

HOW TO LIVE WITH DIABETES

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Normally whenever a doctor treats any patient, his duty is limited to diagnose and treat the ailment. Diabetes mellitus is the perhaps, the only disease where the Physician has got an added responsibility of **educating the patient** as well.

1. INTRODUCTION

In Diabetics, the body does not produce enough insulin. Some patients produce more insulin but body does not respond to it due to insulin resistance. This results in a high level of glucose in the blood due to poor utilisation of glucose while vital organs starve for insulin and suffer slow damage.

There are two main types of diabetes mellitus:

- a. Type 1, (earlier referred as insulin dependent diabetes mellitus, IDDM or sometimes juvenile-onset Diabetes Mellitus). People with this type of Diabetes Mellitus make little or no insulin in their body, and need regular insulin injections to manage the problem.
- b. Type 2, (earlier referred as non-insulin dependent diabetes mellitus, NIDDM, or sometimes adult-onset Diabetes Mellitus). This is the most common form of diabetes mellitus, and is strongly associated with obesity. Main reason being bad lifestyle viz, lack of exercise and excessive consumption of junk food.
- c. Gestational Diabetes (which happens to some females during pregnancy) needs separate discussion with doctor as Diagnostic criteria and management guidelines are different for gestational diabetes.

2. DIAGNOSIS OF DIABETES: Diagnosis of Diabetes is made with any of following readings

- a. Fasting blood glucose : Normal <100 mg%, Pre-diabetes: 100-125 mg%, Diabetes >126 mg%
- b. Post Prandial blood glucose (2 hours after 75 gm glucose orally):
Normal <140 mg%, Pre-diabetes: 140-200 mg%, Diabetes >200 mg%
- c. HbA1c: Normal 4.5% to 5.6%, Pre-diabetes: 5.7% - 6.4%, Diabetes > 6.5%

3. MECHANISM OF DIABETES:

In type 2 diabetes, either the body does not produce enough insulin or the cells ignore the insulin. Insulin is necessary for the body to be able to use glucose for energy. When you eat food, the body breaks down all of the sugars and starches into glucose, which is the basic fuel for the cells in the body. Insulin takes the sugar from the blood into the cells. When glucose builds up in the blood instead of going into cells, it can lead to diabetes complications.

Diabetic complications can affect almost every part of body especially kidneys, heart, brain, eyes and foot. Therefore once someone is diagnosed as a Diabetic, he has to suddenly learn a lot about diet, exercise and necessary checks to avoid and delay these complications. Many of them soon become experts but unfortunately many patient neglect proper care during initial years only to regret later.

4. GUIDELINES FOR ONGOING MEDICAL CARE FOR PATIENTS WITH DIABETES:

- Self-monitoring of blood glucose (individualized frequency)
- Glycosylated Haemoglobin (HbA1c) testing (2–4 times/year).
- Patient education in diabetes management.
- Medical nutrition therapy and education.
- Eye examination (annual)
- Foot examination (1–2 times/year by physician; daily by patient)
- Screening for diabetic nephropathy (annual) – Check urinary microalbumin/creatinine ratio.

- Blood pressure measurement (quarterly at least if stable). Maintain below 130/80 mm Hg.
- Lipid profile and serum creatinine (estimate GFR/Creatinine Clearance) (annual)
- A diabetic must **completely stop smoking**. Smoking is injurious to health to anyone but much more to a diabetic. The risk of Heart attacks & strokes is many times more in such patients.
- Alcohol intake to be reduced or stopped if possible.

5. TARGET GOALS TO BE ACHIEVED

- a) Fasting Glucose: 80 - 110 mg (80 - 130 mg for elderly)
- b) Post Prandial Glucose PPG: 2 hours after any meal: < 140 mg (< 170 mg for elderly)
- c) HbA1c : Less than 6.5% (Less than 7% for elderly)
- d) Blood Pressure : Less than 130/80 mm Hg
- e) Cholesterol: LDL should be less than 70 mg – Discuss with Diabetologist individualized goal.

