Dietary Therapy II

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may /2020

Debre Markos

Dietary therapy II

At the end of the course, the students should be able to discuss:

▪ The type, importance and dietary risk factors of the main non-communicable and lifestyle diseases of public health importance.

▪ Application of nutrition and dietary management in the control and prevention of the non-communicable diseases

▪ Plan menus for a healthy person and modify normal diets for people with special needs and medical conditions

COURSE DISCREPTION

Dietary management and treatment of chronic disease such as diabetes and other diseases such as HIV/AIDS.

- Dietary management and diet related risk factors.

- Control and prevention of non-communicable diseases/disorders including the following: Cardio-vascular diseases, Diabetes Mellitus, hypertension, gout, arthritis, cancer , HIV/AIDS and other clinical disorders or conditions

- Dietary management in immunity stress and infections surgery and burns

Contents

Evaluations

- Test

- Quiz

- Assignment

- Case report

- Field report/Clinical report

Assignments

1. The magnitude of CVD in Debre Markos hospital during the period of one year and evaluate the nutritional therapy in chronic care unit by assessing 20 cards.

2. The magnitude of diabetes mellitus in Debre Markos hospital during the period of one year and evaluate the nutritional therapy in chronic care unit by assessing 20 cards.

3. The magnitude of diabetes mellitus in Debre Markos hospital during the period of one year and evaluate the nutritional therapy in chronic care unit by assessing 20 cards.

4. The magnitude of non communicable diseases in east Gojjam zone and activities conducted to reduce the non communicable diseases.

Individual assignment

1. Access level of BMI for at least 50 patients that visit Debre Markos referral hospital, D/Markos HC, Hidase HC or Wuseta HC. If there are overweight and underweight, access the risk for it and relate with nutrition.

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Introduction

- Dietary therapy II is a continuation of dietary therapy I,

    - But the latter is focused for the management and prevention of chronic illness and its management with nutrition.

- During the past decade, rapid expansion in a number of relevant scientific fields and, in particular, in the amount of population-based epidemiological evidence has helped to clarify **the role of diet in preventing** and controlling morbidity and premature mortality resulting from **non-communicable diseases (NCDs).**

Cont.…

- Rapid changes in diets and lifestyles that have occurred due to:

  ➢ Industrialization,

  ➢ Urbanization,

  ➢ Economic development

  ➢ Market globalization

- This leads to significant impact on:

  - Health
  - Nutritional status of populations, particularly in developing countries and in countries in transition.

Cont.…

- Improved standards of living , expanded food availability become more diversified, and access to services has increased.

- The significant negative consequences become:

  - Inappropriate dietary patterns,

  - Decreased physical activities

  - Increased tobacco use

  - A corresponding increase in diet-related chronic diseases, especially among poor people??.

Cont.….

▪ Food and food products have become commodities produced and traded in a market that has expanded from an essentially local base to an increasingly global one.

▪ Changes in the world food economy are reflected in shifting dietary patterns:

  ▪ Increased consumption of energy-dense diets high in fat, particularly saturated fat,

  ▪ And low in unrefined carbohydrates

Cont.…

- These patterns are combined with a decline in energy expenditure that is associated with a sedentary lifestyle:

  - Motorized transport,

  - Labor-saving devices in the home,

  - The phasing out of physically demanding manual tasks in the workplace,

  - And leisure time

Cont.….

- Because of these changes in dietary and lifestyle patterns, chronic NCDs including

    - Obesity,

    - Diabetes mellitus,

    - Cardiovascular disease (CVD),

    - Hypertension and stroke,

    - And some types of cancer

- Are becoming increasingly significant causes of disability and premature death in both developing and newly developed countries,

- Placing additional burdens on already overtaxed national health budgets.

Cont.…

- Nutrition is coming as a major modifiable determinant of chronic disease,

- Alterations in diet have strong effects,

  - Both positive and negative, on health throughout life.

Global burden of chronic diseases

- Diet and nutrition are important factors in the promotion and maintenance of good health throughout the entire life course.

- Their role as determinants of chronic NCDs is well established and they therefore occupy a prominent position in prevention activities.

- The burden of chronic diseases is rapidly increasing worldwide.

Cont.…

- It has been calculated that, in 2001, chronic diseases contributed approximately:

- 60% of the 56.5 million total reported deaths in the world

- and approximately 46% of the global burden of disease.

Cont.….

- The proportion of the burden of NCDs is expected to increase to 57% by 2020.

- Almost half of the total chronic disease deaths are attributable to cardiovascular diseases; obesity and diabetes are also showing worrying trends,

B/c they already affect a large proportion of the population, but also because they have started to appear earlier in life.

Cont.….

- Chronic disease problem is far from being limited to the developed regions of the world.

- Contrary to widely held beliefs, developing countries are increasingly suffering from high levels of public health problems related to chronic diseases.

- In five out of the six regions of WHO, deaths caused by chronic diseases dominate the mortality statistics

Cont.…

- It is clear that the earlier labeling of chronic diseases as ''diseases of affluence'' is increasingly a misnomer, as they emerge both in poorer countries and in the poorer population groups in richer countries.

- This shift in the pattern of disease is taking place at an accelerating rate; furthermore, it is occurring at a faster rate in developing countries than it did in the industrialized regions of the world half a century ago

Cont.…

- Rapid rate of change, together with the increasing burden of disease, is creating a major public health threat which demands immediate and effective action.

- It has been projected that, by 2020, chronic diseases will account for:
    - Almost three-quarters of all deaths worldwide,
    - And that 71% of deaths due to ischemic heart disease (IHD),
    - 75% of deaths due to stroke,
    - And 70% of deaths due to diabetes will occur in developing countries.

- The number of people in the developing world with diabetes will increase by more than 2.5 fold, from 84 million in 1995 to 228 million in 2025

Cont.…

- On a global basis, 60% of the burden of chronic diseases will occur in developing countries.

- Indeed, cardiovascular diseases are even now more numerous in India and China than in all the economically developed countries in the world put together.

- As for overweight and obesity, not only has the current prevalence already reached unprecedented levels, but the rate at which it is annually increasing in most developing regions is substantial.

