalanced diet may include too much of some nutrients and not enough of others. You need to make sure that the handout and leaflet that you provide is user-friendly, and that anyone who reads it can understand the information.

You must think carefully about the two people in your case studies. You may choose to use real people, but if you do, make sure you maintain confidentiality.
Vitamin deficiency

Although it is possible to become deficient in vitamins, in the UK it is rare as many foods are fortified with vitamins to prevent deficiency diseases occurring. However, in developing countries some vitamin deficiency diseases can be fatal, especially in children.

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Effect of shortage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Night blindness (also known as xerophthalmia or dry eye). In its early stages, it can be cured by providing sufferers with vitamin A supplements such as palm oil or other foods high in vitamin A. However, in its later stages it is incurable and leads to complete blindness and in some cases death. Vitamin A deficiency can also cause itching, thickening of horny layer of the skin, ageing of the skin, dry skin and loss of taste.</td>
</tr>
<tr>
<td>B₁ (thiamin)</td>
<td>Beriberi, causing some or all of the following: neuritis (inflammation of the nerves), headache, fatigue, poor memory, diarrhoea, anxiety, insomnia, depression, irritability, eczema, dermatitis, acne, enlarged heart, muscle weakness, wrist and ankle drop, poor appetite, tenderness in calf muscles and pins and needles in legs.</td>
</tr>
<tr>
<td>B₂ (riboflavin)</td>
<td>Chapping of the lips, cracking at the corner of the mouth, soreness of the tongue, sensitivity to light, and skin rashes. It may also cause red, itchy eyes, night blindness, cataracts, migraines, peripheral neuropathy, anaemia and tiredness. There can also be some abnormalities associated with development, e.g. cleft lip and palate, growth problems and congenital heart defects.</td>
</tr>
<tr>
<td>B₃</td>
<td>Pellagra, causing redness of skin, exfoliation of hands and face, weakness, diarrhoea, memory loss, irritability and insomnia. Deficiency is rare and if supplements are needed, they should be given under medical supervision.</td>
</tr>
<tr>
<td>B₅</td>
<td>Weakness, depression, lowered resistance to infection, numbness, muscle cramps, restlessness, sleep disturbances, nausea, vomiting and abdominal cramps. Deficiency is very rare.</td>
</tr>
<tr>
<td>B₆</td>
<td>Anaemia, fatigue, nerve dysfunction, sore tongue, skin inflammation and depression.</td>
</tr>
<tr>
<td>B₉</td>
<td>Megaloblastic anaemia (abnormally large red blood cells), neural tube defects (e.g. spina bifida), nausea and headaches, memory loss, depression, loss of appetite and diarrhoea.</td>
</tr>
<tr>
<td>B₁₂</td>
<td>Pernicious anaemia, tiredness, loss of appetite, weight loss, breathlessness, diarrhoea, red and sore tongue, degeneration of nerve cells, a change in taste, ringing in the ears (tinnitus).</td>
</tr>
<tr>
<td>C</td>
<td>Scurvy, bleeding gums and loose teeth, incomplete cell repair, easy bruising, tiredness, and physical and mental stress.</td>
</tr>
<tr>
<td>D</td>
<td>Rickets, causing osteomalacia, spontaneous fractures, obesity, overactive parathyroid hormones, depression and fatigue.</td>
</tr>
<tr>
<td>E</td>
<td>Slow healing, poor muscle, circulatory and nerve performance. Vitamin E deficiency as a result of diet is rare.</td>
</tr>
<tr>
<td>K</td>
<td>Problems with blood clotting. It is very rare, but occasionally babies need a supplement at birth.</td>
</tr>
</tbody>
</table>
Bleeding gums are one of the symptoms of scurvy.

**Mineral deficiency**

**Calcium**

Osteoporosis is caused by loss of bone density. People with this condition are at greater risk of fracturing bones, especially wrists, hips and vertebrae. Any activity that promotes stronger bones will help to prevent osteoporosis, so walking and running are good. Calcium-rich foods, such as cheese, milk, bread and tinned fish should be included in the diet. It is important also to have enough vitamin D as calcium cannot be absorbed without it.