6. RECOMMENDED VACCINATIONS (IMMUNIZATIONS) FOR DIABETIC PATIENTS

1. Flu Vaccine (influenza) – Once a year September/October best time.
2. Pneumococcal Vaccine – to prevent Pneumonia and meningitis
3. Hepatitis B Vaccine (Better Hepatitis A + B combined vaccine – Twinrix)
Total three doses – Day 0, 1 month, 6 months

7. HYPOGLYCAEMIA [LOW BLOOD SUGAR]

HYPOGLYCAEMIA is the most important phenomenon, which all those diabetics who are either on insulin or on antidiabetic tablets must know. Hypo means low & glycaemia means sugar i.e. low blood glucose. Some times the level of glucose in blood falls below normal. If the patient is alert and has been told about signs & symptoms of hypoglycaemia, he can himself recognise it in the beginning only and treat it by taking glucose, sugar orally (even honey, sandwich, biscuits etc. work well for mild hypoglycaemia). However if patient fails to recognise it early, he may eventually become unconscious and then will need hospitalisation and intravenous glucose.

- 1) Symptoms: Patient will usually feel hungry in the beginning. This is usually followed by sweating, tremors of hands, weakness, irritable, palpitation and headache, which are important warning symptoms. Later, patient feels giddiness and may even become unconscious.
- 2) Causes of Hypoglycaemia
 - a) Accidental overdose of insulin or antidiabetic tablets.
 - b) Forgetting to take meals at proper time.
 - c) Sudden unaccustomed vigorous exercise or physical activity like playing football, tennis or cycling etc. These physical activities will cause burning of glucose because of increased energy requirement. If patient has taken his usual amount of tablets of insulin this will become overdose because glucose has already been burnt during exercise.
 - d) All the diabetic patients must not skip their meals because some brands of insulin and most oral antidiabetic medications remain effective for 24 hours or more. If a patient whose Diabetes is controlled on tablets decides to skip the meal along with the tablet, the remaining effect of previous dose taken may still cause hypoglycaemia. There should not be even long gaps between the meals. Regular breakfast, lunch & dinner is must for all the diabetic patients on medications or on insulin. You must take small size meals but at frequent intervals (eat 5-6 times daily) to prevent Hypoglycaemia.
- 3) Treatment of Hypoglycemia: Try to give some sugar or glucose (or any juice/biscuit or anything available to eat or drink) by mouth if patient can swallow. After the episode patient must contact his treating physician. He will either change the dosage of anti-diabetic drug or readjust meals or discuss changes in life style. There are some other factors as well, which your physician can analyse.

WHENEVER HYPOGLYCAEMIA IS SUSPECTED PATIENT SHOULD IMMEDIATELY EAT ANYTHING OR IF SYMPTOMS ARE SEVERE, TAKE SOME JUICE, GLUCOSE OR SUGAR & CONTACT YOUR PHYSICIAN AT FIRST OPPORTUNITY.

8. COMPLICATIONS:

Most of the complications do not have any satisfactory treatment. So all the diabetics must try to prevent them or at least delay the onset by many years through proper control of Diabetes.

Diabetes affects almost all the organs of the body. Most of the complications are slow in onset and appear after many years depending upon quality of Diabetic control.

- A. EYE - Retinopathy, a disease in the retina of the eye that can cause blindness.
- B. KIDNEYS - Nephropathy, a kidney disease, that can lead to kidney failure.
- C. BLOOD VESSELS - Atherosclerosis, hardening or blockage of arteries, that can lead to heart attack and stroke. It can also cause poor circulation in the legs and feet.
- D. NERVES - Peripheral neuropathy, or damage to the nerves in the limbs, which can cause numbness and pain in the hands and feet. This, along with poor circulation, can result in serious foot and leg infections that may require amputation.
- E. SEXUAL DYSFUNCTION - The affection of nerves apart from causing problem of sensation can also cause impotence which in many persons is psychologically disturbing. Impotence is usually a late complication.
- F. Autonomic neuropathy, which may cause problems with digestion, diarrhoea, impotence, a fast heartbeat or tachycardia and low blood pressure.
- G. SKIN INFECTIONS - Especially fungal infections such as ringworm, jock itch, and athlete's foot. Other bacterial infections are also common and can be life threatening.
- H. Vaginal infections, as high levels of sugar encourage the growth of yeast.
- I. Urinary tract infections.

