Module 1 The Nature of Diabetes

Introduction

The aim of this module is to allow the learner to have an understanding of the two types of diabetes, how the body is affected by the illness and what can cause diabetes.

Learning outcomes

- When this module is completed the learner will have a knowledge of diabetes
- They will understand the differences between the two types of diabetes

They will:-

- Have an understanding of insulin and how insulin works in the body
- Have a knowledge of the role glucose plays in the body
- Find out what is meant by pre-diabetes
- Have an understanding of the condition called gestational diabetes
- Gain a comprehension of the pancreas, where it is situated and its purpose
- Have an understanding of how diabetes affects the elderly.

What is Diabetes?

Diabetes is a serious health condition where the amount of blood glucose in the body is much higher than its requirements. Consequently, the body cannot use it as efficiently as it should do. This is due to the pancreas - a small organ that is situated behind the stomach, either not producing any insulin or it doesn’t produce enough insulin - this all depends on the type of diabetes a person has.

Fundamentally, there are two types of diabetes: type 1 and type 2. It is a common degenerative health problem for people all over the world, both male and female. Although diabetic symptoms and the conditions that are associated with diabetes can be treated to a certain extent, unfortunately there is as yet no known cure. It is crucial to spot the symptoms of diabetes sooner rather than later. This is to prevent any of the many serious complications associated with the condition developing, or progressing further, in patients that already have some of the serious problems linked to diabetes.

Although the name is similar, there are significant differences between the two conditions. Type 1 diabetes is also known as insulin dependent diabetes mellitus. It is very often referred to as juvenile diabetes as it occurs usually at birth, at a young age or before the age of forty.
However, there are some exceptions. It is a much rarer form of diabetes and the symptoms can develop very quickly.

The symptoms can present themselves within days or weeks. Type 2 diabetes occurs in men and women and is known as non insulin dependent diabetes mellitus. The symptoms of type 2 diabetes show in the patient a lot slower than they do in type 1, and in some cases patients don’t know they have the condition. A routine health check often discovers diabetes type 2.

This condition is often found in people who are older than forty and overweight. Nevertheless, with sedentary lifestyles, availability of fast foods 24/7 and lack of physical activity, people are developing diabetes type 2 at a much younger age. Sadly, with the expansion of technology and computer games and video game consoles people are less active and more immobile than they were.

Some children prefer to sit and play a football game on their console rather than actually being outside kicking a football around. This is encouraging an inactive lifestyle for the future. High fat and high calorie snacks have a part to play too in increasing the risk of developing diabetes. As the range of snacks increase, so do the waistlines.

Activity 1 in your Activities Workbook relates to the section above

Activity 2 in your Activities Workbook relates to the section above

**Type 1 Diabetes**

Type 1 diabetes is a very serious illness and the symptoms can show themselves dramatically. A sudden weight loss is the most commonly noticed symptom of diabetes type 1. This illness is recognised as an autoimmune disease. This is due to the body destroying the cells that produce insulin. As a result, no insulin is being made. Therefore type 1 patients have to inject insulin into themselves to stay alive. Insulin was discovered in 1922. Prior to this children with type 1 diabetes did not survive. Thankfully with modern technology and research into the condition people are living longer and with a better quality of life than they did before the discovery of insulin. However, it is still very important for the sufferer not to take this illness lightly and for them to take care of themselves.

With this type of diabetes the body needs to rid the excess glucose and does so through the kidneys, it does this by passing lots of urine. This is because the cells will not allow the insulin to enter, therefore the body needs to rid the glucose one way or another. Type 1 diabetes accounts for 15% of all cases and great care has to be taken with type 1 sufferers, for if they don’t take their insulin they will be very ill and other serious complications will develop. It isn’t just a case of taking a shot of insulin everyday; there are many other factors to consider to live a healthy life. The diet has to be looked at, eating lots of refined carbohydrates, sugar and fatty foods will increase the risk of heart disease. As will drinking large amounts of alcohol and smoking.
The patient has to take regular exercise too and they also have to have frequent checkups with their doctor to ensure that everything in the body is working the way it should be, such as the kidneys. Regular screening eye tests check that diabetes isn't causing problems with the eyes which can lead to blindness. It is important that the patient attends all of the tests allocated to them.

Other tests are usually performed by the diabetic nurse to ensure that the patient's feet are healthy.