**Iron**

Iron deficiency is known as anaemia. Iron is required in the formation of healthy red blood cells, and helps the body to use oxygen efficiently. Symptoms of anaemia include fatigue, brittle fingernails, weakness and lack of energy. Asian people may become anaemic as they have a diet low in iron. Teenage girls are sometimes anaemic due to blood loss from starting menstruation. It can be easily treated by taking iron supplements and eating iron-rich foods, such as red meat and dark green leafy vegetables.

**Nutrient excess**

Tooth decay, which is also known as dental caries, is caused by an excess of sugar in the diet. Bacteria, food and saliva combine and form sticky deposits (plaque) which are deposited on the teeth. Plaque is acid and over time it will dissolve the enamel on teeth, causing cavities. If they remain untreated, they can kill the tooth's nerve and blood supply and eventually the whole tooth will die. Sugary foods and drinks should be kept to a minimum and good dental hygiene observed.

Did you know?

You should follow these tips for looking after your teeth:
- Brush your teeth twice a day, in the morning and in the evening.
- Spend at least three minutes each time.
- Always use a fluoride toothpaste.
- Use a small toothbrush so that you can reach the back teeth, applying no more than a pea-sized amount of toothpaste for adults.
- Flossing is very important as the toothbrush does not always reach the gaps between the teeth.
- Do not brush too hard – this can damage gums.
- Limit your consumption of sugar and starchy foods.
- Visit your dentist regularly.

Source: NHS Choices
Factors influencing the diet of individuals and their associated dietary needs (1)

Introduction
Although nutritionists and dieticians give advice to people about healthy eating and devise diets for people with particular conditions, they have to take other factors into consideration. There are many different factors that will influence what people eat, and you will explore them in this topic.

Religion and culture

Hinduism
Although some Hindus are vegetarian, many are not. Most avoid beef as the cow is seen as sacred in their religion, and some avoid eggs. Hindus who do not eat beef will also avoid cheese and yoghurt containing rennet as it is produced from cows. Strict Hindus avoid mushrooms, garlic, onions, tea and coffee (containing caffeine), and alcohol. Some Hindus will fast at times of special festivals.

Judaism
Jewish people generally eat kosher foods. This means that they do not eat pork, and will only eat other meat where the animal has been killed according to kosher laws. They eat fish, but not shellfish, such as prawns, mussels and scallops. Orthodox Jews do not mix meat and milk products in the same meal, so would not have a cheeseburger or lasagne, for example. According to household custom, they would wait one, three or six hours to eat a dairy product after eating meat. Yom Kippur or the Day of Atonement is the holiest day in the Jewish calendar and traditionally requires Jews to fast for 25 hours. Children under the age of nine are not allowed to fast, nor are people who are pregnant or in poor health.

Islam
Muslims usually eat lawful or halal foods. This is similar to kosher in the Jewish faith, in that animals for meat must be slaughtered according to religious law. Unlawful or haram food includes pork and pork products, but cheese, fish and shellfish are halal foods. Alcohol is unlawful to Muslims, and some choose not to drink caffeinated drinks. Fasting takes place during Ramadan, the Muslim holy month, for 30 days. During this time, no food or drink may be eaten between sunrise and sunset.
Buddhism

There are no set dietary laws in Buddhism. Although most Buddhists are either vegetarian or vegan, some will eat meat and/or fish. Some avoid onion, garlic and leeks, but dietary choice depends on what branch of Buddhism is studied and in which country. Strict Buddhists do not drink alcohol.

Moral reasons

Some people choose to follow a particular diet for moral reasons, rather than religious beliefs or particular customs.

Vegetarians

Some people don’t eat meat and fish because they don’t like the taste or texture, they disapprove of the way that animals are reared, or the way that animals and fish are killed. There are different types of vegetarian:

<table>
<thead>
<tr>
<th>Vegetarian type</th>
<th>Diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi- or demi-vegetarian</td>
<td>No red meat, but will eat fish and poultry</td>
</tr>
<tr>
<td>Lacto-vegetarian</td>
<td>Dairy such as yoghurt, milk and cheese, but not eggs, meat, fish or poultry</td>
</tr>
<tr>
<td>Ovo-vegetarian</td>
<td>Eggs, but not dairy, meat, fish or poultry</td>
</tr>
<tr>
<td>Lacto-ovo-vegetarian</td>
<td>Dairy products and eggs, but not meat, fish or poultry</td>
</tr>
</tbody>
</table>

Restaurant menus use a green ‘V’ to indicate vegetarian dishes, and labels on packaged foods are sometimes marked in the same way to show that the product is suitable for vegetarians.

