UNIT 11

Clinical nutrition

Introduction

Your body needs nutrients in order to survive. The amount of nutrients you need depend on many factors including your age, body size, activity level and medical conditions. When people have conditions such as heart disease and diabetes, they will need some nutrients in larger quantities than others. They may also need to reduce their intakes of other nutrients e.g. people with diabetes are advised to reduce their intake of sugar and fat.

In this unit, you will explore the role of therapeutic diets in the treatment and management of many diseases including bone disease, heart disease and renal disease. You will gain a deeper understanding of diabetes, the types, causes, management and treatment for each type of diabetes, you will learn how to carry out blood glucose monitoring and the therapeutic diet recommended for diabetic patients.

Learning outcomes

Standard HSC.4.3.01: Advise the appropriate diet for overweight individuals, patients with diabetes, renal disease, bone disease and heart disease.

Learning outcomes:

HSC.4.3.01.001	Outline the purpose of therapeutic diets.
HSC.4.3.01.002	Explain the dietary guidance for overweight individuals.
HSC.4.3.01.003	Identify the types and causes of diabetes.
HSC.4.3.01.004	Evaluate the methods of blood glucose monitoring.
HSC.4.3.01.005	Explain the dietary guidance for patients with diabetes.
HSC.4.3.01.006	Explain the dietary guidance for patients with renal disease.
HSC.4.3.01.007	Explain the dietary guidance for patients with bone disease.
HSC.4.3.01.008	Explain the dietary guidance for heart disease patients.

Keywords

Word	Form	Definition
abdominal	noun	the part of the body below the chest
consistency	noun	the quality of being thick, smooth, runny etc.
deficient	adjective	not having enough of something that is important or necessary
dysphagia	noun	the inability to swallow food
glucose	noun	a simple sugar found in food and can be produced by the body after breaking down certain foods that you eat
hormone	noun	a substance that is produced in the body
hypertension	noun	high blood pressure
insulin	noun	a hormone produced by the pancreas which regulates how much glucose is in the blood.
intolerance	adjective	being unable to take a certain substance in the body without becoming sick
modification	noun	the process of changing parts of something
moist	adjective	slightly or barely wet; not completely dry
sodium	noun	a micronutrient otherwise known as salt
texture	noun	the way that a food or drink feels in your mouth
ulcer	noun	a painful, sore area inside or outside the body

11.1 Therapeutic diets

Therapeutic diets

The word therapeutic relates to the healing of disease.

The word diet relates to the foods and drinks that you regularly eat.

Therefore, a therapeutic diet refers to the use of diet or certain foods to treat and manage diseases.

Keyword

nutrition

eating and drinking the food needed for health and growth

A therapeutic diet is a special diet plan which is given by a healthcare professional. It controls the intake of certain foods or nutrients based on the nutritional needs and health status of a patient. Therapeutic diets can be altered for nutrients, texture, food allergies or food intolerances.

Who benefits from therapeutic diets?

It is very important for people who have an illness or disease to have a healthy diet.

A therapeutic diet can benefit individuals with health conditions such as:

- Cardiovascular disease
- Obesity
- Diabetes
- Food allergies
- Digestive diseases
- Eating disorders

Therapeutic diets can play a very important role in the management of a disease. They can reduce the amount of medication that is needed, increase quality of life and even increase life expectancy. In some cases, a therapeutic diet can cure some conditions.

Example

If someone has hypertension, they may be able to get their blood pressure back to a healthy level by making changes to their diet.

11.1 Therapeutic diets

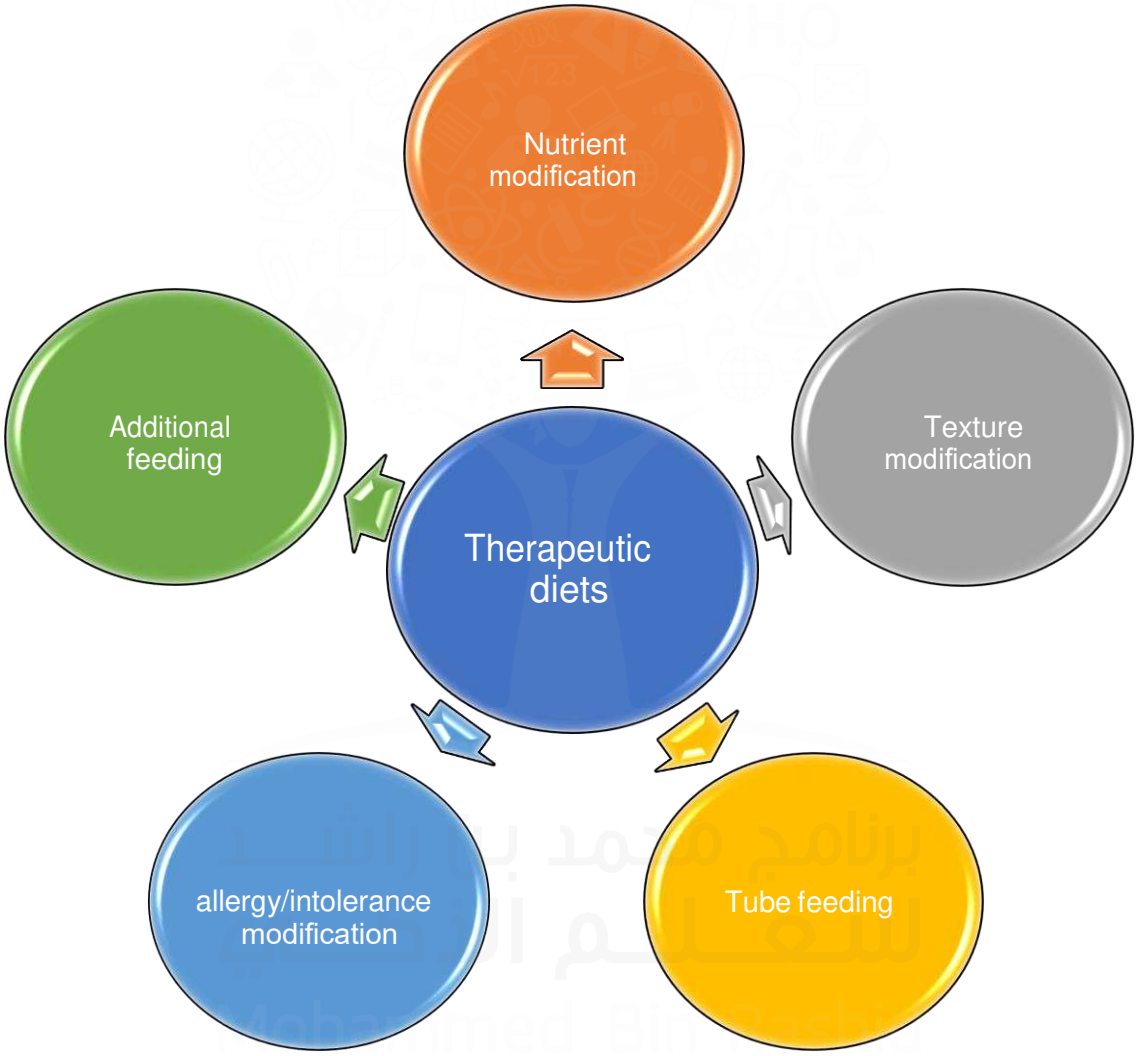
Why are therapeutic diets needed?

There are many reasons why a patient may be given a therapeutic diet. Some of the common reasons include the following.

- To increase, decrease or eliminate a type of food or nutrient, such as dairy or salt.
- To maintain or correct nutritional status.
- To provide extra calories for weight gain.
- To balance the diet.
- To cut out certain foods that affect medication.
- To help with digestion.
- To remove foods due to allergies or intolerances.
- To provide changes in texture due to problems with chewing or swallowing.

Types of therapeutic diets

Therapeutic diets can be grouped together depending on the type of modification or change that is happening to the diet. Let's look at some of the most common types of therapeutic diets.



Nutrient modifications

This is where one or more nutrients are added or removed from the diet. Nutrient modifications are normally used to help fight diseases such as osteoporosis, hypertension or diabetes. Adding or removing nutrients can reduce the effects of a disease.

