DIABETES MELLITUS

THE IDEA

Diabetes mellitus is a serious disease, which is becoming increasingly common throughout the world. It is caused when there is too little or no insulin in the body, or when the insulin produced by the body does not work properly.

Information compiled by the World Health Organisation (WHO) shows that approximately 150 million people suffer from diabetes mellitus worldwide, and that this number may well double by the year 2025. Much of this increase will occur in developing countries and will be due to population growth, ageing, unhealthy diets, obesity and sedentary lifestyles. By 2025, while most people with diabetes in developed countries will be aged 65 years or more, in developing countries people with diabetes will be in the 45–64 year age range and therefore affected in their most productive years of life.

Through healthy life styles – the promotion of good eating habits (high in complex carbohydrates such as cereals, high in fruits and vegetables and low in fats) and adequate exercise, diabetes can be controlled and even prevented, thus reducing the complications associated with this disease.

What is diabetes?

Diabetes is an illness that occurs as a result of problems with the production and supply of insulin in the body.

Most of the food we eat is turned into glucose, a form of sugar. We use glucose as a source of energy to provide power for our muscles and other tissues. Our bodies transport glucose in our blood. In order for our muscles and other tissues to absorb glucose from our blood, we need the hormone called insulin. Without insulin, our bodies cannot obtain the necessary energy from our food.

Insulin is made in a large gland behind the stomach called the pancreas. When a person has diabetes, either their pancreas does not produce the insulin they need (Type I diabetes – Insulin Dependent Diabetes Mellitus, IDDM), or their body cannot use its own insulin effectively (Type 2 diabetes – Non-Insulin Dependent Diabetes Mellitus, NIDDM). As a result, people with diabetes cannot use enough of the glucose in the food they eat. This leads to the amount of glucose in the blood increasing. High levels of glucose in the blood can lead to medical complications such as strokes, heart attacks and kidney failure and also reduce resistance to infection.

Recent evidence shows that malnutrition within the womb leading to poor birth weight predisposes individuals to develop diabetes mellitus in later life.

At present there is no cure for diabetes but we can help to prevent and manage it.

Types of diabetes

In Type 1 diabetes, the pancreas produces very little or no insulin, which is essential for survival. This form is more rare and develops most frequently in children and adolescents, but is being increasingly noted later in life. This type of diabetes develops quickly within a few weeks.

In Type 2 diabetes, the body is unable to respond properly to the action of insulin produced by the pancreas. This type of diabetes is much more common and

accounts for about 90 per cent of all the diabetes cases worldwide. It occurs most often in adults but is noticed increasingly in adolescents as well. Type 2 diabetes develops slowly and is usually detected during the course of a routine medical check-up.

Another type of diabetes is a temporary form of diabetes that sometimes occurs in pregnant women. It is called 'gestational diabetes'. It usually disappears when the pregnancy is over. Women who have this type of diabetes are at higher risk of developing Type 2 diabetes in later life.

In this Activity Sheet we concentrate on the more common Type 2 diabetes.

Who is most likely to get diabetes?

1 ***Those who have a history of diabetes in close family members***.

The closer the relative, the greater your risk of diabetes.

2 ***Those who are overweight***.

80 per cent of people with Type 2 diabetes are overweight. Body Mass Index (BMI) is a measure of obesity or how overweight a person is. A person with a BMI of over 25 is regarded as overweight. BMI is calculated by dividing the individual's weight in kg by the square of his or her height in metres (kg ÷ m^2) – see page 181 of this Sheet.

3 ***Those who do not exercise***.

The less exercise you do, the greater your chances of developing diabetes.

