Nutrition & Diet Therapy
Third Stage
First Semester 2023-2024

Lecture Nine : Diet Therapy; Part 1

Ass.Lec. Iman Hadi Auda
Ass.Lec. Maryem Jawad Abd alateef

Branch of Basic Medical Sciences
College of Nursing
University of Basrah

Overview of Diabetes Mellitus

- Diabetes is a chronic, degenerative disease that affects the way body uses food. In normal digestion, body converts sugars, starches and other substances into glucose, which is carried by the blood to every cell in the body.
- Blood glucose is controlled by two hormones from the beta cells of the pancreas: insulin, which lowers blood sugar, and glucagon, which raises it. A third hormone, somatostatin, regulates the secretions of these two hormones.
- People with diabetes may be unable to produce sufficient insulin or to use insulin effectively, or they may have both types of abnormalities.
- Diabetes is not a disease, which can be cured. It can only be kept under control by the patient with the help of the nutritionist assisted by the physician.

➡ **If not kept under control, a number of complications occur. These include:**

(a) loss of sensation in peripheral nerves, resulting in injury, infection and amputation of lower extremities.

(b) Eye disorders leading to blindness

(c) Thickening of arteries

(d) Kidney dysfunction.

TABLE 21-1 Symptoms of Diabetes Mellitus

- Frequent urination (polyuria)
- Dehydration, dry mouth
- Excessive thirst (polydipsia)
- Weight loss
- Excessive hunger (polyphagia)
- Blurred vision
- Increased infections
- Fatigue

Glossary

- **Glycemic index:** A measurement of how fast starches and sugars metabolize in the blood stream. It indicates how quickly specific foods affect blood sugar levels based on a scale of 1 to 100.
- **Hyperglycemia:** Condition that occurs when the glucose in the blood exceeds the normal range (the normal range for blood sugar levels is 70 to 120 mg/ml).
- **Hypoglycemia:** Condition that occurs when the glucose in the blood falls below normal range (the normal range for blood sugar levels is 70 to 120 mg/ml).
- **Hypoglycemic agent:** A drug sometimes used by diabetics not receiving insulin to assist in lowering blood sugar levels. It is not a hormone.
- **Ketoacidosis:** Formation and accumulation of ketone bodies in body tissues and fluids.
- **Polydipsia:** Excessive thirst.
- **Polyphagia:** Excessive hunger.
- **Polyuria:** Excessive urination.

Classification of Types of Diabetes Mellitus

Type I is Insulin Dependent Diabetes Mellitus (IDDM):

- About 10 to 20 per cent of known cases of diabetes are of Type I.
- There is no insulin or insufficient insulin to regulate blood glucose, because the beta cells are destroyed or are very few.
- The reason for the destruction of the beta cells can be an auto immune reaction, viral infection, genetic aberration and/or stress.
- It may occur at any age but a large number of patients are young.
- Most of the diabetic cases occurring before 20 years of age are of Type I.

Classification of Types of Diabetes Mellitus

Type II is Non-Insulin-Dependent–Diabetes Mellitus (NIDDM):

- 80 to 90 per cent known cases are of type II.
- In NIDDM, insulin receptor response is decreased while insulin production may be normal, increased or decreased.
- Sudden shock, trauma or tragic event in the family, heredity and excess body weight are contributory factors.
- Most patients are obese.
- Most cases occur during the mid-thirties or mid-forties.
- diet is suitably modified and regular exercise is taken, these persons do not need insulin except during stressful days.

Classification of Types of Diabetes Mellitus

Type III Gestational diabetes:

- occurs in some women during pregnancy.
- Diet modification as indicated for type II diabetes helps to correct the glucose intolerance during pregnancy.
- The blood glucose returns to normal after delivery; but many of these women develop diabetes mellitus in later years.

Nutrient Balance

- carbohydrates provide 50% to 60% of the calories.
- Approximately 40% to 50% should be from complex carbohydrates (starches).
- The remaining 10% to 20% of carbohydrates could be from simple sugar.
- Fats should be limited to 30% of total calories.
- proteins should provide from 15% to 20% of total calories.

An example: Mr. X is placed on a 1500 calorie per day diabetic diet. The nutrient balance is 50% carbohydrate, 20% protein, and 30% fat. What is the number of grams of each nutrient used in the daily diet plan?

1. Carbohydrate

1500 calories × 0.50 = 750 calories

750 calories/ (4 calories/g) = 187.5 g carbohydrate, rounded to 190 g

2. Protein

1500 calories × 0.20 = 300 calories

300 calories/ (4 calories/g) = 75 g protein

3. Fat

1500 calories ×0.30 = 450 calories

450 calories/ (9 calories/g) = 50 g fat

Nursing implications

Nurses are part of a teaching team; therefore, they must be able to teach as well as reinforce the information that all diabetic clients need. The topics covered should include the following:

1. Explanation of the disease and why the diet will help the client control it.
2. Principles of managing the diet:

a. Basic nutrition needs

b. Meal planning following the individual prescription

c. Menu planning that allows variety in the diet

d. Purchase and preparation practices appropriate to the diet therapy

e. Adjustments for illness or unusual activity, especially strenuous exercise

f. Diabetic foods (is either sugar-free or reduced in sugar content)

3. The patient should be provided with as much information as possible. Some examples include:

a. Food exchange lists.

b. Diet plans, written or in picture form.

c. Scheduled meal times and frequency.

d. List of recommended cookbooks.

e. Audio cassettes (if client is vision impaired).