Vegans

Veganism is a stricter form of vegetarianism, and vegans eat no animal foods at all. Many refuse to wear leather or wool goods as well. Vegetarians and vegans must combine different plant proteins in meals to ensure that they get enough protein in their diets.

Activity

Vegetarian and vegan food

Do some online research on vegetarian and vegan foods and recipes. Produce a handout or booklet with recipes for one breakfast, lunch and dinner for a lacto-ovo-vegetarian and one for a vegan. Make sure that the meals are balanced and that you have combined the food to ensure that there is sufficient protein.
Factors influencing the diet of individuals and their associated dietary needs (2)

Environment

Access to food and food storage

In developed countries, people have access to a good variety of food which can come from all over the world, and the increase in air travel means that most foods are available all year round. For the population of developed countries, this can lead to over-nutrition. The longer fruit and vegetables are stored, the more nutrients they lose. In developing countries, people often have access to restricted diets that are high in carbohydrates and not so rich in protein and fats. This can lead to under-nutrition.

Location

Where you live will have an effect on your diet. Although there is enough food in the world, it is not evenly distributed. More wealthy countries can afford to buy food and so have a greater variety than countries that are poor. Food that is grown in poor soil will contain fewer minerals and so the quality of the diet will be poorer.

Climate

Many developing countries suffer from poor soil conditions, flooding and drought, which result in repeated years of lost harvests. In 1995 and 1996, severe flooding in North Korea destroyed crops and the harvest, including the reserve grain stores that were being stored underground. As a result, many people starved to death.

Socio-economic factors

Costs

The cost of food varies according to the region of the country where people live and the type of shop that sells it. Changes in the economy also have an effect, and the financial status of the country affects cost. Large chain supermarkets sell in large quantities, which means that they can sell at a lower price than independent shops that have much less space and stock.

Income

The ability to afford food is linked to social class. People who are in higher social classes have more money to spend on food and tend to buy better-quality food, and eat out more. People who have low incomes are more likely to buy food that is high in salt, fat, and sugar and provides concentrated sources of energy to help them feel fuller for longer.
Trends

Just as you might follow trends, such as wearing clothes that are in fashion, or downloading the same music or apps as your friends, some people follow trends in eating. In recent years there has been an increase in the number of bio yoghurts on sale that claim to strengthen the body’s defences or aid digestion.

Family

There is not much evidence to suggest that there is a difference in food choice depending on an individual’s position in the family, but it is known that mothers will often give more protein or fruit and vegetables, or larger quantities to their husband/partner or children. They will then fill up on lower-quality food and their nutritional status may suffer.

Class

There is some evidence that differences in social class influence dietary choices. In general, people from the upper social classes eat more healthy food, and poorer people eat less fruit and vegetables and more high-fat, high-sugar foods. Women in the lower social classes are more likely to be obese than women in the upper social classes. People in lower social classes usually earn less money than those in the higher social classes and are more likely to substitute cheap processed food for fresh food.

Peer pressure

Peer pressure can have an effect on the food choices that are made, especially by children and teenagers. Many young people develop a stereotypical view of people who eat healthy and unhealthy food and may choose less healthy options to copy their friends.

The media

Information in the media can influence food choice. Food scares can be caused by what is reported in the press. In 2006, products were recalled after there was a salmonella scare in a chocolate factory. More recently, there has been a lot of publicity about rising levels of obesity in the UK.

Personal preferences

Although some people like almost everything that is put in front of them, there are others who only eat food they really enjoy. Often in a family household, the food is mainly chosen and cooked by one person, so their preferences may be dominant. However, as long as healthy eating guidelines are followed, the diet will be balanced. It is less easy to ensure a child has a balanced diet if they are fussy, and parents often need to come up with imaginative ways to make their children eat.
Factors influencing the diet of individuals and their associated dietary needs (3)

**Illness**

**Effects on appetite and dietary requirements**

How do you feel when you are ill? When we feel really unwell, we often lose our appetite until we start to feel better. Some conditions can increase appetite, such as an overactive thyroid gland.

Some illnesses may affect the body so that the food eaten can’t be digested, and in some cases treatment for illness will affect dietary intake. People who have a poor appetite should be encouraged to eat small amounts of food which are high in nutrients, and it is well known that vitamins and minerals are necessary for health and healing.