Cont.…

- Beyond the appropriate medical treatment for those already affected, the public health approach of primary prevention is considered to be:

    - The most cost-effective,

    - Affordable

    - And sustainable course of action to cope with the chronic disease epidemic worldwide.

- Modern dietary patterns and physical activity patterns are risk behaviors that travel across countries and are transferable from one population to another like an infectious disease, affecting disease patterns globally.

Cont….

- While age, sex and genetic susceptibility are non-modifiable, many of the risks associated with age and sex are modifiable.

- Such risks include:

  - Behavioral factors (e.g. diet, physical inactivity, tobacco use, alcohol consumption);

  - Biological factors (E.g. Dyslipidemia, hypertension, overweight, hyperinsulinaemia);

  - And finally societal factors, which include a complex mixture of interacting

    - ✓ Socioeconomic,

    - ✓ Cultural

    - ✓ And other environmental parameters

Cont.…

- Diet has been known for many years to play a key role as a risk factor for chronic diseases.

- What is apparent at the global level is that great changes have swept the entire world since the second half of the twentieth century, inducing major modifications in diet,

- first in industrial regions and

- more recently in developing countries

Cont.…

- Traditional, largely plant based diets have been swiftly replaced by high-fat, energy-dense diets with a substantial content of animal-based foods.

- But diet, while critical to prevention, is just one risk factor.

Nutrition for Chronic Disease Prevention and Treatment

- Nutrition is a widely accepted tool for prevention of chronic diseases

- It is also very important for management and treatment of a chronic diseases

- Weight management is crucial for preventing nutrition related chronic disease

- It is advisable that the health professionals or nutritionist monitor their client's weight with their contacts.

Cont.…

▪ Weight is managed by measuring individual's body mass index.

▪ It is indicated by measuring weight in kilogram and height in meters.

▪ So by calculating with the formula wt in kg divided by meter square we can judge where is the individual nutritional status

▪ Wt in kg/ht in m^{2,} the classification indicates on the next table

Cont….

- Table1. indicated the classification of body mass index

Classification	BMI(kg/m)	
	Principal cut-off points	**Additional cut-off points**
Underweight	<18.50	<18.50
Severe thinness	<16.00	<16.00
Moderate thinness	16.00 - 16.99	16.00 - 16.99
Mild thinness	17.00 - 18.49	17.00 - 18.49
Normal range	18.50 - 24.99	18.50 - 22.99
		23.00 - 24.99
Overweight	≥25.00	≥25.00
Pre-obese	25.00 - 29.99	25.00 - 27.49
		27.50 - 29.99
Obese	≥30.00	≥30.00
Obese class I	30.00 - 34-99	30.00 - 32.49
		32.50 - 34.99
Obese class II	35.00 - 39.99	35.00 - 37.49
		37.50 - 39.99
Obese class III	≥40.00	≥40.00

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Cont….
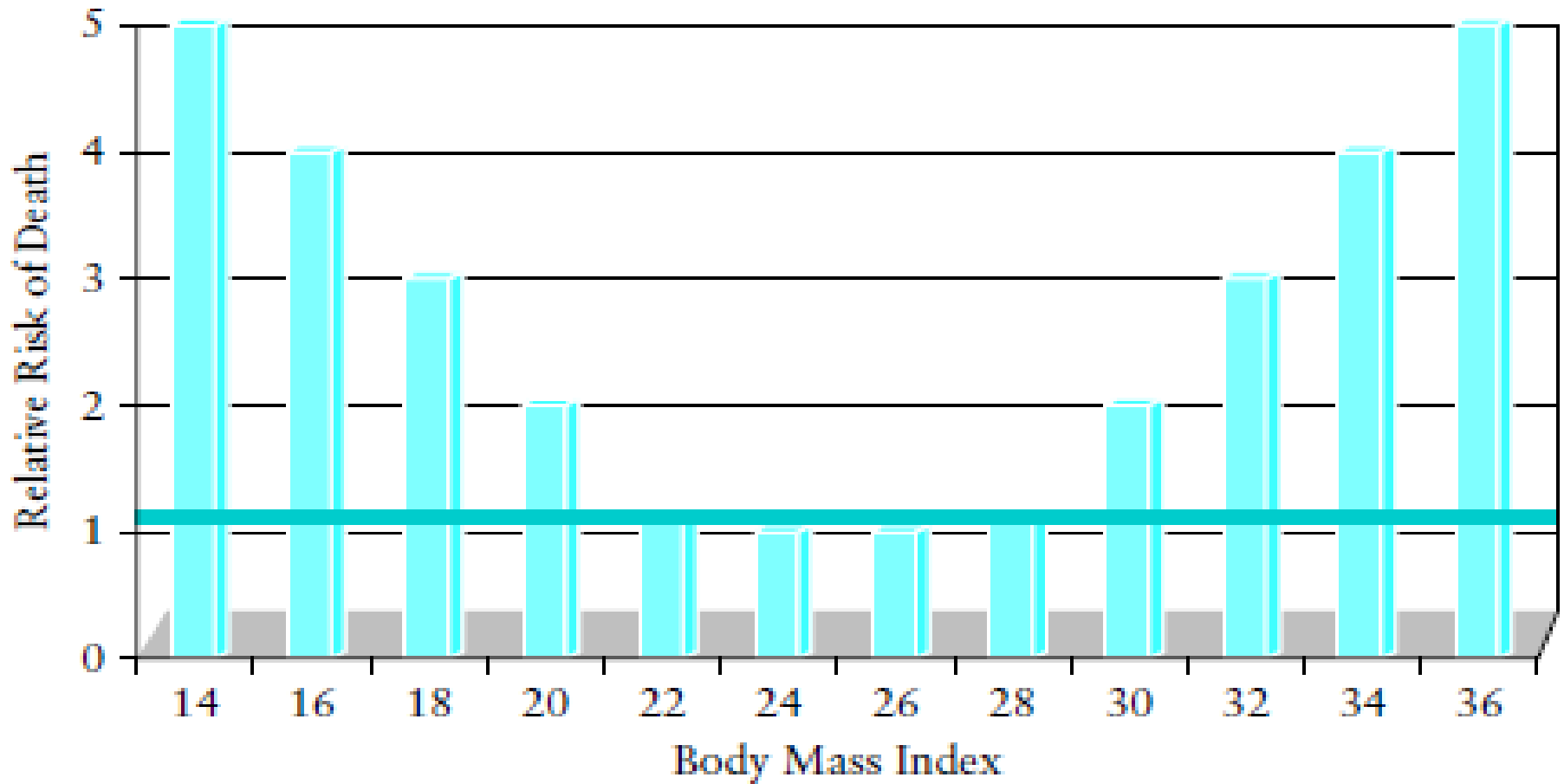