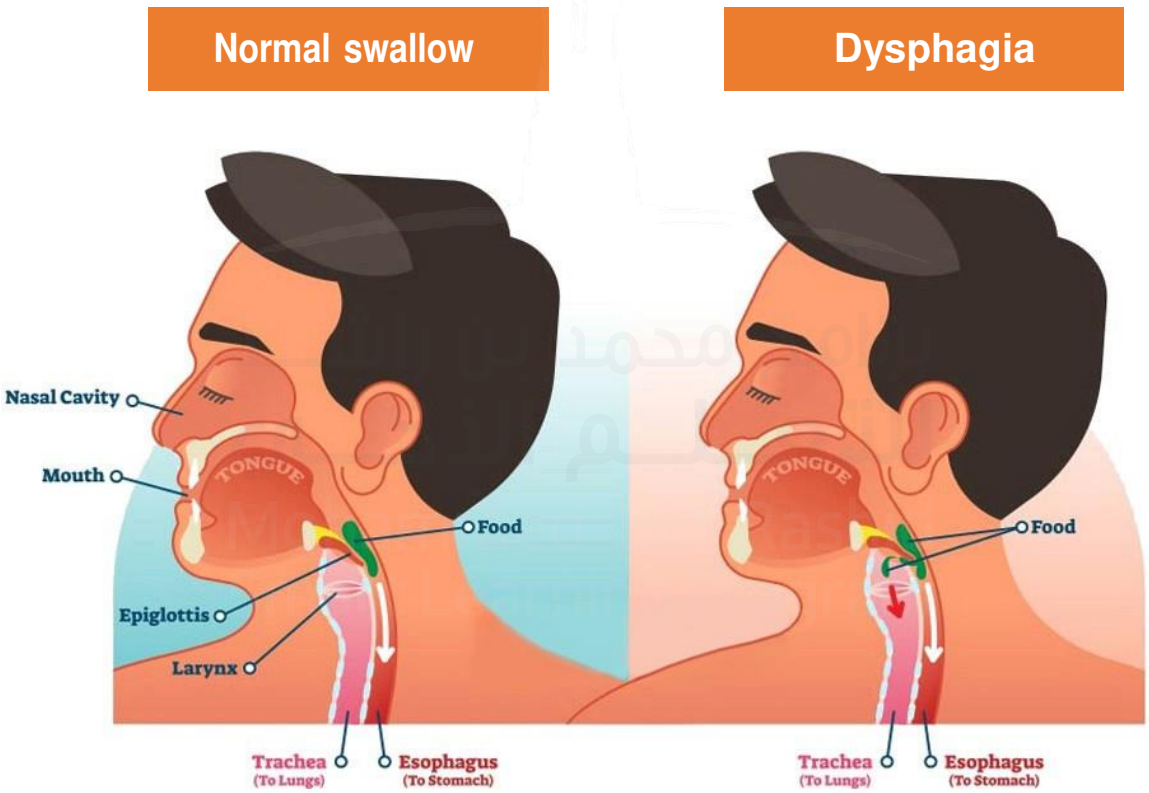
11.1 Therapeutic diets

Common nutrient modified diets include:

- Low sugar diet
- Low sodium (salt) diet
- Low-fat diet
- High fibre diet
- Renal diet (low sodium, potassium and phosphorous)

Texture modification

Swallowing is a complex function. When we eat food, it is chewed and moved around the mouth until it reaches an area at the back of the tongue. Here, the swallow reflex is triggered. For some people, the brain does not register when the food reaches this area. Some people do not have teeth to properly chew food. Eating and drinking can become a slow and difficult process, and choking is a hazard. The medical term used to describe when people have problems with swallowing food is dysphagia. The texture and consistency of food can be modified to make eating easier for these people.

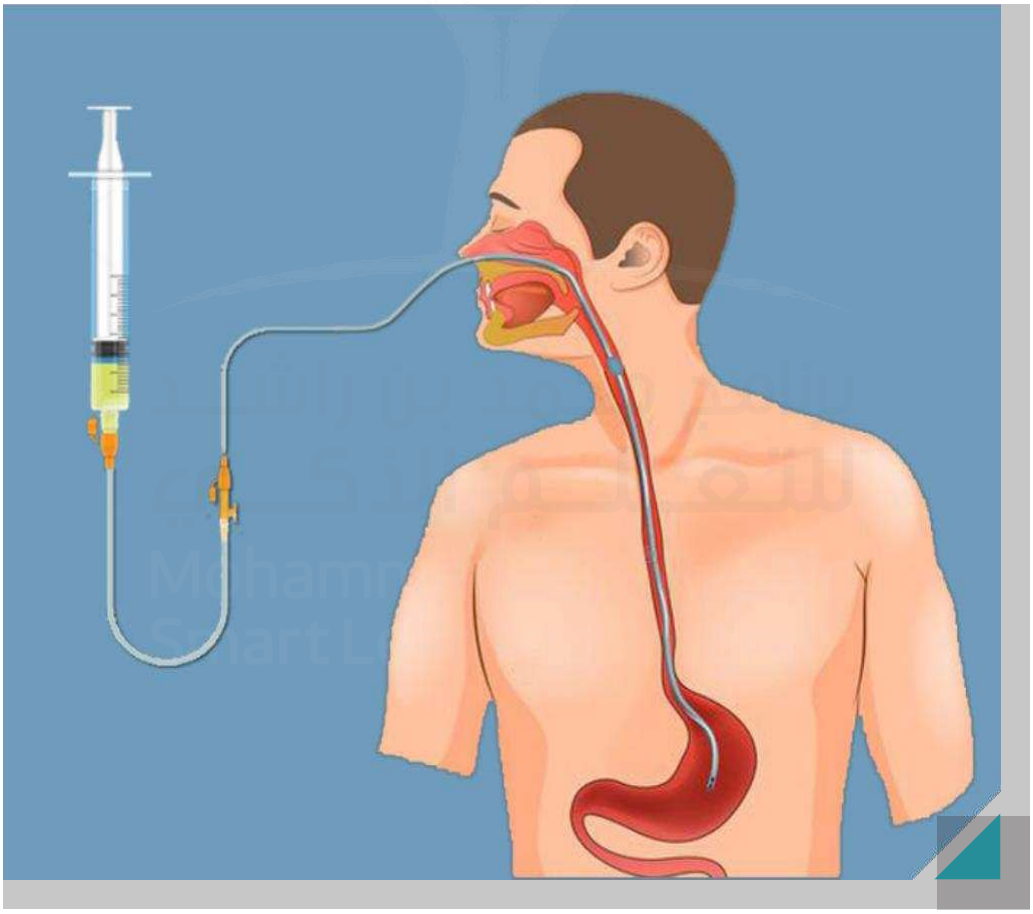


There are three main levels of texture modification of foods:

- **Soft** – when food is cooked or cut so it can be easily chewed with minimal effort.
- **Minced and moist** – food is soft, easily mashed with a fork; any lumps that are present are smooth.
- **Puree diet** – food is smooth, moist and lump-free; Sometimes pureed food is grainy.

Tube feeding

People may need tube feeding because they cannot get enough nutrients on their own. This could be because they have problems with their mouths or have difficulty swallowing food. The nutrients they receive are similar to normal food and their bodies digest them in the same way. In some cases, tubes are inserted through the nose or mouth and go down the oesophagus into the stomach. In other cases, the tubes are inserted directly into the stomach.



11.2 Diet for overweight

Overweight and obesity

If a person is overweight or obese, it increases their risk of developing other diseases such as diabetes, heart disease and cancer.

Remember

A person who has a BMI between 25-29.9 is classed as overweight. A person with a BMI above 30 is classed as obese.

Someone who is overweight or obese may be advised by their doctor to lower their weight in order to improve their health.

This should be done in a controlled and healthy way. It should be done by gradually reducing the number of calories a person consumes and increasing their physical activity levels.

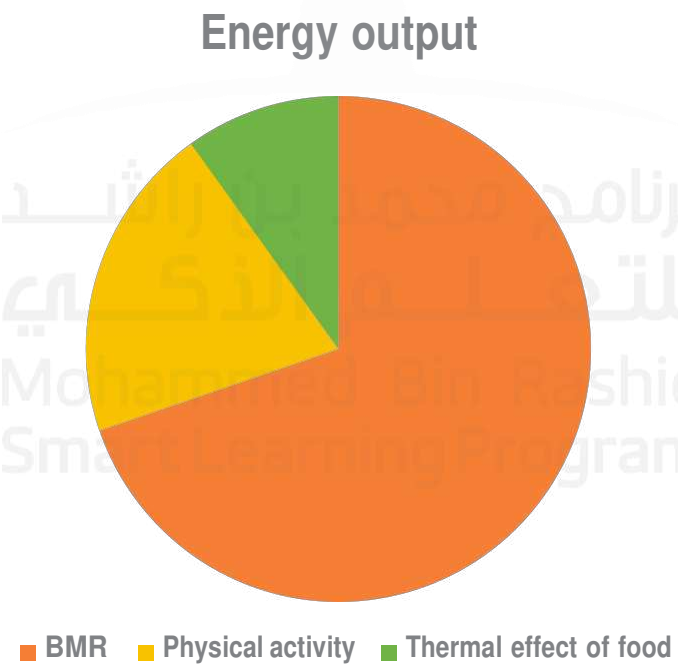
Energy balance

Energy balance is the balance of calories that are consumed through eating and drinking compared to calories burned throughout the day. You can calculate energy balance by using the energy balance equation:

Energy balance = energy input – energy output

As you have read above, energy input is the calories that come from foods and drinks that have been consumed. Energy output is made up of three different things:

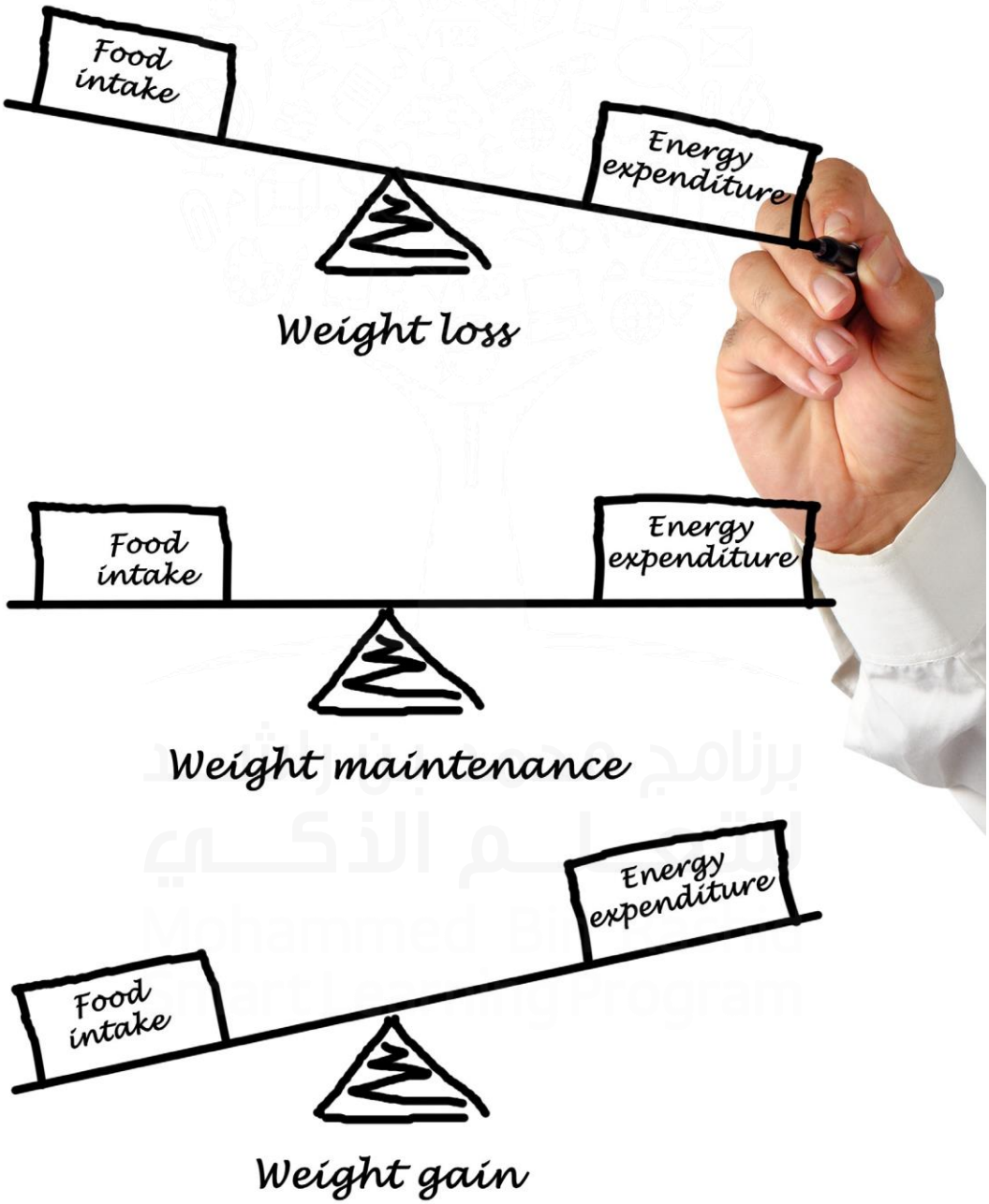
- Basal metabolic rate (BMR) – most of your energy is used up doing basic functions such as breathing and blood circulation. Even when you are sleeping your body is burning calories. The rate at which your body burns calories when it is at total rest is called your BMR. This is the number calories that your body needs to simply survive.
- Physical activity – anything that raises your heart rate above resting is counted as physical activity. Daily activities are even classed as physical activity, such as walking upstairs.
- Thermal effect of food – the energy that is used to chew, digest and store food. This uses the least amount of energy.



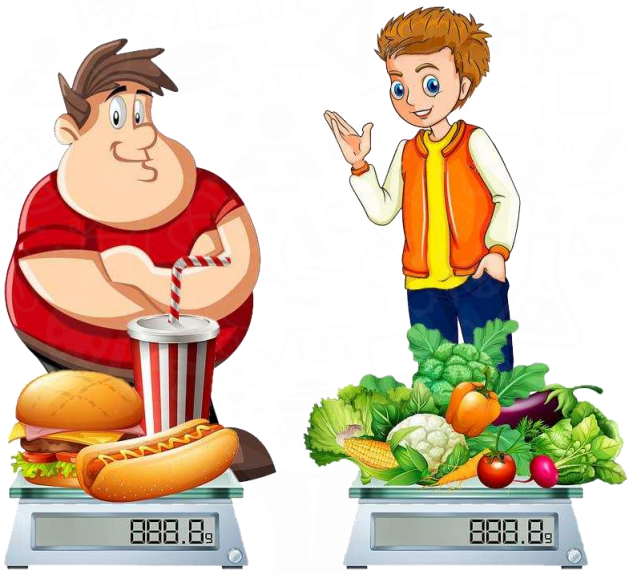
11.2 Diet for overweight

Understanding energy balance

If you consume more calories than you use up, you will have a positive energy balance and over time, will notice weight gain. If you consume less calories than you use up, perhaps by eating less calories or increasing energy output by doing exercise, you will have a negative energy balance. Over time, people with negative energy balance will lose weight.



Anyone who is trying to lose weight needs to be in a state of negative energy balance. As you know, this can be done by reducing the number of calories consumed. Eating less energy-dense foods and having a better diet can help with this. Increasing the amount of calories that are used up is another way to lose weight. This can be done by doing more physical activity each day or increasing the intensity of exercise to burn more calories than normal.



Diet for overweight

- Eat a variety of foods each day.
- Try to eat enough fruit and vegetables every day.
- Choose food high in protein, lean meat, fish, eggs and legumes.
- Make sure that the diet has enough cereals and their products.
- Make sure that the diet contains enough calcium. Good sources include milk and dairy products.
- Reduce intake of foods that are high in saturated fat.
- Reduce the intake of food and drinks that have high sugar content.
- Cut down on processed foods.
- Reduce the intake of sodium and foods that are high in salt.
- Eat foods high in fibre; this will help with digestion and keep you feeling full for longer.
- Consume enough water every day.

11.3 Diabetes

What is diabetes?

Diabetes mellitus (better known as diabetes) is a chronic condition. This is where the body's ability to respond to or produce a hormone called insulin is not working as it should. This leads to too much glucose in the blood.

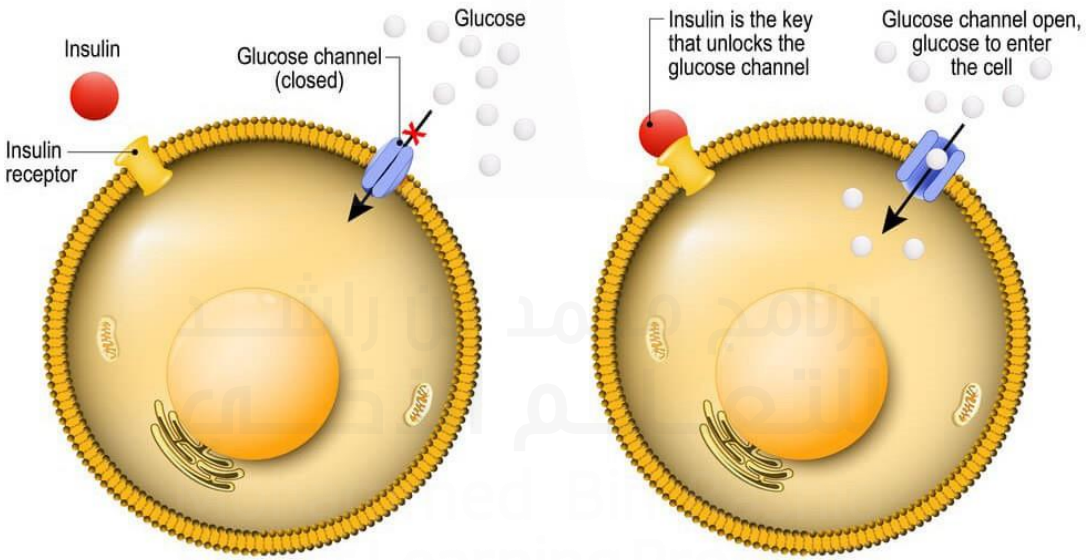
Keyword

glucose

a type of sugar found in foods and can be produced by the body after breaking down certain foods that you eat

Insulin

Insulin is a hormone produced by the pancreas. The main role of insulin is to control the amount of glucose in the blood. It helps the cells in the body to take in the glucose from the blood and use it up as energy.