**Activity**

**Effects on appetite**

Carry out some research into the causes of both loss of appetite and increased appetite. What other conditions may affect appetite?

**Underlying health conditions**

**Allergies**

Do you have an allergy to peanuts, prawns or strawberries? Many people do. Allergic reactions to food vary in intensity. Similar symptoms and illnesses can be triggered by different allergens, yet the same allergens can also cause very different reactions in different people. Symptoms can include eczema, asthma, urticaria (hives) and other health problems. Anaphylaxis is an extreme reaction which must be treated by adrenaline injections. Failure to treat this promptly can result in death. Avoidance of food that causes allergies is the only way to prevent the onset of symptoms, although some people have desensitisation treatment which can be very effective.
**Lactose intolerance**

Lactose intolerance is an inability to digest lactose, the sugar found in milk and milk products. It is particularly common in people of African, Asian and Indian races and can lead to digestive disturbance, such as cramps, diarrhoea and wind. Milk should be avoided in the diet, but often sufferers can tolerate yoghurt and cheese because the lactose is converted to lactic acid during manufacture.

**Coeliac disease**

Coeliac disease is an autoimmune disease caused by the protein gluten, which is found in wheat, barley and rye. Symptoms include abdominal pain, cramping and bloating, nausea and vomiting, and diarrhoea. People with this condition should avoid foods containing gluten. This is quite difficult because many foods contain thickeners made of gluten, so people with the condition tend to become experts in reading food labels.

**Diabetes**

People who suffer from type 2 diabetes can help the levels of blood glucose by maintaining a diet low in fat and sugar. Complex carbohydrates should form a part of the diet, as low carbohydrate diets can be high in fat. There is a relatively high incidence of coronary heart disease in diabetics in the United Kingdom.

**Crohn’s disease**

The cause of Crohn’s disease is unknown, but it is a chronic inflammatory condition that affects the whole of the digestive tract. Symptoms include abdominal pain, diarrhoea, weight loss, fever and tiredness. Sufferers of the disease can go into remission and have no symptoms at times. Crohn’s disease is treated by diet, usually an individual diet plan for each person.

**Irritable bowel syndrome (IBS)**

The cause of IBS is not known, but triggers may be stress or immune system problems. It usually affects people in their twenties and thirties. Symptoms include stomach cramps, bloating, diarrhoea and constipation. There is no cure, but changing diet and lifestyle can help.
Nutritional variation during life stage development (1)

Introduction
A person’s diet changes during his or her lifespan, according to need and the ability of the body to digest the food. Although we all need the same macro- and micronutrients, we need them in different quantities and different formats at different stages in our lives.

Life stages

Infancy (0–2 years)

From birth, breast milk contains all the baby’s needs in the right amounts. Although it is low in iron and copper, the baby has enough of these stored until it starts eating solid foods at about six months. Breast milk is clean, provides immunity and does not have to be prepared. Some mothers can’t or choose not to breastfeed and use formula milk, which is modified cow’s milk. It must be made up according to the instructions provided to prevent damage to the baby’s immature kidneys, and equipment must be sterilised to prevent infection. Weaning too early may cause obesity or allergies later.

Table 6.9 shows when different foods should be introduced. Mothers may find that they need to introduce foods several times before the baby gets used to the taste and texture. This can help to prevent children becoming fussy eaters.

Table 6.9 The weaning process.

<table>
<thead>
<tr>
<th>Age</th>
<th>Weaning process</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 months</td>
<td>Start with spoonfuls of baby rice, mashed potato or puréed vegetables, such as carrot, peas or parsnips. When they are used to the spoon, introduce lots of tastes, such as puréed meat, pulses and fruit. As a baby gets used to eating, introduce food with soft lumps. Do not give nuts as infants may choke or be allergic to them.</td>
</tr>
<tr>
<td>9 months</td>
<td>Minced or finely chopped food can be given. Infants at this age should be given different textures to get them used to them.</td>
</tr>
<tr>
<td>12 months</td>
<td>Give a good mixed diet by this stage, including three meals and two to three healthy snacks each day.</td>
</tr>
</tbody>
</table>

Weaning can help babies develop social skills.

Key terms

Weaning – introduction of solid food into the baby’s diet from about six months of age.