Unhealthy feet in a diabetic is more than just a callus or a corn, it can be life threatening if left untreated.

The diabetic care team monitor the blood glucose of the patient and also discuss the patient's medication to see if it is working correctly or if it needs altering in any way.

Activity 3 in your Activities Workbook relates to the section above

Activity 4 in your Activities Workbook relates to the section above

Patients have numerous areas on the body where they can inject the insulin, which include the buttocks, thighs, stomach and upper arms. Some patients inject in the same place all the time. The problem with this is that it can create bruising. It is also likely that there will be fat deposits under the skin if the injections are inserted in the same place all the time. This makes the skin look lumpy and also delays the absorption of the insulin. There are many forms of injecting the insulin; this can be by a syringe, insulin pump or a pen device. The injection has to be inserted just under the skin so the needle is only a small one. Unfortunately insulin cannot be taken as a tablet form as it is a protein and would be digested in the stomach before it had the chance to do its job. It can be a very anxious time for the patient who has been informed that they have diabetes, so to be told that they have got to give themselves injections every day can be particularly distressing. Nevertheless over time the procedure becomes straightforward and a part of their daily life. Plus many patients say how much better they feel since they have been taking insulin.

The exact cause of type 1 diabetes is not known, however it is thought to run in families, be triggered by a virus such as rubella, mumps, measles, polio, encephalitis, Epstein barr virus, or some other autoimmune disease. Unlike type 2, type 1 is not at all due to the lifestyle of the patient.

Activity 5 in your Activities Workbook relates to the section above
Type 2 Diabetes

Around 85% of the diabetic population have type 2 diabetes. Many people don’t even know they have the condition as in some cases the symptoms are not severe enough for the person to think that there is a problem. What happens with this condition is that either the insulin that is produced by type 2 diabetics is not working properly or the body isn’t producing enough of it. Diabetes is more common in the Native Americans, the Hispanic, Latino population and people of the Asian community.

Unlike type 1, type 2 diabetes can for some patients be treated with diet and lifestyle change alone. Other patients have to take tablets to reduce their blood sugar level as well as eating a healthy diet and taking regular exercise. A number of patients find that this just isn’t enough to control their blood sugar level, and insulin has to be administered. It is possible to be a type 2 diabetic and have to take daily insulin injections. This is usually due to the fact that with diet, exercise and tablets the blood sugar level still cannot be controlled.

Understanding the Pancreas

The pancreas is a small organ that sits just behind the stomach. It is sandwiched between the stomach and the spine and sits close to the gallbladder and the liver. It is an organ of the digestive and the endocrine systems. It lies in the upper part of the abdomen and consists of a tail, body and head and is approximately six inches long. This yellowish coloured organ makes insulin and secretes digestive juices into the small intestines. This helps to break down food that has left the stomach.

What is insulin?

Insulin is a hormone that is produced by the pancreas. It allows the glucose to enter the body’s cells. These cells are called the islet cells. This is where it is used as a fuel to give energy. Insulin regulates the amount of glucose that enters the blood. If the body didn’t have any insulin at all, you could eat lots and lots of food but still be in a state of starvation. This is why people with undiagnosed type 1 diabetes lose so much weight.

What is glucose?

Glucose is a form of sugar that is found in the blood. All the cells and organs within the body need this energy source. The glucose in the blood comes from the foods we eat, mainly carbohydrates such as bread, pasta, fruits and vegetables. Once eaten the digestive system breaks the foods down which then travel to the liver.

The liver then turns the consumed carbohydrates into glucose. The glucose is stored in the liver and the muscles as glycogen. This is then carried throughout the body providing the cells with the fuel. This process stops the body from using fat as an energy source.
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Activity 1

How many of your patients have diabetes? Do some research into who has the condition and which type of diabetes they have? Ask questions such as: how long have they had the condition? When were they first diagnosed? What symptoms did they have prior to a diagnosis? How have they managed their condition so far? Ask any other questions that you feel would benefit your studies.
Activity 2

Take a look at the people around you, how many of them do you think could be at risk of developing diabetes type 2 due to their lifestyle? What is it that they are doing that makes you believe that they are at risk?
Activity 3

Why do you think that it is important for sufferers of diabetes to look after themselves?

Activity 4

How do you think that diabetics could keep themselves healthy? What ways could the patient improve their health?