Figure 1. BMI and risk of death

Cont.…

The value of waist circumference

- Location of excess fat is important

- If excess fat is mainly around midsection = more likely to develop health problems than if excess fat is mainly around hips and thighs

- Women: waist measurement of more than 35 inches (88 cm)

- Men: waist measurement of more than 40 inches (102 cm)

Cont.…

Use BMI and Waist Circumference

- Use it with every patient visit

- Can identify those patients at risk for chronic disease with confidence

- Should be incorporated into vital signs and patient check-in procedures

- Quick, cheap, and easy to do!

Thank you

Chapter II
Dietary management and diet related risk factors

- **Dietary management** is also known as food service management.

- It is the practice of providing nutritional options for individuals and groups with diet concerns through supervision of food services.

- Practitioners in dietary management, known as **dietary managers**, work in:

    - Hospitals
    - Long-term care facilities,
    - Restaurants

Cont.….

- School and college cafeterias,

- Correctional facilities,

- And other foodservice settings, usually implementing meal plans established by a dietitian or nutritionist.

- They are responsible for supervising the work of other nutrition personnel such as cooks and dietary aides.

1. Lifestyle and Related Risk Factors for Chronic Diseases

- Chronic diseases, often referred to as non-communicable diseases (NCDs).

- usually emerge in middle age after long exposure to an unhealthy lifestyle involving:

  - Tobacco use,

  - A lack of regular physical activity,

  - And consumption of diets rich in highly saturated fats, sugars, and salt, typified by "fast foods."

Cont.….

- This lifestyle results in higher levels of risk factors, such as:

  - Hypertension,

  - Dyslipidemia,

  - Diabetes,

  - And obesity that act independently and synergistically.

- The risk factors are frequently undiagnosed or inadequately managed in health services designed to treat acute conditions

Cont.….

- Chronic conditions are frequently incorrectly considered to have limited impact on the burden of disease in Sub-Saharan Africa, because of the known high relevance of the infectious diseases.

- Nevertheless, these diseases occur in younger age groups more commonly in Sub-Saharan Africa than in the developed countries and are at least as common in the poor sector of society as in the more affluent

Cont.….

- The current burden of chronic diseases reflects the cumulative effects of unhealthy lifestyles and the resulting risk factors over the life span of people.

- Some of these influences are present from before a child is born

2. Antenatal Influences on the Emergence of Risk Factors for Chronic Diseases

- Fetal origins of adult chronic diseases play a particularly important role in Sub-Saharan Africa countries.

- Adequacy of mother's nutrition before and during pregnancy is the first key component in determining the infant's birth weight.

- The latter in its own right is associated with the emergence of chronic disease risk factors in these children

Cont.….

- The association between poor intrauterine growth because of inadequate nutrition and smoking tobacco during pregnancy, resulting in LBW and increased NCD risk in children in Sub-Saharan Africa, could possibly increase in the twenty-first century.

- At the beginning of this century most Sub-Saharan Africa countries were in the grip of serious food shortages as well as unopposed promotion of tobacco products targeting women and youth.

- This situation led to more starvation and more smoking during pregnancy and thus to the birth of more LBW babies in these countries

3. Nutrition transition

▪ The nutrition transition refers to large shifts in the composition and structure of diets.

▪ The dietary changes of the nutrition transition involve large increases in the consumption of fat (especially saturated fat) and sugar, marked increases in animal products, and a decline in unrefined cereal and, thus, in fiber intakes

Cont….

- Nutrition patterns in Sub-Saharan Africa countries are influenced by many factors, including individual preference;

  - culture,

  - traditions,

  - beliefs;

  - and price

- However, availability and accessibility are the principal factors that shape dietary patterns

Cont.…

- In the Sub-Saharan context,

    - war and internal strife,

    - drought and poor agricultural practices,

    - and rapid urbanization are particularly influential.

- In addition, multinational food companies market their products aggressively in the region.

- For example in West Africa, consumption has changed from that of locally produced coarse grains, such as millet and sorghum, to imported wheat and rice

4. Aerobic Exercise and chronic disease

- Many studies have revealed the impact of a sedentary lifestyle on emerging NCD risk factors.

- Low levels of physical activity were correlated to weight, body mass index (BMI), waist-to-hip ratio, blood pressure, insulin levels, and total and low-density lipoprotein (LDL) cholesterol in men

5. Obesity

▪ Is a state of excess adipose tissue mass.

▪ Although often viewed as equivalent to increased body weight, this need not be the case lean but very muscular individuals may be overweight by arbitrary standards without having increased adiposity.

▪ Body weights are distributed continuously in populations, so that a medically meaningful distinction between lean and obese is somewhat arbitrary.

▪ Obesity is therefore more effectively defined by assessing its linkage to morbidity or mortality

Cont….

- The World Health Organization (WHO) defines obesity as a condition in which excess body fat has accumulated to such an extent that health may be adversely affected

- In a world where food supplies are intermittent, the ability to store energy in excess of what is required for immediate use is essential for survival.

- Fat cells, residing within widely distributed adipose tissue depots, are adapted to store excess energy efficiently as triglyceride and, when needed, to release stored energy as free fatty acids for use at other sites

Cont….

- This physiologic system, orchestrated through endocrine and neural pathways, permits humans to survive starvation for as long as several months.

- However, in the presence of nutritional abundance and a sedentary lifestyle, and influenced importantly by genetic endowment, this system increases adipose energy stores and produces adverse health consequences

Cont.…

- Abdominal fat is reported by measuring the waist circumference or the waist-to-hip circumference ratio.

- The waist circumference is thought to provide a better correlate with abdominal fat mass than the waist-to-hip ratio

- High abdominal fat mass is frequently referred to as central obesity.