Activity

Use the internet to research weaning. Find out at what stage different foods should be introduced and produce a handout for new mums on weaning.
Childhood (3–8 years)

Children aged between three and eight years of age tend to be very active and are growing fast. Although their energy requirements are not as high as those of adults, they need almost the same amount of some vitamins and minerals.

Some children have big appetites because they have high nutritional needs. Children should be encouraged to eat healthy meals consisting of a mix of meat, fish or eggs and potatoes, pasta or rice with vegetables.

<table>
<thead>
<tr>
<th>Table 6.10 Daily energy needs of babies and children.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age range</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1-2 months (Breast milk substitute-fed)</td>
</tr>
<tr>
<td>3 – 4 months</td>
</tr>
<tr>
<td>5 - 6 months</td>
</tr>
<tr>
<td>7 - 12 months</td>
</tr>
<tr>
<td>3 years</td>
</tr>
<tr>
<td>6 years</td>
</tr>
<tr>
<td>9 years</td>
</tr>
<tr>
<td>12 years</td>
</tr>
</tbody>
</table>


Adolescence (9–18 years)

The nutritional needs of adolescents are greater than for any other age group because they have large appetites and are still growing. Boys aged 11 to 14 need approximately 2,354 kilocalories a day, rising to 3,005 for 15 to 18 year olds. Girls need 2,175 and 2,432 kilocalories respectively. Adolescents should be encouraged to eat sensibly and healthily at regular intervals and to avoid phases of overeating or starving themselves in order to lose weight, and to take a regular amount of physical activity.

Both children and adolescents should avoid too many sweets, crisps, biscuits and fizzy drinks.

Activity

**Healthy eating for children**

Visit the Change4life website and find out what advice there is for encouraging children to eat healthy meals. You can access this by going to www.pearsonhotlinks.co.uk and searching for this title.

Make a poster for 7 to 10 year olds that gives them advice on making healthy food choices.
Introduction

Although our nutritional needs do not change a lot during adulthood, as we age our bodies can become less active and efficient. As a result, we need to make sure that we know how to maintain a healthy and balanced diet to suit our needs. Intake that is more than the amount of energy we expend will cause weight gain, and less activity can also result in weight gain, weakened bones and muscles, and loss of ability.

Early to middle adulthood (19 to 65 years)

An adult's nutritional needs reduce with age. Men and women between 19 and 45 need approximately 2,550 and 1,940 kilocalories per day, but this will vary with the amount of activity or exercise taken. In general, adults need to eat a healthy diet consisting of complex carbohydrates, such as bread, potatoes, rice or pasta, protein, such as meat, eggs, cheese or fish and at least five daily portions of fruit and vegetables. Foods with high levels of fat, particularly saturated fat, and sugar should be kept to a minimum and adults are advised to carry out physical activity on a regular basis. Alcohol intake should be limited as it contributes extra calories to the diet.

Between the ages of 45 and 64 men need between 2,550 and 2,380 kilocalories per day and women 1,900. They should have at least five portions of fruit and vegetables a day to provide vitamins, minerals, fibre and water, which will help to prevent constipation. Osteoporosis can be a problem for older people, particularly women, so calcium-rich foods should be included in the diet, although they should be advised to stick to low-fat versions where possible. Walking and any exercise that is considered to be weight-bearing will help to strengthen bones too. A couple of meals a week containing oily fish, such as salmon, mackerel or sardines will help to protect against heart disease.

Pregnancy and breastfeeding

During pregnancy and breastfeeding a woman’s nutritional needs are increased to provide nutrition for the growing baby and for making breast milk after the baby is born. Pregnant women are advised to avoid eating foods high in vitamin A, soft cheeses and patés which may contain listeria bacteria, as they can cause birth defects.

Although some people think that being pregnant means that a woman can ‘eat for two’, only about an extra 200 kilocalories a day are required in the last three months of the pregnancy, and about
450 to 570 kilocalories a day extra during breastfeeding. This is to give the mother the energy she needs to carry the extra weight of the baby and to make breast milk. Women planning to become pregnant should be advised to eat a diet rich in folic acid to prevent damage to the foetus, particularly spina bifida.