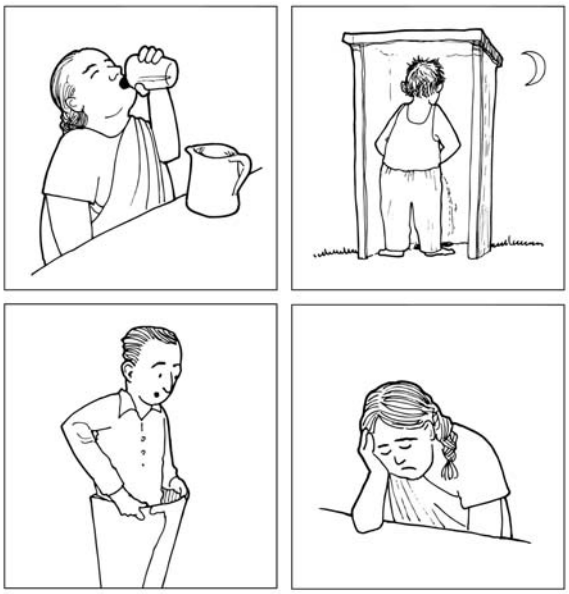
4 ***Those who are over 40 years old***.

The older you are, the greater your risk of diabetes.

How can we recognise diabetes?

The classic symptoms of diabetes include:

- Feeling very thirsty.
- Passing urine frequently, especially during the night.
- Loss of weight.



Classic symptoms of diabetes

However, these symptoms may be less noticeable or even absent in Type 2 diabetes.

How can we prevent and control Type 2 diabetes?

People who have good eating habits and take adequate exercise may prevent the onset of diabetes. Once a person has developed diabetes, a well-balanced diet and exercise will help to control the disease and may reduce or eliminate the need to use medicine. Good control of diabetes will also prevent the complications of diabetes, such as heart disease, blindness, reduced blood supply to the limbs and kidney failure. The adoption of a healthy life style allows someone with diabetes to enjoy a better quality of life and can help prevent diabetes in those prone to getting it.

Type 1 Diabetics need specific attention to timing of meals in relation to insulin intake.

Type 2 Diabetics need to eat a healthy well-balanced diet that is good for everyone in the family and not just them. When diabetics and their families realise this then the burden of living with diabetes is eased. Also many diabetics believe that they have 'sugar disease' and so they need only to make sure they do not eat sugar. This is NOT true – they need to be careful to lower their fat intake too and increase their intake

of complex carbohydrates like high fibre foods such as cereals.

About a third of people with Type 2 diabetes need to take insulin to reduce the level of glucose in their blood. If the doctor prescribes insulin, it is very important to follow both the treatment and a healthy lifestyle.

Insulin is unavailable and unaffordable in many poor countries despite being listed by WHO as an essential drug. Access to insulin by those who require it is a subject of special concern to international health agencies and national health authorities. It is also a challenge to keep insulin cool in hot climates where electricity supplies are poor and refrigerators unavailable. Insulin can be kept cool when vials are stored in earthenware pots whose tops can be covered with moistened cloths and kept in the shade.

Activities

Understanding

Invite a health worker who knows about diabetes to talk to children about what it is and how it can be prevented.

Tell 'Omar and his Grandmother's Story' to the children. Ask them to role-play the story and discuss what they have learned from it.

Omar and his Grandmother's Story

Omar loved his grandmother very much but she would always tell him that she loved him more. When she knew he was visiting she would make all the foods he liked to eat, which were also her favourites — like fried potato chips and sweetmeats that had lots of butter and sugar in them. One day when visiting his grandmother, Omar noticed she was not her usual self. She complained she was feeling tired and thirsty all the time and kept wanting to urinate.

Omar told her he would take her to the health worker because he remembered reading a poster at the clinic that said that these were some of the signs of diabetes — the feeling of being thirsty and tired all the time and wanting to urinate, especially during the night. 'What would you know?' said Omar's grandmother. 'Diabetes is for those who have a lot of sugar and I take no sugar in my tea!' Omar agreed that as he was no expert she should go see an expert and so he arranged for his mother to take them to the health worker.

A simple blood test showed that Omar's grandmother had Type 2 diabetes. The health worker told Omar and his grandmother that she was lucky to have caught the disease in time and that by controlling her diet, losing some weight and taking exercise she could control her diabetes and would not need to take medication or insulin injections.

'But I eat very little sugar, although I do have a sweet tooth and treat myself to some sweetmeats when Omar visits!' admitted Omar's grandmother.