- This form of obesity has been shown to have more morbidity than if the fat distribution is predominantly on the hips

Cont.….

- Central obesity has been shown to be associated with metabolic syndrome.

- The key features of this condition are raised blood pressure, raised insulin and triglyceride levels, reduced high-density lipoprotein (HDL)-cholesterol levels, and insulin resistance.

- The condition is strongly atherogenic and predisposes to an elevated risk of diabetes and cardiovascular disease

Cont.…

- In many Sub-Saharan Africa countries, an increased level of body fat is associated with beauty, prosperity, health, and prestige, despite its negative impact on health.

- Thinness, in contrast, is perceived to be a sign of ill health or poverty and is something to be feared and avoided, particularly in recent years, when it has been associated with AIDS.

Cont….

Physiologic Regulation Of Energy Balance

▪ Substantial evidence suggests that body weight is regulated by both endocrine and neural components that ultimately influence the effectors arms of energy intake and expenditure

▪ Energy expenditure includes the following components:

(1) Resting or basal metabolic rate;

(2) The energy cost of metabolizing and storing food;

(3) The thermic effect of exercise; and

(4) Adaptive thermogenesis, which varies in response to chronic caloric intake (rising with increased intake)

Cont….

The Adipocyte and Adipose Tissue

- Adipose tissue is composed of the lipid-storing adipose cell and a stromal/vascular compartment in which pre-adipocytes reside.

- Adipose mass increases by enlargement of adipose cells through lipid deposition, as well as by an increase in the number of adipocytes

Cont.….

Etiology of Obesity

▪ Though the molecular pathways regulating energy balance are beginning to be illuminated, the causes of obesity remain elusive.

▪ In part, this reflects the fact that obesity is a heterogeneous group of disorders.

▪ At one level, the pathophysiology of obesity seems simple: a chronic excess of nutrient intake relative to the level of energy expenditure

Cont….

- **Genetics and Weight: A** person's genetic makeup influences the body's tendency to consume or store too much energy or to expend too little.

  - **Lipoprotein Lipase:** hydrolyzes triglycerides in the blood into fatty acids and glycerol for absorption into the cells.

  - **Leptin**: a hormone produced by fat cells under the direction of the (*ob*) gene. It decreases appetite and increases energy expenditure

  - **Ghrelin:** a hormone produced primarily by the stomach cells. It signals the hypothalamus of the brain to stimulate appetite and food intake.

Cont….

- **Environmental Stimuli:** Obesity reflects the interaction between genes and the environment.

- Overeating

- Learned Behavior

- Physical Inactivity

Cont.…

Pathologic Consequences of Obesity

- Insulin Resistance and Type 2 Diabetes Mellitus

- Reproductive Disorders

- Cardiovascular Disease

- Pulmonary Disease

- Gallstones

- Cancer

- Bone, Joint, and Cutaneous Disease

Complications of Obesity

- Menstrual, uterine and ovarian abnormalities

- Cardiovascular hazards

- Gall bladder disease

- Arthritis

- Psychosocial disability

- Surgical and anesthetic risks

- Modest changes in B.P. and blood lipids

- Diabetes mellitus

- Gout

- Accidents

- Low life expectancy

Cont….

Treatment

- Behavior Modification

- Diet

- Exercise

- Drugs

- Surgery

Diet

Carbohydrate(calories)

- The main principle involved in planning *low calorie reducing diets* is to cut down the intake of cereals and fats which contribute energy to the body.

- The diet should provide less calories than the requirement of the person.

- By supplying less energy than what is required the body fat gets metabolized and supply energy.

- When body fat is utilized for energy, body weight decreases.

- The energy reduction per day depends on how much reduction is required by the person in a particular time.

Cont.….

Protein

- Normal recommended dietary allowances.

- Usually the low kcal diet contains 45 – 70 gs of protein per day.

- Protein will be around 20% kcal in a low kcal diet and 13–15% in diets with more kcal.

Fat

- Around 30 and not more than 35% of kcal in the low kcal diet should come from fat.

Cont....

Tips for diet modification

- Reduce the total fat content in diet

- Reduce/avoid sugar containing dishes and sweets

- Relish large servings of salads

- Prefer whole cereal to refined cereals

- Consume a serving of millets for dietary fiber

- Avoid snacks in between meals

- Exclude pickle in oil

- Stop nibbling in between meals

Cont.…

Reading assignment

1. Exercise and behavioral treatments of obesity

Cont.…

Selection criteria for surgery:

- A BMI > 35 with an associated comorbidity or a BMI > 40;

- repeated failures of other therapeutic approaches;

- At eligible weight for 3 to 5 years;

- Capability of tolerating surgery;

- Absence of alcoholism, other addictions, or major psychopathology; and

- Prior clearance by a psychiatrist.

- It is recommended that an appropriately experienced surgeon work together with nutritionists and other support personnel; evaluation and follow-up

Chapter III
Dietary control and prevention of non-communicable diseases/disorders

At the end of this chapter the student will be able to:

- Identify the common chronic diseases

- Explain the dietary managements of the common chronic diseases.

Introduction

- **Non-communicable disease**, or **NCD**, is a medical condition or disease, which by definition is **non-infectious** and **non-transmissible** among people

- may be chronic diseases of long duration and slow progression,

- Or they may result in more rapid death such as some types of sudden stroke.

Cont.…

- Include:

    - Autoimmune diseases,

    - Heart disease, stroke,

    - Many cancers,

    - Asthma

    - Diabetes

    - Chronic kidney disease,

    - Osteoporosis,

Cont….

- Alzheimer's disease,

- Cataracts, and more

- Sometimes (incorrectly) referred to as synonymous with "chronic diseases", NCDs are distinguished only by their non-infectious cause, not necessarily by their duration.

- Chronic diseases require chronic care management as do all diseases that are slow to develop and of long duration

Causes and risk fact

Risk factors such as:

- Person's background;

- lifestyle

- Environment(Most NCDs are considered preventable because they are caused by modifiable risk factors)

- WHO identified five important risk factors for non-communicable disease in the top ten leading risks to health.

- These are raised blood pressure, raised cholesterol, tobacco use, alcohol consumption, and overweight.