Research: The pancreas

Do some research about the pancreas. In which part of the body can it be found? Does it do anything else apart from produce insulin?

Types of diabetes

There are three types of diabetes:

- Type 1 diabetes
- Type 2 diabetes
- Gestational diabetes

Type 1 diabetes

Type 1 diabetes occurs when the body cannot produce enough insulin. This happens because the body's immune system destroys the cells in the pancreas that produce insulin.

A person with type 1 diabetes needs to take insulin medication to control the level of glucose in their blood. If they do not take any insulin, the level of sugar in their blood will build up and the cells in their body will not get the energy they need from glucose.

Further information

The term used to describe when there is too much glucose in the blood is hyperglycaemia.

Type 1 diabetes is commonly diagnosed at a young age. It cannot be prevented and it is not caused by lifestyle factors. The following things can make a person more likely to develop type 1 diabetes:

- Family history of type 1 diabetes
- Exposure to certain viruses
- Diseases or problems with the pancreas

11.3 Diabetes

Type 2 diabetes

With type 2 diabetes, the body cannot produce enough insulin, or it cannot properly use the insulin that it produces. This is called insulin resistance.

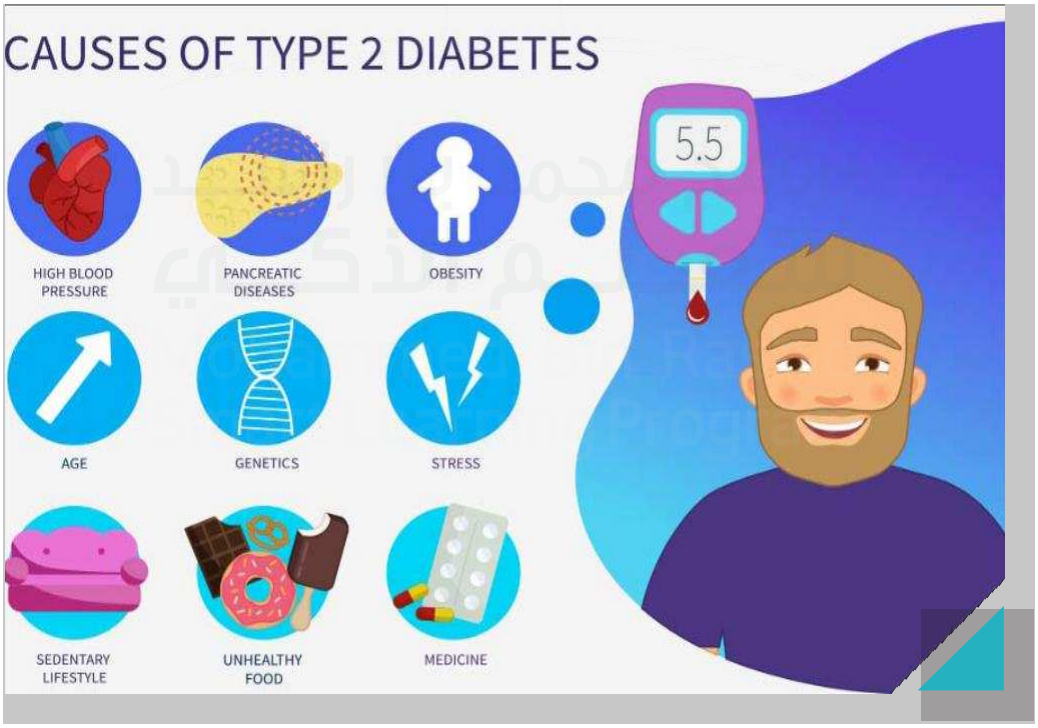
If there is not enough insulin produced, the cells in the body cannot receive enough glucose. The brain sends signals to the pancreas to produce more insulin. Over time, the cells in the pancreas that create insulin become overworked. This means they stop producing it. When this happens, the levels of glucose in the blood increase.

Did you know?

Around 90% of diabetes cases worldwide are type 2.

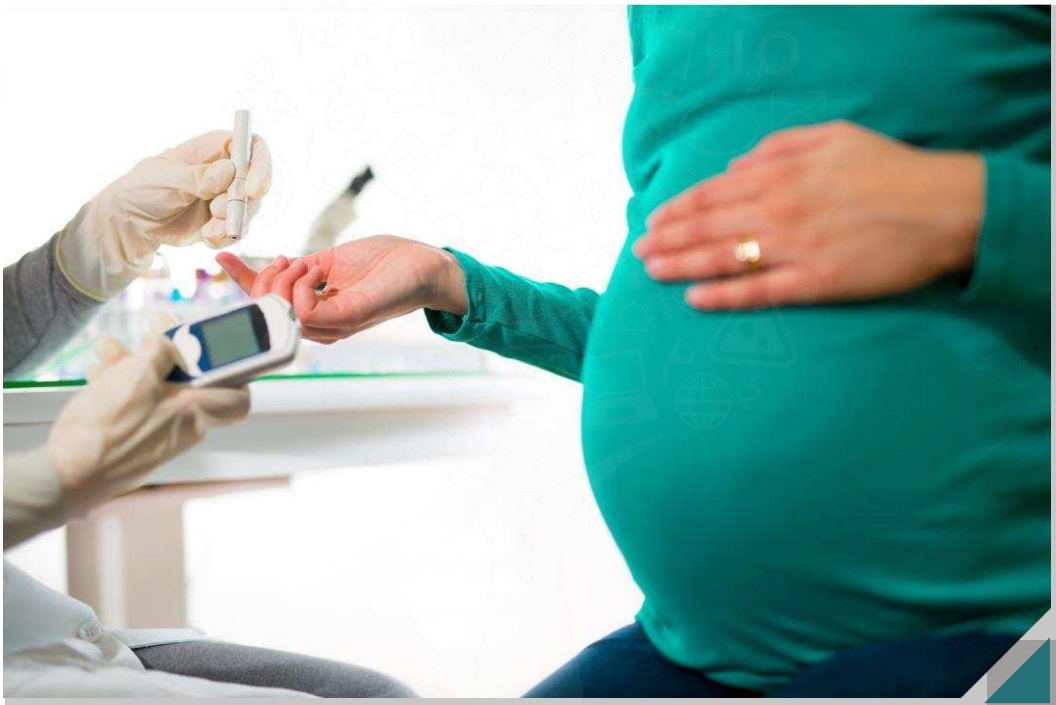
Type 2 diabetes is more common than type 1 diabetes. It is commonly diagnosed in adulthood, but more recently this type of diabetes has also been seen in children because of the rising cases of obesity and poor diet. While it can be associated with genetics, it is mainly caused by lifestyle factors such as:

- being overweight or obese.
- eating an unhealthy diet.
- not doing enough physical activity.



Gestational diabetes

Gestational diabetes is a type of diabetes that develops during pregnancy. It occurs as the pancreas is not able to produce enough insulin to meet the extra demands during pregnancy. This means the levels of glucose in the blood increase, causing hyperglycaemia.



Gestational diabetes normally goes away after the baby is born. However, it puts the mother at a higher risk of developing type 2 diabetes in the following three to six years after giving birth. Women who experience gestational diabetes are also likely to experience it again with future pregnancies.

The chances of complications during pregnancy and delivery are higher for a woman who has gestational diabetes. However, these risks can be reduced if it is detected and controlled from an early stage. The risk factors for developing gestational diabetes are similar to type 1 and type 2:

- Being overweight or obese
- Not doing enough physical activity
- Previous gestational diabetes
- Family history of diabetes

11.3 Diabetes

Signs and symptoms of diabetes

Type 1 diabetes

The image above shows the typical symptoms of type 1 diabetes.

Further information

Someone with type 1 diabetes may not show all of the typical symptoms which can sometimes make a diagnosis difficult. This is especially the case if the patient does not experience excessive thirst, frequent urination or sudden weight loss.

Type 2 diabetes

The signs and symptoms of type 2 diabetes are similar to those for type 1. However, a person generally experiences these symptoms in a much less dramatic way than someone with type 1 diabetes. In some cases, people may not show any symptoms. Because of this, it is estimated that one in two adults who have type 2 diabetes are not diagnosed. If diabetes is not diagnosed or treated, complications can occur such as retinopathy or the formation of an ulcer in a lower limb. It may only be at this late stage that a person is diagnosed with type 2 diabetes.