The health worker explained that it was as important to eat less fat as it was to eat less sugar even though diabetes is known as 'the sugar disease'. The grandmother looked sad but Omar told her that this was not a special diet she was on, the whole family could eat what she should be eating and would be healthier, by eating less fat and sugar, more cereals, vegetables and fruit and by exercising! For if Omar's grandmother had diabetes then he was more likely to get it. The health worker told them that it was a disease that could be inherited and so Omar and his family should take precautions to prevent this happening by eating more healthy diets and exercising.

Omar's visits to his grandmother are still just as much fun. They now take walks together three times a week, where they have lots of time to talk and hear each other's stories of the day. They also go shopping to the vegetable market and try cooking new recipes that their whole family enjoys.

Finding out more

Children can find out from the local health department or hospital:

- How many cases of diabetes are there in the local area?
- Has there been an increase in the number of diabetes cases over the past years?
- How can insulin be kept cool if there is no electricity or refrigerator?

Children can interview members of their own families or friends to find out:

- Does anyone suffer from diabetes and what type?
- Do people know what diabetes is and how to prevent it?
- How do people with diabetes manage the disease?
- Do people with diabetes, and their families and carers, realise that it is as important for them to avoid eating fat, to lose weight and have regular exercise, as it is to avoid eating sugar?
- Are there local myths and beliefs about diabetes?

Taking action

- Children make up healthy well-balanced menus of foods high in fibre and 'complex' carbohydrates (such as rice, pasta, bread, chapattis, cereals, potatoes, yams, cassava) and low in sugar and fat. These are good for people with and without diabetes and healthy for all the family.
- Older children can make healthy recipe books to help people with diabetes and their carers understand what they CAN eat rather than what they cannot eat.
- Children can calculate their Body Mass Index (BMI) or that of their parents. This is a measure of obesity or how overweight a person is. The risk of developing diabetes in adults with a BMI of over 30 is five times that of adults with a BMI of less than 25. BMI is calculated like this:
  - Work out your height in metres and multiply the figure by itself*.
  - Measure your weight in kilograms.
  - Divide the weight by the height squared*. For example, you might be 1.6 m tall and weigh 65 kg. The calculation would then be: 1.6 x 1.6 = 2.56. BMI would be 65 divided by 2.56 = 25.39.

Sara's mum weighs 65 kg and is 1.73 m tall. Sara worked out her mum's BMI as follows: 1.73 x 1.73 = 2.99; 65 ÷ 2.99 = 21.7, which is in the desirable range.

However, Sara's dad weighs 80 kg and is 1.75 m tall. Sara worked out her dad's BMI: 1.75 x 1.75 = 3.06; 80 ÷ 3.06 = 26.1, which is overweight.

The desirable range for BMI is 20 to 24.9, while 25 to 29.9 is overweight and a BMI of over 30 is obese. If you find a BMI of 25 or over, then the person needs to lose weight by exercising more and eating less, reducing intake of fat and sugar in particular.

- We all deposit fat around our bodies differently. It has been shown that people who are fatter around their abdomen and tummy area (apple shaped) rather than their hips and thighs (pear shaped) have a greater risk of insulin resistance.

Take a tape measure and measure around the tummy across the belly button (= waist) and around the hips by the largest part of the buttocks (= hips). Divide the waist by the hips (waist ÷ hips) to give you the ratio. If this number is 1.00 or above in men and 0.87 or above in women it is too high and the person needs to exercise and eat less fat and sugar to lose weight.

- Children can encourage everyone to exercise. Find out the types of exercise people like doing (walking, jogging, swimming, dancing, gardening, etc.) and make an activity diary for family members and friends to find out when they can make time to exercise.
- Children can help to organise an open day at school on the theme of diabetes, ideally on World Diabetes Day (14 November). They can make posters about diabetes on:
  - Benefits of regular exercise.
  - Healthy foods.

They can also hold cookery demonstrations and show how healthy meals can be planned and prepared.

Follow-up

Children can talk to people who came to the Diabetes Day and find out what they remember. Do they know how Type 2 diabetes can be prevented and managed?

Have family members and friends filled in their activity diaries?

Children can again calculate their and their family members' BMIs to see if these are in the desirable range (20 to 24.9).

Children can measure again parents' waist to hip ratios and see if they are now below 1.0 (for men) and 0.87 (for women).

References

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