- The other factors associated with higher risk of NCDs include a person's economic and social conditions, also known as the "[social determinants of health].

Cont....

Environmental diseases

- NCDs include many environmental disease, covering a broad category of avoidable and unavoidable human health conditions caused by external factors, such as sunlight, nutrition, pollution, and lifestyle choices.

- The diseases of affluence are non-infectious diseases with environmental causes.

Cont….

Inherited diseases

- Genetic disorders are caused by errors in genetic information that produce diseases in the affected people.

- The origin of these genetic errors can be:

- Spontaneous errors or mutations to the genome:

- A change in chromosome numbers, such as Down syndrome.

- A defect in a gene caused by mutation, such as Cystic fibrosis.

- An increase in the amount of genetic information

1. Cardiovascular disease

▪ Cardiovascular disease (CVD), a group of disorders involving the heart and blood vessels.

▪ Called **heart disease**

▪ The most common form of CVD is **coronary heart disease (CHD),** which is usually caused by **atherosclerosis** in the coronary arteries that supply blood to the heart muscle.

▪ If atherosclerosis restricts blood flow in these arteries, the resulting deprivation of oxygen and nutrients can destroy heart tissue and cause a **myocardial infarction (MI)**—a **heart attack**.

▪ When the blood supply to brain tissue is blocked, a **stroke** occurs.

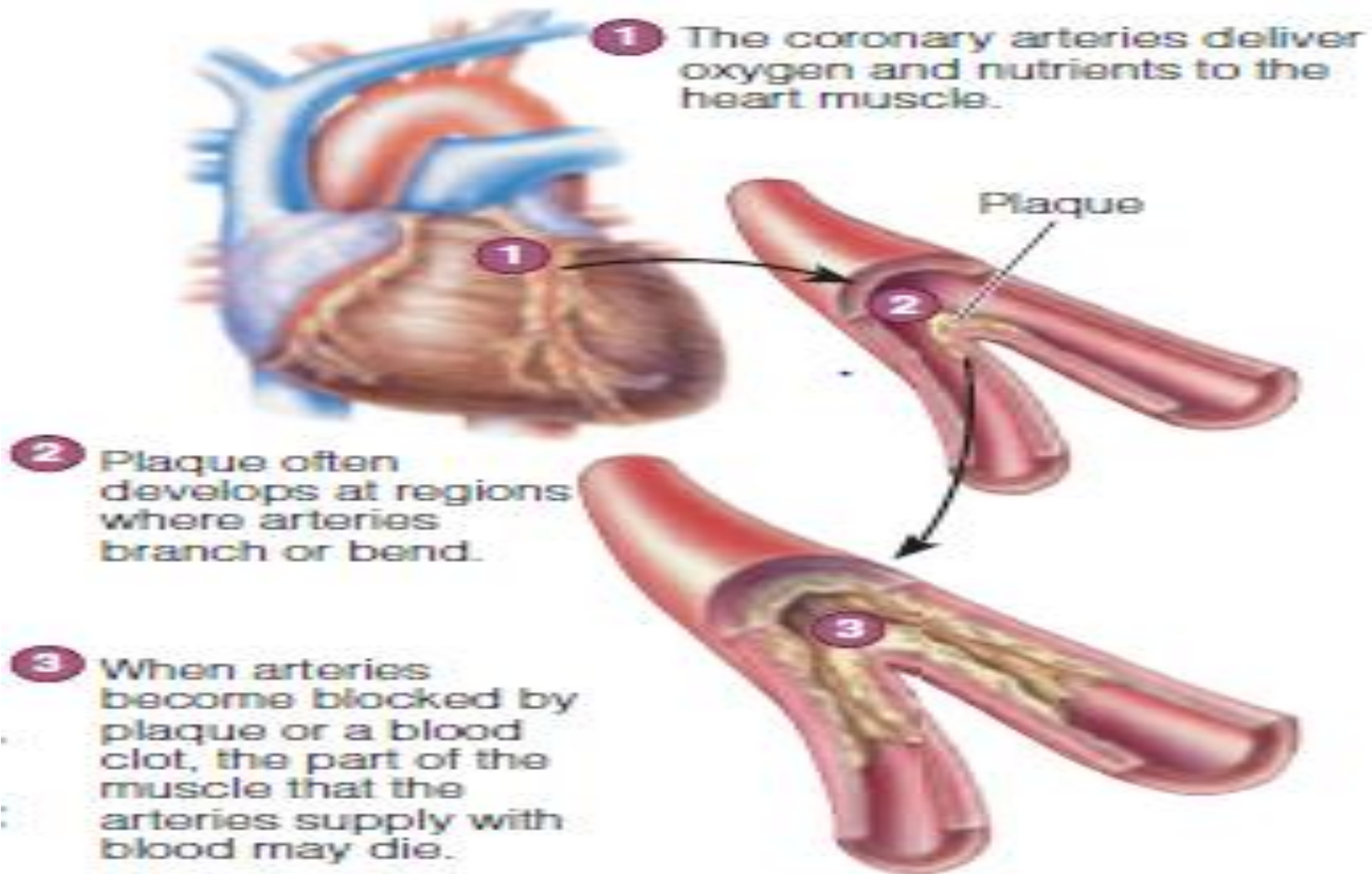▪ Both heart attack and stroke may result in **disablement or death.**