4. How to monitor blood and urine, why it is needed, and how to keep good records.

5. How to inject insulin: dosage, type, site rotation, and why timing of meals to insulin schedule is important.

6. How to recognize symptoms of hypoglycemia or hyperglycemia and what to do about them.

7. Why an exercise program is adjunct to diet therapy.

Hypertension (Silent Disease)

- When blood pressure is chronically high, the condition is called hypertension (HTN).
- In 90% of hypertension cases, the cause is unknown, this condition is called essential, or primary, hypertension.
- The other 10% of the cases are called secondary hypertension because the condition is caused by another problem. Some causes of secondary hypertension include kidney disease, problems of the adrenal glands, and use of oral contraceptives.
- The blood pressure is commonly measured from the artery in the upper arm. This measurement is made with an instrument called the sphygmomanometer.

Hypertension (Silent Disease)

- The top number is the systolic pressure, taken as the heart contracts.
- The lower number is the diastolic pressure, taken when the heart is resting.
- The pressure is measured in millimeters of mercury (mm Hg).
- The systolic pressure is 140 mm Hg or more and the diastolic pressure is 90 mm Hg or more.
- It is sometimes called the silent disease because sufferers can be asymptomatic (without symptoms).

The blood pressure categories

- Normal- less than 120/less than 80 mm Hg
- Prehypertension- 120-139/80-88 mm Hg
- Stage 1 hypertension- 140-159/90-99 mm Hg
- Stage 2 hypertension- 60/100 mm Hg

DASH
(Dietary Approaches to Stop Hypertension)

- The DASH plan has been clinically shown to reduce high blood pressure while increasing the serving of fruits and vegetables to 8 to 12 servings per day, depending upon calorie intake.

Sodium restricted diets

- A sodium restricted diet is a regular diet in which the amount of sodium is limited. Such a diet is used to alleviate edema and hypertension. Most people obtain far too much sodium from their diets. It is estimated that the average adult consumes 7 grams of sodium a day.
- It is impossible to have a diet totally free of sodium.
- Meats, fish, poultry, dairy products, and eggs all contain substantial amounts of sodium naturally.
- Cereals, vegetables, fruits, and fats contain small amounts of sodium naturally.
- Water contains varying amounts of sodium. However, sodium often is added to foods during processing and cooking and at the table.

The following are examples of sodium-containing products frequently added to foods that the consumer may not notice:

1- Salt (sodium chloride): used in cooking or at the table and in canning and processing.

2-Monosodium glutamate (called MSG and sold under several brand names): a flavor enhancer used in home, restaurant, and hotel cooking and in many packaged, canned, and frozen foods.

3- Baking powder: used to leaven quick breads and cakes.

4-Baking soda (sodium bicarbonate): used to leaven breads and cakes; sometimes added to vegetables in cooking or used as an"alkalizer"for indigestion.

5- Brine (table salt and water): used in processing foods to inhibit growth of bacteria; in cleaning or blanching vegetables and fruits; in freezing and canning certain foods; and for flavor, as in corned beef, pickles, and sauerkraut.

6-Disodium phosphate: present in some quick cooking cereals and processed cheeses.

7- Sodium alginate: used in many chocolate milks and ice creams for smooth texture.

8- Sodium benzoate: used as a preservative in many condiments such as relishes, sauces, and salad dressings.

9- Sodium hydroxide: used in food processing to soften and loosen skins of ripe olives, hominy, and certain fruits and vegetables.

10- Sodium propionate: used in pasteurized cheeses and in some breads and cakes to inhibit growth of mold.

11- Sodium sulfite: used to bleach certain fruits in which an artificial color is desired, such as cherries and glazed or crystallized fruit; also used as a preservative in some dried fruit, such as dried plums.

FOODS PERMITTED ON MOST SODIUM-RESTRICTED DIETS	FOODS TO LIMIT OR AVOID
Fruit juices without additives	Tomato juice and vegetable cocktail
Fresh fruits	Canned vegetables, if not salt-free
Fresh vegetables (except for those on the "Avoid" list)	Sauerkraut
Dried peas or beans	Frozen vegetables if prepared with salt
Fat-free milk	Dried, breaded, smoked, or canned fish or meats
Puffed-type cereals	Cheeses; salted butter or margarine
Regular, cooked cereals without added salt, sugar, or flavorings	Salt-topped crackers or breads
Plain pasta	Salty foods such as potato chips, salted nuts, peanut butter, pretzels
Rice	Canned fish, meats, or soups
Unsalted, uncoated popcorn	Ham, salt pork, corned beef, lunch meats, smoked or canned fish
Fresh fish	Prepared relishes, salad dressings, catsup, soy sauce
Fresh unsalted meats	Bouillon, baking soda, baking powder, MSG
Unsalted margarine	Commercially prepared meals
Oil	Fast foods
Vinegar	
Spices containing no salt, herbs, lemon juice	
Unsalted nuts	
Hard candy	
Jams, jellies, honey	
Coffee, tea	