Research: Diabetes complications

Research the complications that can happen as a result of diabetes. Describe some of the complications in your workbook.

Gestational diabetes

Symptoms of gestational diabetes are rarely experienced. Sometimes the symptoms of gestational diabetes can be confused with regular pregnancy symptoms. In the UAE, pregnant women are usually screened for gestational diabetes between weeks 24-28 of pregnancy. However, testing may be done earlier than this if the doctor believes the pregnant mother is high-risk.

Did you know?

One in five pregnant women in the UAE experience gestational diabetes.

Prevention of diabetes

While type 1 and gestational diabetes are mainly caused by genetic factors and cannot be prevented, more than 50% of type 2 diabetes cases can be prevented. The following things can help to prevent the cause of type 2 diabetes:

- Maintain a healthy weight.
- Eat a balanced diet.
- Exercise regularly.
- Don't smoke.

11.4 Blood glucose monitoring

Measuring blood glucose

Discussion: Measuring blood glucose

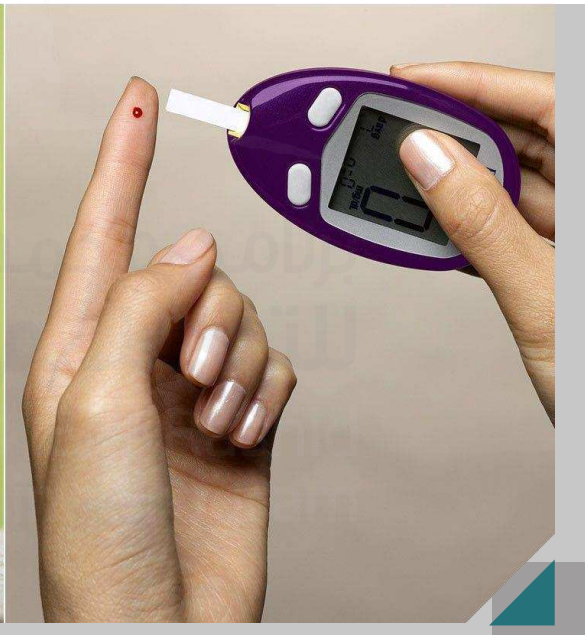
Have you ever had your blood glucose measured? Do you know the name of the method that was used to measure it?

You may be familiar with measuring blood glucose if you or a family member have diabetes. There are different ways of measuring it.

Testing blood glucose levels are one of the best ways for patients to understand their diabetes and how different foods, medications and physical activities affect them.

Diabetic patients will usually measure their blood glucose often and at various times, such as:

- after fasting for several hours.
- before mealtimes.
- one to two hours after eating a meal.
- after doing physical activity.



Two methods we will look at in detail are:

- Continuous glucose monitoring (CGM)
- Finger prick readings using a blood glucose monitor

Continuous glucose monitoring

Continuous glucose monitoring (CGM) is a modern method of measuring blood glucose levels for diabetics. CGM systems measure blood glucose at regular intervals, 24 hours a day, seven days a week. The blood glucose readings are sent to a receiver such as a mobile phone or a special display device every few minutes.

CGM can alert a patient about a rise or fall in their blood glucose and it can put all the data together. This is so the patient can view trends and have an insight into the impact that meals, exercise and medication have on their blood glucose levels.

How does CGM work?

CGM has three parts:

1. It has a tiny sensor wire that sits under the skin. This measures blood glucose. A device is used to automatically insert the wire.
2. It has a transmitter that is attached to the sensor wire. This small, reusable device sits on top of the skin and sends the blood glucose levels to the receiver (the patient's phone or display device).

11.4 Blood glucose monitoring

3. It has a receiver which is a device that a patient can use to read their blood glucose from. This can be the patient's mobile phone, a special display device or a pump.

The sensor wire can be worn for up to seven days. After that, it should be replaced and re-attached to the transmitter.

The CGM comes with software that allows the patient to collect and analyse their data over time.

There is a short time delay with CGM readings, especially after eating or exercising. Because of this time delay, CGM readings are normally not the same as finger-prick readings using a blood glucose monitor. CGM users are encouraged to carry out two finger-prick tests a day to make sure their equipment is working correctly.

Finger-prick readings

Blood glucose monitors are small digital devices which work by analysing a small amount of blood that is taken from the fingertip. An object called a lancet is used to lightly prick the skin to produce the blood. When doing this, it is advised to use the side of the fingertip towards the nail. This will avoid sore spots and possible infections from forming on the parts of the finger which are more frequently used and are in contact with more surfaces.

The following items are needed to measure blood glucose using the finger-prick method:

- PPE
- Antibacterial wipes
- Blood glucose monitor
- Cotton wool or plasters
- Test strips
- Lancet
- Lancing device (a device that controls the needle)
- A sharp objects bin

11.4 Blood glucose monitoring

Steps to measure blood glucose

1. Wash your hands and wear PPE such as gloves.
2. Decide on the site to take the blood sample, in this case, you will use the tip of one finger.
3. Tell the patient what you are going to do. For example, you can say, "I am going to take a small sample of blood from the tip of your finger".
4. Use an antibacterial wipe to clean the area that you wish to take the blood sample from. Allow it to dry.
5. Switch the glucose monitor on and insert a new, clean test strip.
6. Insert a new lancet into the lancing device.
7. Press the lancet device against the fingertip and allow the lancet to prick the finger.

8. Dispose of the used lancet in the sharp objects bin.
9. Collect the blood sample on the testing strip which is inserted in the blood glucose monitor.
10. Place cotton wool or a plaster over the site of the finger prick. Tell the patient to apply some pressure to the site to stop the bleeding.
11. Read the results from the blood glucose monitor and record the results.
12. Take the correct action based on the blood glucose reading.

Think

Devices and methods can vary. It is important to read the instruction manual of the specific blood glucose monitor that you are using.

Understand the results

The blood glucose monitor will show a reading that indicates the level of glucose in the blood. Doctors or healthcare professionals will use the following numbers as guidance for diagnosing diabetes.

Time of test	Healthy	Prediabetes	Diabetes
After fasting for at least eight hours	<6mmol/L	6-7mmol/L	>7mmol/L
Two hours after eating or drinking	<7.7mmol/L	7.8-11mmol/L	>11mmol/L

Research: mmol/L

Research the meaning of mmol/L. Write the answer in your workbook.

What is prediabetes?

Prediabetes is when blood glucose levels are above the normal range but below the threshold for diagnosing diabetes. Prediabetes is a very important state as it recognises the risk of developing type 2 diabetes if the person continues to live the way they currently do. With the correct lifestyle changes and support, type 2 diabetes can be prevented. Therefore, prediabetes can be a very useful indicator.

Further information

The medical term for prediabetes is impaired glucose tolerance.

11.5 Diet for diabetes

Managing diabetes

Diet, exercise and medication are all very important when managing diabetes. There are two ways which meal planning can be carried out. These are known as carbohydrate counting and the plate method. These methods focus on limiting the foods that cause severe changes in blood glucose levels.

Carbohydrate counting

Carbohydrates are broken down to glucose in the body and therefore have the biggest impact on blood glucose levels. Carbohydrate counting refers to managing blood glucose levels. This is done by counting the number of carbohydrates you eat and adjusting the dose of insulin needed.