Cont….
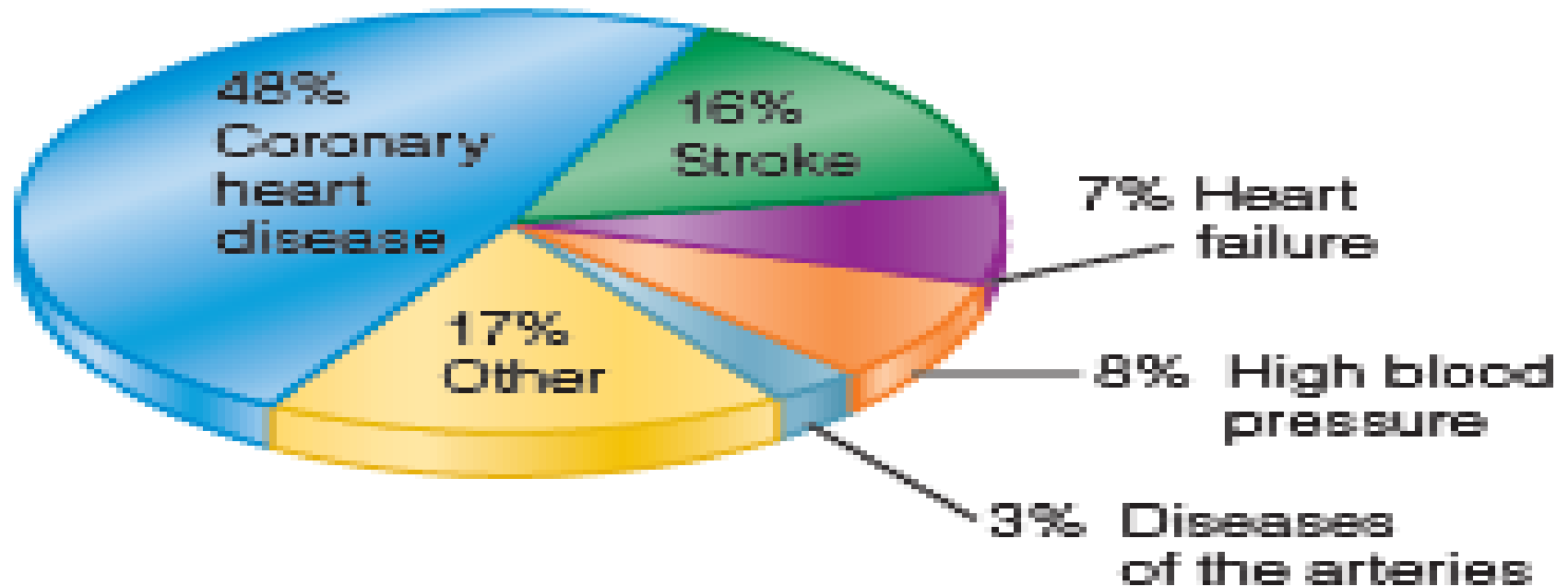
FIGURE 22-1 Percentage Breakdown of Deaths from Cardiovascular Diseases in the United States
Source: A. S. Go and coauthors, Heart disease and stroke statistics—2014 update: A report from the American Heart Association, *Circulation* 129 (2014): e28–e292.

Cont….

① The coronary arteries deliver oxygen and nutrients to the heart muscle.

② Plaque often develops at regions where arteries branch or bend.

③ When arteries become blocked by plaque or a blood clot, the part of the muscle that the arteries supply with blood may die.

Plaque

FIGURE 22-2 **Plaque Formation in Atherosclerosis**

Cont.…

- The causes of cardiovascular disease are diverse but atherosclerosis and/or hypertension are the most common.

- Aging come a number of physiological and morphological changes that alters cardiovascular function

- And lead to increased risk of cardiovascular disease, even in healthy asymptomatic individuals.

Types of cardiovascular disease

1. Coronary artery disease (also known as coronary heart disease and ischaemic heart disease)

2. Cardiomyopathy - diseases of cardiac muscle

3. Hypertensive heart disease - diseases of the heart secondary to high blood pressure

4. Corpulmonale - a failure at the right side of the heart with respiratory system involvement

5. Cardiac dysrhythmias - abnormalities of heart rhythm

Cont….

6. Inflammatory heart disease

- Endocarditis – inflammation of the inner layer of the heart, the endocardium. The structures most commonly involved are the heart valves.

- Inflammatory cardiomegaly

- Myocarditis – inflammation of the myocardium, the muscular part of the heart.

7. Cerebrovascular disease - disease of blood vessels that supply blood to the brain such as stroke.

Cont.….

8. Peripheral arterial disease - disease of blood vessels that supply blood to the arms and legs

9. Congenital heart disease - heart structure malformations existing at birth

10. Rheumatic heart disease - heart muscles and valves damage due to rheumatic fever caused by streptococcal bacterial infections

Coronary Heart Disease

- Coronary heart disease (CHD), also called *coronary artery disease,* is the most common type of cardiovascular disease.

- CHD is most often caused by atherosclerosis, which leads to impaired blood flow through the coronary arteries; possible outcomes include:

    - angina pectoris,

    - heart attack,

    - or even sudden death.

- The most common symptom of CHD is pain or discomfort in the chest region; the pain may radiate to the left neck and shoulder, arms, back, or jaw.

- Other possible symptoms include shortness of breath, unusual weakness or fatigue, lightheadedness or dizziness, nausea, vomiting, and lower abdominal discomfort.

Risk Factors for CHD

Major Non modifiable Risk Factors

- Increasing age

- Male gender????

- Family history of early heart disease

Major Modifiable Risk Factors

- High LDL cholesterol

- High blood triglyceride (VLDL) levels

Cont.….

- Low HDL cholesterol

- Hypertension (high blood pressure)

- Diabetes

- Obesity (especially abdominal obesity)

- Physical inactivity

- Cigarette smoking

- Alcohol overconsumption

- (≥3 drinks per day)

- An atherogenic diet (high in saturated fat and *trans* fats; low in fruits and vegetables)

Cont.…

Diagnosis

- ECG;

- Chest roentgenogram;

- Noninvasive graphic examinations

- Specialized invasive examinations, i.e., cardiac catheterization, angiocardiography, and coronary angiography

- Family History

- Assessment of Functional Impairment

- History and physical examination

Preventions

- A low-fat, high-fiber diet including whole grains and plenty of fresh fruit and vegetables (at least five portions a day)

- Tobacco cessation and avoidance of second-hand smoke

- Limit alcohol consumption to the recommended daily limits consumption of 1-2 standard alcoholic drinks per day may reduce risk by 30%· However excessive alcohol intake increases the risk of cardiovascular disease.

- Lower blood pressures, if elevated

- Decrease body fat (BMI) if overweight or obese

Cont.…

- Increase daily activity to 30 minutes of vigorous exercise per day at least five times per week.

- Reduce sugar consumptions

- Decrease psychosocial stress. Stress however plays a relatively minor role in hypertension.

- Specific relaxation therapies .For adults without a known diagnosis of hypertension, diabetes, hyperlipidemia, or cardiovascular disease, routine counseling to advise them to improve their diet and increase their physical activity has not been found to significantly alter behavior.