Later adulthood (65+)

Although there is not much difference in the dietary needs of adults and older adults, as we age we become less mobile and we need less energy for our daily needs. Men and women between the ages of 65 and 73 need approximately 2,330 and 1,990 calories a day. Over the age of 75, they need 2,100 and 1,810 kilocalories a day respectively. Older people have smaller appetites, so the diet should provide concentrated sources of protein, vitamins and minerals in smaller portions. Gentle exercise should also be encouraged.

In old age, the body begins to slow down and does not work as efficiently as in younger days, so older people are more likely to become constipated. They should be encouraged to drink plenty, and to have at least five portions of fruit and vegetables a day. Taste sensation can alter in old age, which might make food seem tasteless and unappetising. Strong flavours, such as herbs and spices, can be used to improve taste and might encourage older people to eat more.

Old people who live alone often cannot be bothered to cook a hot meal for one person, so they should be encouraged to eat foods that do not require much preparation but are high in nutrients. It is a good idea for older people to make sure that they have some tinned or dried food in the cupboard and some longlife milk, in case of illness or bad weather.

There are some companies that provide ready-made meals that can be delivered frozen and a microwave oven to heat the food, but this might be too expensive an option for some elderly people. In some areas of the country, there are ‘meals on wheels’ services that deliver a hot meal once a day to older people.
Considerations for nutritional planning

Introduction
There are times when healthcare professionals may see patients who need dietary advice, whether it is just to lose weight, or to help in the treatment of an illness or disease.

A dietician or nutritionist normally provides a dietary plan for an individual on a long-term basis, but other healthcare workers can do so provided they have a sound knowledge and understanding of dietary intake, the long-term effects of balanced and unbalanced diets, and specific dietary needs of individuals at different life stages.

When planning suitable diets, it is important to get to know the individual and their eating habits, as many factors need to be considered.

A nutritional plan can then be put together taking into account as much of the information gathered as possible. An example of a one-week plan is shown in Table 6.11.

Jack is a 57-year-old sales executive who has had a heart attack. He has just been discharged from hospital following treatment and has been given a diet plan by Anoushka, the dietician. This is to be combined with taking regular exercise and drinking one to two litres of water a day.

You will see that there are three meals which include oily fish (tinned tuna is not included) and there are at least five portions of fruit and vegetables every day. There are a couple of treats as Jack is likely to be bored with this diet long term, and provided he sticks to the plan, he should remain healthy.

Assessment activity 6.2

As trainee dietician, you are working with a dietician in a GP practice. She runs a training session every two months for the doctors, nurses and healthcare assistants at the practice. She asks you to prepare a PowerPoint presentation for use at the next teaching session about individuals with specific dietary needs.

She has given you two sets of patient notes and has asked you to make a sample nutritional plan for each patient:
- Sarah is a 22-year-old Jewish mother of two who is pregnant with her third child. Her husband has just been made redundant.
- Alan is a 45-year-old bank manager who is married to Helena, and they have grown-up children who no longer live at home. They are both vegan, and Alan runs about six marathons a year and trains every day.

1. Describe the specific nutritional needs for Sarah and Alan.
2. Explain the different factors that influence the diets of Sarah and Alan.
3. Discuss how the different factors will influence the diets of Sarah and Alan.
4. Show your nutritional plans for Sarah and Alan to the group, and compare them. You might want to create a handout showing the nutritional plans in detail.