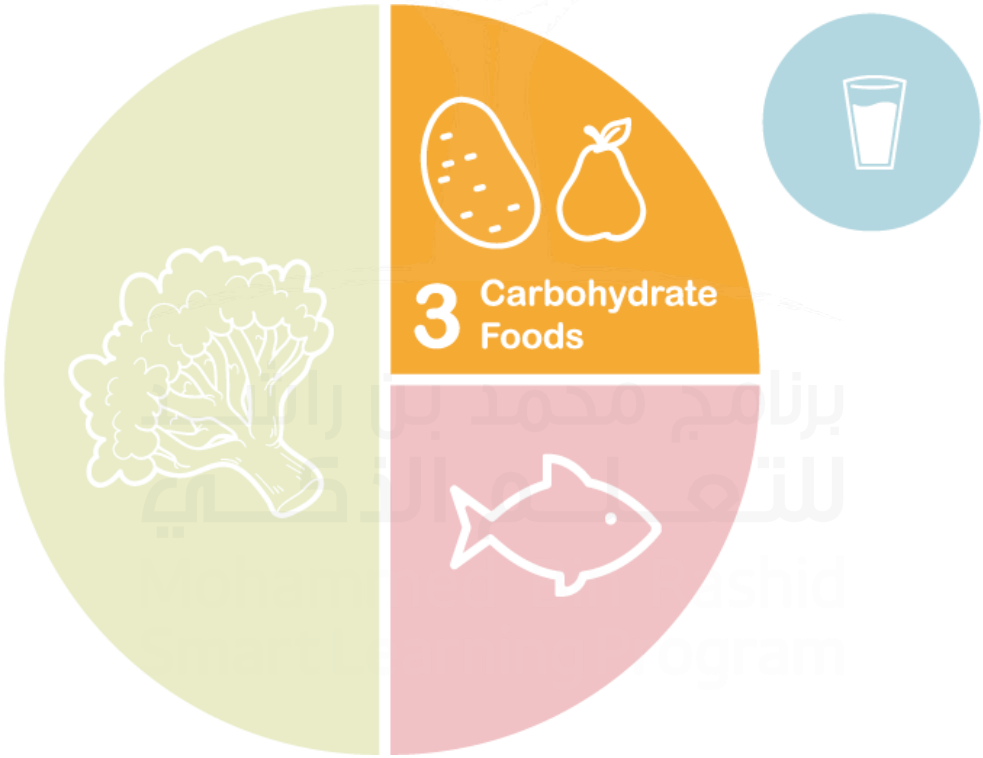
Choose to get carbohydrates from food such as fruit, vegetables, wholegrain rice and pasta, beans and low-fat milk. These are known as complex carbohydrates. Cut down consuming simple carbohydrates including added sugars, sweets, pastries, cakes, white bread, white rice and white pasta.

The plate method

It is difficult to get portion sizes right all the time. Using everyday items such as spoons and cups can be really useful. A good way to plan meals is to follow the plate method. It focuses on eating more vegetables.

The following things should be considered when preparing a meal:

- Fill half the plate with vegetables such as spinach, carrots and tomatoes.
- Fill a quarter of the plate with protein, such as tuna, salmon, lean beef, chicken or lamb.
- Fill the other quarter of the plate with whole-grain foods such as brown rice or pasta.
- Add a serving of fruit or dairy.
- Drink water or unsweetened tea or coffee.

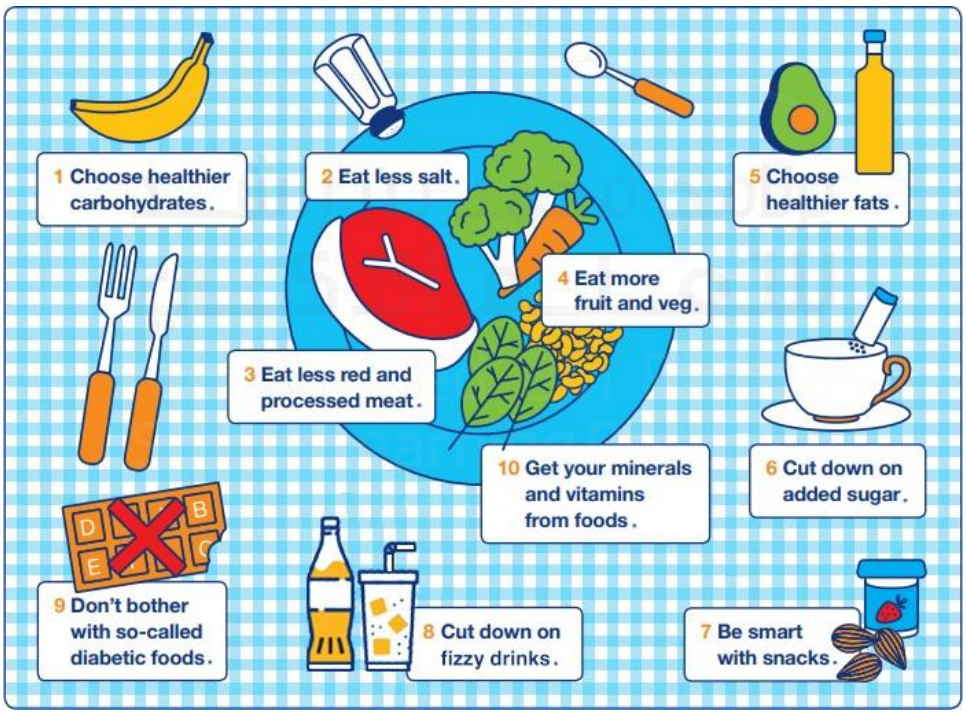


11.5 Diet for diabetes

Dietary recommendations for diabetes

As there are different types of diabetes, there is not one single diet that works for each diabetic patient. But there are some tips which help diabetics to make healthier food choices. The general dietary recommendations for diabetes include the following:

- Eat three meals a day at regular mealtimes. If you become hungry between meals, choose a low-fat and low-sugar snack.
- Choose foods that are naturally rich in nutrients.
- Include starchy foods in each meal. Choose whole grain or wholemeal as they contain more fibre. High-fibre foods help to keep you feeling fuller for longer and can help with weight management.
- Eat fruit and vegetables regularly. Try to eat fresh fruit and vegetables every day. If you are having fruit juice, have it with meals. Whole fruit and vegetables are best.
- Limit intake of sugary foods. Foods that are generally high in sugar include sugar-sweetened drinks, sweets, chocolate, syrup, honey and some breakfast cereals.
- Limit the intake of foods that are high in saturated fat. Foods that are generally high in saturated fat include butter, fat on meat, processed meats, crisps, chips and mayonnaise.
- Control the portion sizes of meals to avoid consuming too many calories and affecting blood glucose levels.



The relationship between type 2 diabetes and overweight

Did you know?

Around 85% of type 2 diabetics are also overweight or obese.

One of the biggest risk factors for developing type 2 diabetes is being overweight or obese. People who have a BMI above 30 (obese) are 80 times more likely to develop type 2 diabetes than people with a BMI of 22 (normal weight).

Further information

Having a lot of abdominal fat (fat around the tummy) increases the risk of developing diabetes. People with a lot of abdominal fat will have a large waistline. Abdominal fat cells release chemicals which make the body less sensitive to the insulin it produces. This is known as insulin resistance. As you know, type 2 diabetes happens because of insulin resistance.

Without exercise and a healthy diet, overweight and obesity can lead to type 2 diabetes over a short period of time. Following a diet for overweight people can help. Reducing body weight, even a little, allows the body's cells to become more responsive to insulin, and lower the risk of developing type 2 diabetes.

11.6 Diet for renal disease

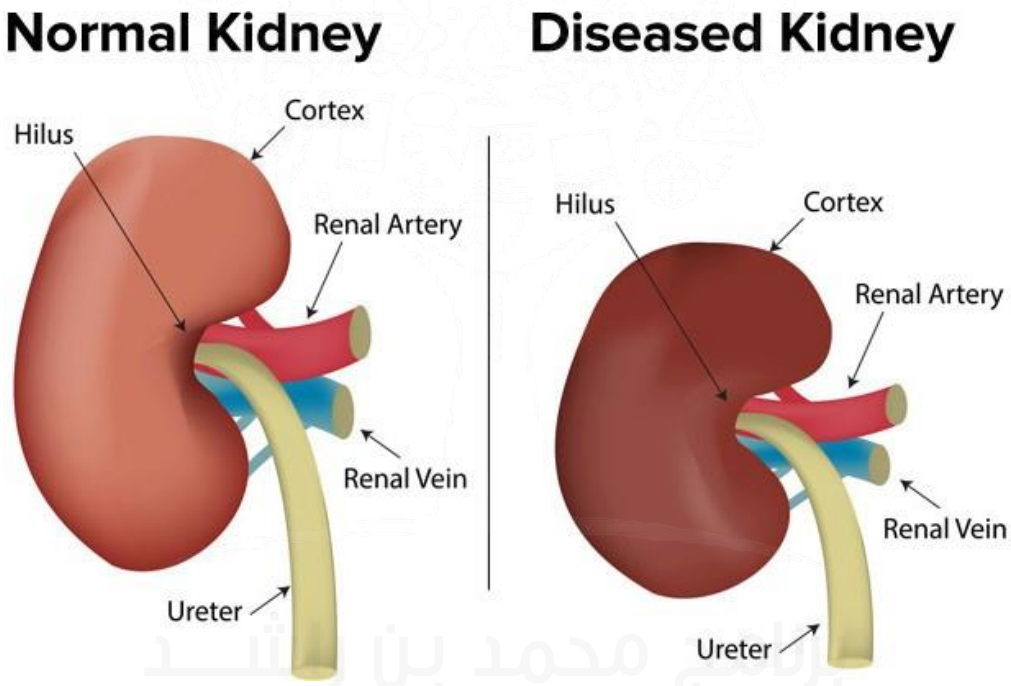
Renal disease

Keyword

renal

relating to the kidneys

Renal disease, also known as chronic kidney disease, is a chronic disease where the kidneys do not work as well as they should.