Nutritional Assessment of Cardiac Patients

The following parameters are included the nutritional assessment of cardiac patients.

- **Nutrient Intake and Food Habits**

- Diet history

- Food frequency

- Dietary recall

Anthropometric Assessment

- Body weight

- Body height

- Fat fold measurement

Cont….

- **Laboratory Assessment**

- Serum glucose, glucose tolerance test

- Serum uric acid

- Serum electrolytes

- Serum triglycerides (fasting)

- Serum cholesterol

- Serum lipoprotein profile

- Blood pressure

- Enzyme tests — SGOT, LDH, CPK

Lifestyle Management to Reduce CVD Risk

Dietary Strategies

- Adopt a healthy dietary pattern such as the USDA Food Pattern or the DASH Eating Plan.

- Limit saturated fat to about 5 to 7 percent of total kcalories and cholesterol to less than 200 milligrams per day.

- Replace saturated fats with unsaturated fats from fish, vegetable oils, and nuts or with carbohydrates from whole grains, legumes, fruits, and vegetables.

- Avoid food products that contain *trans* fats.

- Choose foods high in soluble fibers, including oats, barley, legumes, and fruit. Food supplements that contain psyllium seed husks can be used to help lower LDL cholesterol levels.

Cont.….

- Regularly consume food products that contain added plant sterols or stanols.

- Fish can be consumed regularly as part of a CVD risk-reduction diet.

- If alcohol is consumed, it should be limited to one drink daily for women and two drinks daily for men.

- To reduce blood pressure, consume a low-sodium diet that is high in fruits and vegetables, whole grains, nuts, and low-fat milk products.

Cont….

Lifestyle Choices

- Physical activity: Engage in moderate-to-vigorous aerobic activity, lasting about 40 minutes per session, at least 3 or 4 days per week.

- Tobacco avoidance: Exposure to any form of tobacco smoke should be minimized.

Weight Reduction

- In overweight or obese individuals, weight reduction may improve some CVD risk factors. The general goals of a weight-management program should be to prevent weight gain, reduce body weight, and maintain a lower body weight over the long term.

- The initial goal of a weight-loss program should be to lose no more than 5 to 10 percent of the original body weight.

Dietary management

Goals

- To achieve and maintain optimal body weight

- To reduce plasma lipids to a normal range

- If hypertension is present, to reduce hypertension by reducing sodium intake

- To individualize drug and diet therapy.

Cont.….

Energy/Kilo Calories

- Achieve and maintain desirable weight.

- If the patient is maintaining his weight, his energy requirements can be determined from a food dairy or recall.

- For a patient who is obese, a reducing diet has to be prescribed.

- Loss of body weight can reduce blood pressure.

- Loss of body weight can reduce serum triglycerides, cholesterol and plasma glucose.

Cont.…

Fat

Total fat

- Less than 30% of total kilo calories is recommended.

- There is strong correlation between mean serum total cholesterol concentration and men percentage of kilo calories.

Cont..

Saturated fat

- Less than 10% of total kilocalories is recommended.

- Saturated fatty acids increase serum cholesterol.

Mono unsaturated fatty acids (MUFA)

- 10 – 15 per cent of total kilo calories are recommended.

- MUFA do not have any effect on serum cholesterol if substituted for dietary carbohydrates.

- Olive oil lowers serum cholesterol when substituted for saturated fats in the diet.

- High MUFA did not lower HDL-C concentrations as did replacement of SFA with carbohydrates.

Cont.…

Carbohydrates

- 50 – 55% of total Kilo calories from carbohydrates is recommended.

- Select complex carbohydrates.

- Consumption of whole grain bread, cereal products fruits and vegetables are encouraged.

- Small increases in soluble fibre intake (approximately 6 gs/day) moderately decreases serum cholesterol

- concentration regardless of the fibre source.

- Insoluble fibre (wheat bran) does not lower serum triglycerides.

Cont.…

Protein

- 10 – 20 per cent of total kilo calories is recommended.

- If the patient is non-vegetarian, fish, poultry without skin and lean meats are recommended.

- Use skim milk.

- If the patient is vegetarian, select plant foods of high biological value.

Specific Dietary Guidelines

- Total fat intake should be less than 30% K. cal.

- Saturated fat intake should be less than 10% K. cal.

- Cholesterol intake should be less than 100 mgs/1000 K. cal not to exceed more than 300 mg per day.

- Poly unsaturated/saturated fat ratio should be increased to about 1.0 from the usual value of about 0.3.

- Protein intake should be approximately 10 – 20% K. cal.

- Foods rich in animal fat should be avoided.

- Non-vegetarians should increase fish consumption.

Cont.…

- Non-fat milk and vegetable oils are encouraged.

- Carbohydrate intake should constitute 50 – 55% of K. cal.

- Emphasis should be on complex carbohydrate.

- Sodium intake should be reduced to approximately 1g per 1000 K. cal and not exceed 3 gs/day.

- Avoid alcoholic beverages. If consumed not more than 50 ml of alcohol per day.

- Total K.cal should be sufficient to maintain the individuals best body weight.

- A wide variety of foods should be consumed.

- Supplements of vitamin A and vitamin E should be given.

- A banana a day keeps the doctor away. Banana contains magnesium and it is good for heart.

Cont.…

- Different drug managements to assist the damaged cardio vascular.

Thank you!!!!!

2. **Diabetes Mellitus**

- The incidence of **diabetes mellitus** is steadily increasing

- About 28 percent of persons with diabetes are unaware that they have it.

- It also contributes to the development of other life-threatening diseases, including heart disease and kidney failure.

Cont.…

- The term *diabetes mellitus* refers to metabolic disorders characterized by elevated blood glucose concentrations and disordered insulin metabolism.

- People with diabetes may be unable to produce sufficient insulin or to use insulin effectively, or they may have both types of abnormalities.

- The defective glucose uptake and utilization in muscle and adipose cells.

- The result is hyperglycemia, that can ultimately cause damage to blood vessels, nerves, and tissues.