9. DIABETIC FOOT CARE:

American Diabetes Association estimates that one of every five diabetic patients coming to the hospital is having with foot problems. Diabetic patients are at greater risk of foot problems because the damage to nerves from diabetes and also due to same reason their blood flow to legs and foot is less. Delay in the treatment of foot problems, can lead to full or partial amputation of foot. American Diabetes Association has issued guidelines for foot care of diabetic patients. Follow these guidelines to keep your feet healthy:

- Take care of your diabetes. Ask your doctor to monitor blood sugar and keep it under total control.
- Check your feet every day. Look for Red spots, sores, swelling, and blisters. If you cannot see under your feet, you can use a mirror or take someone's help.
- Be more active. Regular physical activity and exercise under your doctor's supervision is must.
- Wash your feet every day. Dry them carefully, especially between the toes.
- Keep your feet softer and maintain smooth skin. Apply regularly any moisturising lotion or oil, but do not apply between your toes.
- If need to cut your nails and you can reach them, cut them straight. Do not cut your nails to the corners.
- Must wear shoes and socks all the time. Diabetics should avoid going barefoot outdoors to prevent the risk for cuts and infections. Wear comfortable shoes that fit well. Check inside your shoes before wearing them and make sure the lining is smooth and does not have any object inside.
- Do not use any hot water bottles, pads, or electric heating blanket. You can burn your feet without even realizing.
- Diabetics should avoid crossing their legs when sitting because this reduces blood circulation in the legs and feet.

10. HEALTHY EATING CAN HELP YOU TO CONTROL YOUR DIABETES BETTER.

Good dietary habits and adequate activities along with medications are important for good diabetes control. Good diabetes control means keeping your blood sugar level as close to normal (non- diabetic level) as possible.

This leaflet can help you to plan your own meals until you see a dietitian in our hospital, who will give you more information on your own diet

General guidelines

1. Avoid all kinds of sugary foods and drinks.
2. Have regular meals each day and try to eat plenty of salad before each meal. It is better to have small and frequent meals (at least 5 meals a day). It is not advisable to have large meals with long gaps in between meals.
3. Choose cereals and grains that are high in fiber and low in fat such as steamed brown rice, oatmeal, and whole wheat bread more often.
4. Enjoy 2 servings of fruits each day (1 serving of fruit = 1 small orange or ½ banana)
5. Eat at least 2 servings of green leafy vegetables per day.
6. Choose lean meat, skinless poultry & fish, low fat & non- fat dairy products, less than 3- 4 eggs per week.
7. Cut down on oils and salt in cooking.
8. Avoid alcohol intake especially if you are overweight or on sulphonylurea.
9. Keep active and enjoy daily activities such as walking, cycling and other aerobic exercises.
10. Achieve and maintain a reasonable body weight. (BMI between 19 to 25). B.M.I. is Body Mass Index and is calculated as weight in Kilograms divided by height square in meters.

$$\text{BMI} = \text{W}/\text{H}^2 \quad \text{where W= weight in Kg. H=Height in meters}$$

Then... what can I eat ?

The key is to eat balanced meals based on unrefined and high fibre cereals. And you can also include some free foods in your diet. Don't forget to cut back on sugars and fats!!!

TRY TO AVOID THESE

- a. Too Much Sugar : Sugar, glucose, jam, honey, Sweets, chocolate, ice- cream, Condensed milk, chocolate milk, Mangoes, Grapes, Dates, Fruit pies, cakes, cookies, Soft drinks, fruit juice, Beer, sweet wines
- b. Too Much Fat: Fatty meat, salami, sausages, luncheon meat, Chips, pastries and deep fried foods, Instant noodles & cup noodles, Salad dressing, cream, non- dairy creamer, coconut cream, Oil, butter,
- c. Smoking & Alcohol

EAT IN MODERATION

Cereals: rice, brown rice, pasta, noodles preferably wholemeal bread

Fruits: 2 servings per day, Starchy vegetables: carrots, potatoes, corn

Skinless poultry, lean meat & Fish

Non fat or low fat dairy products such as skim milk, yoghurt(low fat), low fat cheese, cottage cheese

Soya beans, red beans, kidney beans & lentils 2- 3 eggs per week

FREE FOODS

All kinds of green leafy vegetables such as Spinach, Watercress, Lettuce, Broccoli, Brussel sprouts, onions, peppers, cucumber, celery, cabbage, green beans

Clear soup, plain tea or coffee, "Diet" or sugar- free soft drinks, plain water or mineral water.

Low fat salad dressing, vinegar, herbs and spices, lemon, ginger, garlic, vinegar, pepper

Sugar free candies, low fat popcorn, agar with artificial sweetener.

8. SOME USEFUL WEBSITES FOR DIABETICS.

- a. <http://www.abhaynigam.com>
- b. <https://www.diabetes.co.uk/>
- c. <http://diabetesindia.com/>
- d. <http://www.desidieter.com/index.html>
- e. <http://www.diabetes.org>
- f. <https://childrenwithdiabetes.com/>
- g. <https://www.niddk.nih.gov/health-information/diabetes>

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