The function of the kidneys is to filter waste and excess fluid from the blood and pass it out of the body as urine. Therefore, as renal disease progresses, dangerous levels of fluid and waste can build up in the body as it is not being filtered out of the body.

Dietary recommendations for renal disease

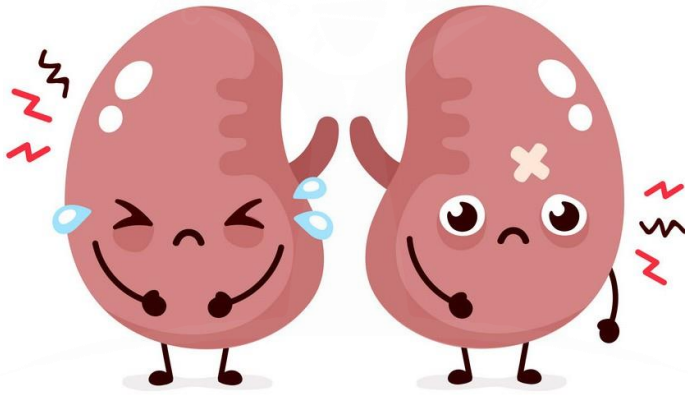
Nutrition advice will vary depending on the stage of the disease and the treatment that is needed. People who have renal disease will be given nutritional advice that may include some of the information on the following pages.

Low protein

Protein is an important part of the diet. Everyone needs protein for the growth and repair of cells. Having too little protein can cause the skin, hair and nails to become weak. But having too much protein can also be a problem, especially for people with renal disease.

When you eat more protein than needed, it cannot be stored, so it needs to be broken down. When our body breaks down protein, it produces by-products. These by-products are broken down by the kidneys.

Eating too much protein means that the kidneys must work extra hard. This extra work can cause even more damage to the kidneys. Therefore, people with renal disease need to make sure they limit the amount of protein in their diet.



Low-protein foods:

- Bread
- Fruits
- Vegetables
- Pasta and rice

High-protein foods:

- Red meat
- Chicken
- Fish
- Eggs

11.6 Diet for renal disease

Low potassium

Potassium is an important nutrient. It is found in almost all foods. Potassium is needed to help your muscles work, but too much potassium can be dangerous.

When people have reduced kidney function, the levels of potassium in the body can become too high. Having too much or too little potassium can cause muscle cramps, muscle weakness and heart problems. People with kidney disease must not eat too much potassium.

Low-potassium foods:

- Some fruits
- Some vegetables
- Bread
- Rice
- Pasta

High-potassium foods:

- Bananas
- Potatoes
- Beans
- Fish
- Cheese
- Nuts

Low phosphorus

The kidneys also work at keeping the level of phosphorus in the body at a healthy level. When the kidneys are not working properly, the levels of phosphorus in the body can increase. People with renal disease might be recommended to reduce their intake of phosphorus in their diet. Foods that are high in phosphorus include protein-rich foods such as meats, poultry, fish, nuts, beans and dairy products.

Low-phosphorus foods:

- Bread
- Popcorn
- Fruits
- Vegetables

High-phosphorus foods:

- Cheese
- Nuts
- Sunflower seeds
- Meat
- Fish

Further information

Depending on the stage of renal disease, doctors may prescribe medication called a phosphate binder. This helps to keep phosphorous from building up in the blood. A phosphate binder can be helpful, but renal disease patients still need to watch how much phosphorous they eat.

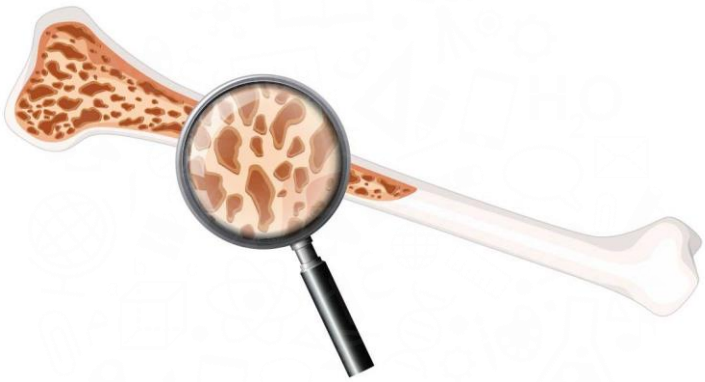
Think

Just because a food is low in protein, potassium or phosphorous it does not mean it is healthy to eat it in large amounts.

11.7 Diet for bone disease

Bone disease

At the beginning of the school year, you learned about the musculoskeletal system. One of the diseases associated with this system is osteoporosis.



Osteoporosis recap

Osteoporosis is a chronic bone disease where the bones in the body break down faster than they can be replaced. The bones become weak and porous.

Because of the weakened structure of the bones, they are more likely to break easily. The risk of developing osteoporosis increases with age. Women are more likely to develop it than men.

Osteopenia

Osteopenia is also a condition that happens when bones become porous and weaker than normal. Osteopenia is not as severe as osteoporosis, but it can increase your chances of developing oosteoporosis.

Dietary recommendations for bone disease

Calcium is needed to make the bones stronger and vitamin D is needed to help the body absorb calcium.

Calcium

Calcium is a mineral that is very important for bone health. Getting enough calcium can help to reduce the risk of developing bone disease. .

The best sources of calcium come from dairy foods such as:

- Milk
- Yoghurt
- Cheese

However, calcium can also be found in non-dairy foods such as:

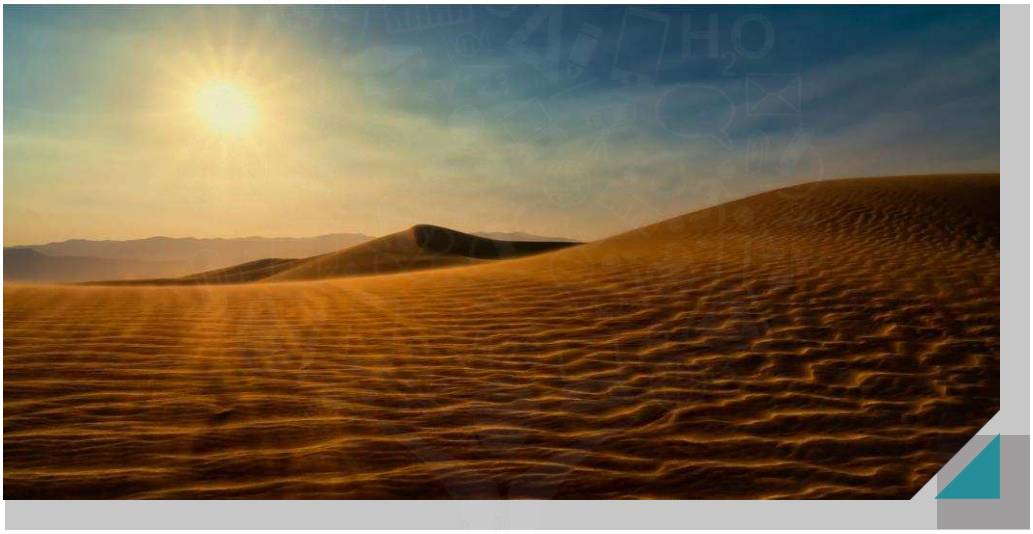
- Dark green leafy vegetables (such as kale, broccoli and cabbage)
- Tofu
- Soybeans
- Fish that you eat the bones (such as sardines)
- Foods fortified with calcium

11.7 Diet for bone disease

Vitamin D

Without vitamin D in the diet, calcium cannot be used properly by our bodies.

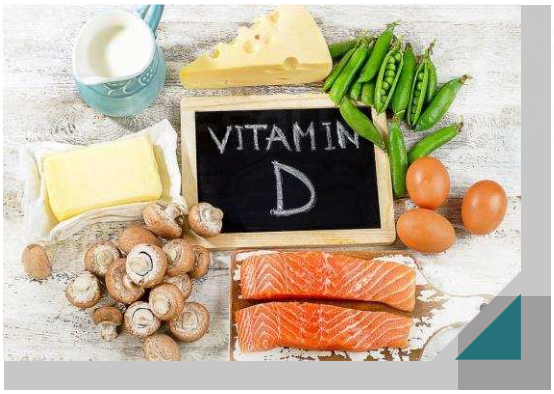
The best source of vitamin D is sunlight. Our bodies create vitamin D from sunlight on our skin when we go outdoors.



Most people can make enough vitamin D by exposing their hands, forearms and feet to the sun for fifteen to thirty minutes per day. In the UAE it is difficult to achieve this, especially in the summer months when temperatures are above 40 degrees when the sun is out.

Thankfully, there are also food sources of vitamin D. These include the following:

- Oily fish such as salmon, sardines and mackerel
- Red meat
- Eggs
- Fortified foods such as vitamin D water



Foods to eat less of

Research has found that some foods can actually increase the risk of developing bone diseases such as osteoporosis.