Symptoms of Diabetes Mellitus

- Frequent urination (polyuria)

- Dehydration, dry mouth

- Excessive thirst (polydipsia)

- Weight loss

- Excessive hunger (polyphagia)

- Blurred vision

- Increased infections

- Fatigue

Diagnosis of Diabetes

- Based primarily on plasma glucose levels, which can be measured:

  - Under fasting conditions

  - Or at random times during the day or

  - In some cases, an oral glucose tolerance test is given

Cont….

- The following criteria are currently used to diagnose diabetes:

- The plasma glucose concentration is 126 mg/dL or higher after a fast of at least eight hours.

- Normal fasting plasma glucose levels are 75 to 100 mg/dL.

- Random blood glucose level 200 mg/dL or higher.

- The plasma glucose concentration measured two hours after a 75-gram glucose load is 200 mg/dL or higher.

Types of Diabetes

Type 1 Diabetes

- Type 1 diabetes accounts for about 5 to 10 percent of diabetes cases.

- It is usually caused by autoimmune destruction of the pancreatic beta cells, which produce and secrete insulin.

- Although the reason for the autoimmune attack is usually unknown, environmental toxins or infections are likely triggers.

Cont…

- People with type 1 diabetes often have a genetic susceptibility for the disorder and are at increased risk of developing other autoimmune diseases.

- Type 1 diabetes usually develops during childhood or adolescence, and symptoms may appear abruptly in previously healthy children.

- Ketoacidosis is common

Cont.…

Type 2 Diabetes

- Type 2 diabetes is the most prevalent form of diabetes, accounting for 90 to 95 percent of cases.

- The defect in type 2 diabetes is insulin resistance.

- Previously called adult-onset diabetes

Cont….

- Causes of type 2 diabetes commonly are unknown

- Risk is substantially increased by:

  - Obesity (especially abdominal obesity),

  - Aging,

  - And physical inactivity.

- The obesity itself can directly cause some degree of insulin resistance.

- Prevalence exceeds 25 percent in persons older than 65 years.

- Ethnicity

Cont….

Gestational diabetes

- Can occur between the sixteenth and twenty-eighth week of pregnancy.

Table 2. Features of Type 1 and Type 2 Diabetes Mellitus

Feature	Type 1 Diabetes	Type 2 Diabetes
Prevalence in diabetic population	5–10 percent of cases	90–95 percent of cases
Age of onset	<30 years	>40 years[a]
Associated conditions	Autoimmune diseases, viral infection, inherited factors	Obesity, aging, inactivity, inherited factors
Major defect	Destruction of pancreatic beta cells; insulin deficiency	Insulin resistance; insulin deficiency relative to needs
Insulin secretion	Little or none	Varies; may be normal, increased, or decreased
Requirement for insulin therapy	All cases	Some cases
Former names	Juvenile-onset diabetes Insulin-dependent diabetes	Adult-onset diabetes Noninsulin-dependent diabetes

Complications of DM

Acute Complications of Diabetes Mellitus

- Diabetic Ketoacidosis

- Hyperosmolar Hyperglycemic

- Hypoglycemia

Chronic Complications of Diabetes

- Macro vascular Complications

- Peripheral vascular disease

Cont….

- Micro vascular Complications

    - Diabetic retinopathy-foot ulcers

    - Diabetic nephropathy

Treatment

The treatment of diabetes is intended to do the following:

- Control blood glucose levels

- Provide optimal nourishment for the client

- Prevent symptoms and thus delay the complications of the disease

Cont.…

- Although it is not possible to cure diabetes completely, diabetics can lead almost a normal life if they follow Certain **do's** and don'ts scrupulously.

- Cooperation of the patient is very important in the management of diabetes.

The main modes of treatment of diabetes are:

- Diet

- Exercise

- Drugs

- Education

Cont….

Dietary management

A well designed meal plan is an important cornerstone in the management of diabetes mellitus.

GOALS OF NUTATIONAL THERAPY

- Achieve physiologic blood glucose levels

- Maintain desirable plasma lipid levels

- Reduce complications of diabetes mellitus

- Retard development of atherosclerosis

Cont.…

- Provide optimal selection of nutrients

- Attain and maintain desirable body weight

- Meet energy needs in a timely manner.

- Individualize to preferences and food available.

- Address special requirements (such as pregnancy)

- Tailor for therapeutic needs (such as renal failure)

Cont….

The nutrition plan

Calories

Category	Calorie requirement
Over weight	20 Kcals/Kg/day
Ideal weight	30 Kcals/Kg/day
Under weight	40 Kcals/Kg/day
Elderly person above 50 years	10% less calories for each additional decade
Children - Ist year	1000 calories
For girls 1 – 12 years	1000 + 100 calories per year of age upto 12 years.
For boys 1 – 12 years	1000 + 125 calories per year of age after 12 years

Cont….

Carbohydrates

- Carbohydrates should provide 50 – 60 per cent of energy

- Complex carbohydrates should account for approximately 2/3 of total carbohydrate. Among this,

- 60 – 70% should be complex carbohydrate

- 30 – 40% should be simple carbohydrate

Cont….

- Fat: 20–35%

- Protein: 10–35%

- Carbohydrate RDA: 130 g/day

- Fiber AI: 21–38 g/day

- Protein RDA: 0.8 g/kg body weight

Cont….

- The carbohydrate sources should be:

  - whole grains,

  - legumes, vegetables,

  - fruits, and milk products,

- whereas foods made with refined grains and added sugars should be limited.

- Choosing foods with a low glycemic index (GI) over those with a high GI may modestly improve glycemic control

Cont.…

Protein: Protein recommendations for people with diabetes are similar to those for the general population.

Micronutrients: Micronutrient recommendations for people with diabetes are the same as for the general population.

Medical treatment: e.g. Insulin, metformin,

Cont.…

Fiber

- The therapeutic value of fiber in the diabetic diet has become increasingly evident.

- High-fiber intake appears to reduce the amount of insulin needed because it lowers blood glucose.

- High-fiber may mean 25 to 35 grams of dietary fiber a day.

HYPERTENSION

- When blood pressure is chronically high, the condition is called hypertension.

- Essential, or primary, hypertension-90%

- Secondary hypertension-10%

- The blood pressure commonly measured is that of the artery in the upper arm.

- This measurement is made with an instrument called the sphygmomanometer.