Tips
You have been given the main points about the lifestyles of Sarah and Alan, but you can introduce more information that can be used to add further detail to your presentation. Make sure that it is realistic, so set aside enough time for research and preparation.
<table>
<thead>
<tr>
<th>Day</th>
<th>Breakfast</th>
<th>Snack</th>
<th>Lunch</th>
<th>Snack</th>
<th>Dinner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>Porridge made with skimmed milk and dried fruit</td>
<td>Banana</td>
<td>Sandwich made with lean ham, salad and low-fat mayo</td>
<td>Low fat yoghurt</td>
<td>Roast chicken</td>
</tr>
<tr>
<td></td>
<td>Tea with skimmed milk</td>
<td>Coffee with skimmed milk</td>
<td>Six cherry tomatoes</td>
<td>Tea with skimmed milk</td>
<td>Dry roasted potatoes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tea with skimmed milk</td>
<td></td>
<td>Carrots</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cabbage</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Gravy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Small portion of apple crumble, custard</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>One glass of red wine</td>
</tr>
<tr>
<td>Monday</td>
<td>Two slices of wholemeal toast</td>
<td>Two plums</td>
<td>Jacket potato with tuna and sweetcorn (low-fat mayonnaise)</td>
<td>Two water biscuits with a small portion of reduced-fat cheese</td>
<td>Vegetable curry</td>
</tr>
<tr>
<td></td>
<td>Low fat spread Marmite</td>
<td>Coffee with skimmed milk</td>
<td></td>
<td>Tea with skimmed milk</td>
<td>Rice</td>
</tr>
<tr>
<td></td>
<td>Tea with skimmed milk</td>
<td></td>
<td></td>
<td></td>
<td>Low-fat chocolate mousse</td>
</tr>
<tr>
<td></td>
<td>Orange juice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td>Two poached eggs</td>
<td>Carrot and celery sticks</td>
<td>Small can baked beans</td>
<td>Tea with skimmed milk</td>
<td>Grilled salmon</td>
</tr>
<tr>
<td></td>
<td>Two rashers of grilled bacon, fat removed</td>
<td>Can of diet cola</td>
<td>Two slices of wholemeal toast, no spread</td>
<td>Two Rich Tea biscuits</td>
<td>New potatoes</td>
</tr>
<tr>
<td></td>
<td>Orange juice</td>
<td></td>
<td>Water</td>
<td></td>
<td>Peas</td>
</tr>
<tr>
<td></td>
<td>Tea with skimmed milk</td>
<td></td>
<td></td>
<td></td>
<td>Broccoli</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fresh fruit salad</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tea with skimmed milk</td>
</tr>
<tr>
<td>Wednesday</td>
<td>Porridge made with skimmed milk and seeds</td>
<td>One chocolate digestive biscuit</td>
<td>Chicken breast Salad</td>
<td>Banana</td>
<td>Pork chop, fat removed</td>
</tr>
<tr>
<td></td>
<td>Tea with skimmed milk</td>
<td>Coffee with skimmed milk</td>
<td>New potatoes</td>
<td>Tea with skimmed milk</td>
<td>Couscous</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Low-fat dressing</td>
<td></td>
<td>Roasted Mediterranean vegetables</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>One orange</td>
<td></td>
<td>Frozen yoghurt</td>
</tr>
<tr>
<td>Thursday</td>
<td>Bowl of cornflakes with skimmed milk</td>
<td>Low fat yoghurt</td>
<td>Tinned sardines on two slices of wholemeal toast</td>
<td>Apple</td>
<td>Vegetable lasagne</td>
</tr>
<tr>
<td></td>
<td>One slice of wholemeal bread with low-fat spread and marmalade</td>
<td>Coffee with skimmed milk</td>
<td>Apple</td>
<td>Orange juice</td>
<td>Salad with low-fat salad dressing</td>
</tr>
<tr>
<td></td>
<td>Tea with skimmed milk</td>
<td></td>
<td></td>
<td></td>
<td>Low-fat chocolate mousse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td>Grilled tomatoes</td>
<td>Cereal bar</td>
<td>Bowl of homemade vegetable soup</td>
<td>Two water biscuits with a small portion of reduced-fat cheese</td>
<td>Cottage pie</td>
</tr>
<tr>
<td></td>
<td>Two slices of wholemeal toast</td>
<td>Coffee with skimmed milk</td>
<td>One wholemeal roll, no spread</td>
<td>Tea with skimmed milk</td>
<td>Courgettes</td>
</tr>
<tr>
<td></td>
<td>Orange juice</td>
<td></td>
<td>Apple</td>
<td></td>
<td>Green beans</td>
</tr>
<tr>
<td></td>
<td>Tea with skimmed milk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td>Fresh fruit salad</td>
<td>Pear</td>
<td>Smoked mackerel Salad and tomatoes with low-fat dressing</td>
<td>One slice of malt loaf</td>
<td>Spaghett Bolognese</td>
</tr>
<tr>
<td></td>
<td>Two toasted crumpets with low-fat spread</td>
<td>Orange juice</td>
<td>Frozen yoghurt</td>
<td>Tea with skimmed milk</td>
<td>Fresh strawberries with a small amount of single cream</td>
</tr>
<tr>
<td></td>
<td>Coffee with skimmed milk</td>
<td></td>
<td>Coffee with skimmed milk</td>
<td></td>
<td>Tea with skimmed milk</td>
</tr>
</tbody>
</table>