Caffeine

Coffee, tea and sodas contain caffeine. Caffeine can cause a decrease in calcium absorption, especially if a person regularly drinks more than three caffeinated drinks per day.

People who drink tea and coffee are recommended to add some milk to their drink to increase their calcium intake.

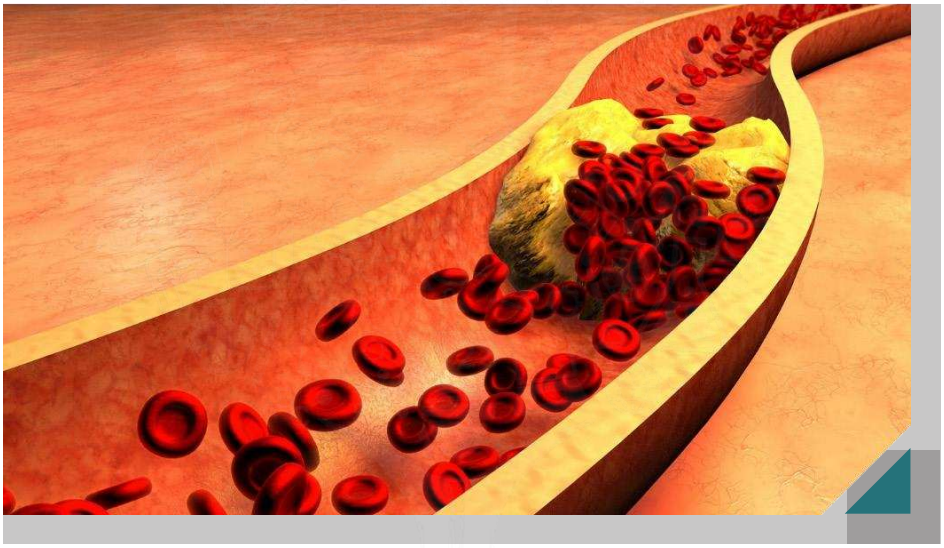
Sugary drinks

Fizzy, sugary drinks are similar to caffeine – they reduce the absorption of calcium. Swapping these drinks with milk or water is suggested.

11.8 Diet for heart disease

Heart disease

Heart disease covers a range of different illnesses that affect the heart. They generally refer to conditions that involve narrowed or blocked blood vessels that can lead to a heart attack, chest pain or stroke.



Did you know?

Heart disease causes 30% of the deaths in adults in the UAE. It is the largest cause of death in the region.

Dietary recommendations for heart disease

A healthy diet and lifestyle are the best way to fight heart disease.

Choose the right type of fats

All fats and oils are high in calories, so they should be used in small amounts. It is very important to choose the right type of fats.

Too much saturated fat increases the amount of cholesterol in the blood and causes heart disease. Trans fat is another type of fat which raises the amount of cholesterol in the blood. These fats should be limited.

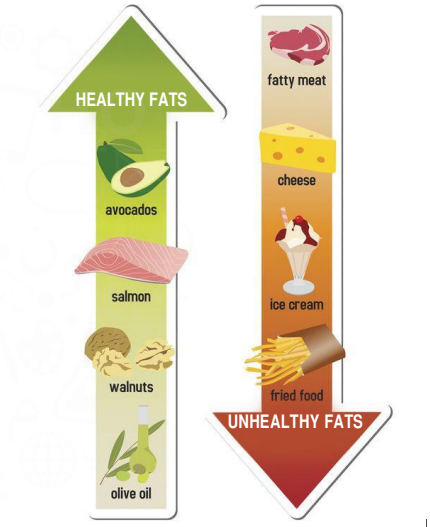
Unsaturated fats are a healthier choice of fats. These can be monounsaturated or polyunsaturated fats. It Is advised to replace saturated and trans fats with unsaturated fats.

Examples of monounsaturated fats include:

- Olive oil
- Avocado
- Almonds
- Pistachios

Examples of polyunsaturated fats include:

- Sunflower oil
- Vegetable oil
- Cashews
- Sunflower seeds
- Oily fish



11.8 Diet for heart disease

Reduce salt intake

Eating too much salt may raise blood pressure. Having high blood pressure increases the risk of developing heart disease. To keep your heart healthy, you must not eat too much salt each day.

Did you know?

Another word for salt is sodium. Sodium is often written on food labels instead of salt.

Further information

DASH diet

DASH stands for dietary approaches to stop hypertension. The DASH diet is recommended for people who have high blood pressure. Hypertensive people who follow the DASH diet can expect to see a reduction in their blood pressure in the short term.

The DASH diet is high in fibre and low in fat. It also provides all the other necessary nutrients.

Following the DASH diet plan may help to do the following things:

- Lower high blood pressure
- Reduce the risk of heart disease, heart failure and stroke
- Prevent or control type 2 diabetes
- Improve cholesterol levels
- Reduce the chance of kidney stones

Following the DASH eating plan

Use this chart to help you plan your menus or take it with you when you go to the shop.

Food group	Servings per day			Serving sizes	Examples and notes	Significance of each food group to the DASH eating plan
	1600 calories	2000 calories	2600 calories			
Grains	6	6-8	10-11	1 slice bread ½ cup of cooked rice, pasta or cereal	Whole wheat bread and rolls, whole wheat pasta, pita bread, bagel, cereals, oatmeal, brown rice and popcorn	Major sources of energy and fibre.
Vegetables	3-4	4-5	5-6	1 cup raw leafy vegetable ½ cup cut up raw or cooked vegetable ½ cup vegetable juice	Broccoli, carrots, green beans, kale, lima beans, potatoes, spinach, sweet potatoes, tomatoes	Rich sources of potassium, magnesium, and fibre.
Fruits	4	4-5	5-6	1 medium fruit ¼ cup dried fruit ½ cup fresh, frozen or canned fruit ½ cup fruit juice	Apples, apricots, bananas, dates, grapes, oranges, grapefruit, mangos, melons, peaches, pineapples, raisins, dates, strawberries	Important sources of potassium, magnesium, and fibre.
Milk and dairy products	2-3	2-3	3	1 cup milk or yogurt 20g cheese	Low-fat or fat free milk, reduced fat cheese, low-fat fresh or frozen yogurt	Major sources of calcium and protein.
Lean meat, poultry and fish	3-6	6 or less	5	50g cooked meats, poultry or fish 1 egg	Select lean meats, remove visible fats, roast or grill. Remove skin from poultry	Rich sources of protein and magnesium.
Nuts, seeds and legumes	3 per week	4-5 per week	1	1/3 cup nuts 2 Tbsp peanut butter 2 Tbsp seeds	Sunflower seeds, almonds walnuts, hazelnuts, peanuts, lentils	Rich sources of energy, magnesium, protein and fibre.

11.8 Diet for heart disease

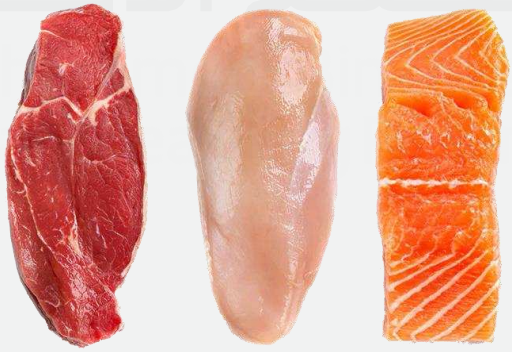
Recommendations of the DASH diet:

Bread, cereals and potatoes: These foods should be one of the main energy sources in the diet. A person with hypertension should try to eat 6-8 servings of cereals and their products every day. Wholegrain varieties are better than white.

Fruit and vegetables: It is recommended that people with hypertension should try to consume 4-5 servings of fruit and 4-5 servings of vegetables every day. Fruit and vegetables contain many nutrients which can help to lower blood pressure.

Dairy products: Aim to eat 2-3 servings of low-fat dairy products every day. Low fat is better than full fat, especially for people with high blood pressure. Try to find low-fat versions that don't have added sugar.

Lean meat and poultry: People with hypertension should aim to eat two or fewer servings of lean meat and poultry each day. The fat on the meat should be removed and it should be grilled or baked instead of fried.



Nuts, seeds and legumes: People should aim to consume 4-5 servings of nuts, seeds and legumes every week.

Fats and oils: Aim to consume 2-3 servings of unsaturated fats every day. Saturated and trans fats should be avoided.

Added sugar: Reduce the intake of added sugar. Added sugar is found in processed foods, sweets and sugary drinks.

In addition to the standard DASH diet, there is also a low sodium version of the diet. The patient or the healthcare provider can decide which version of the diet is best. With the standard DASH diet, a person can have up to 2300mg of sodium per day while those on the low sodium version can consume up to 1500mg of sodium in a day.