CONCEPT OF HEALTH AND DISEASE

By,

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WHAT IS HEALTH ?

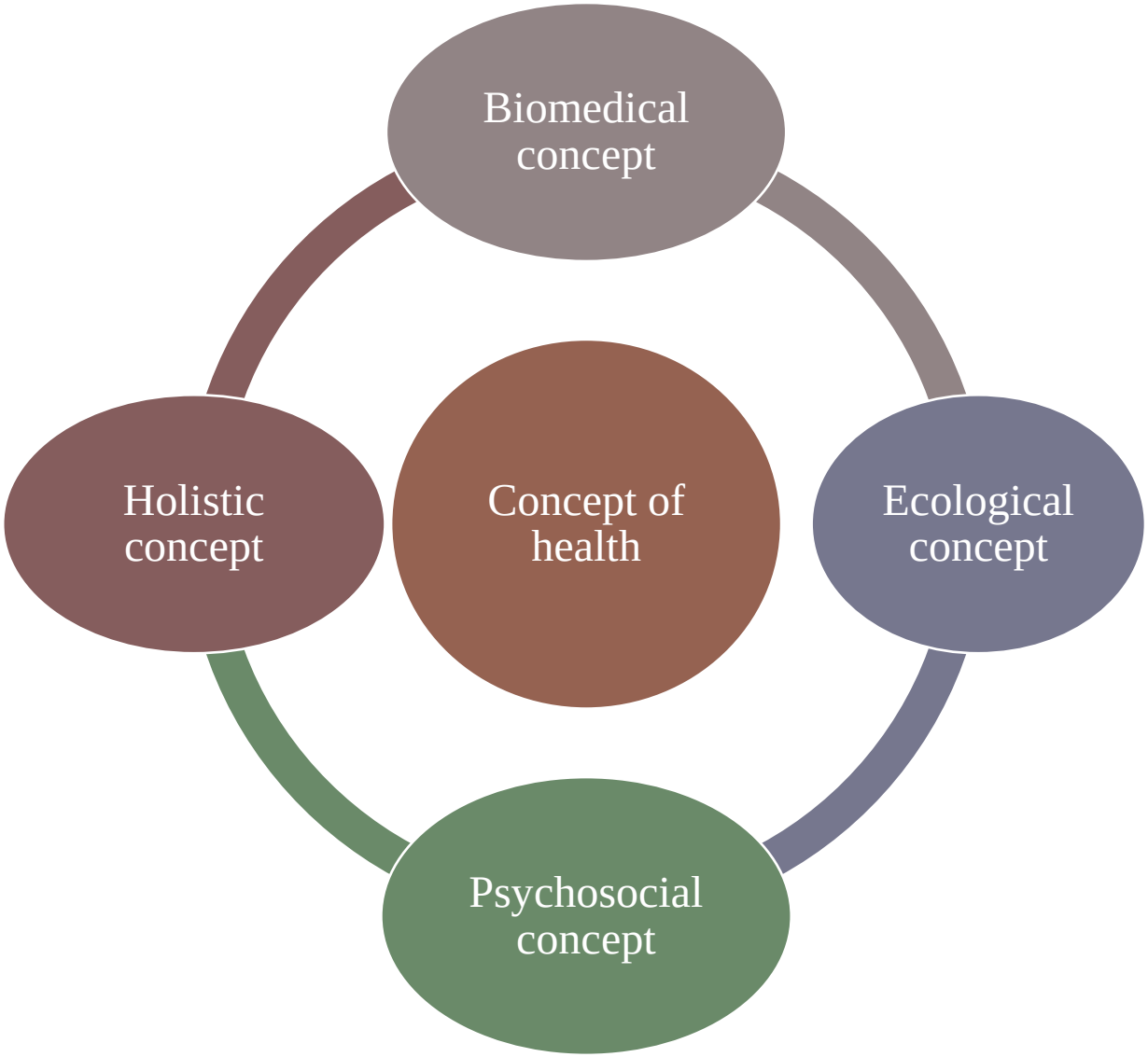
- “A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”

  (World Health Organization, 1948)

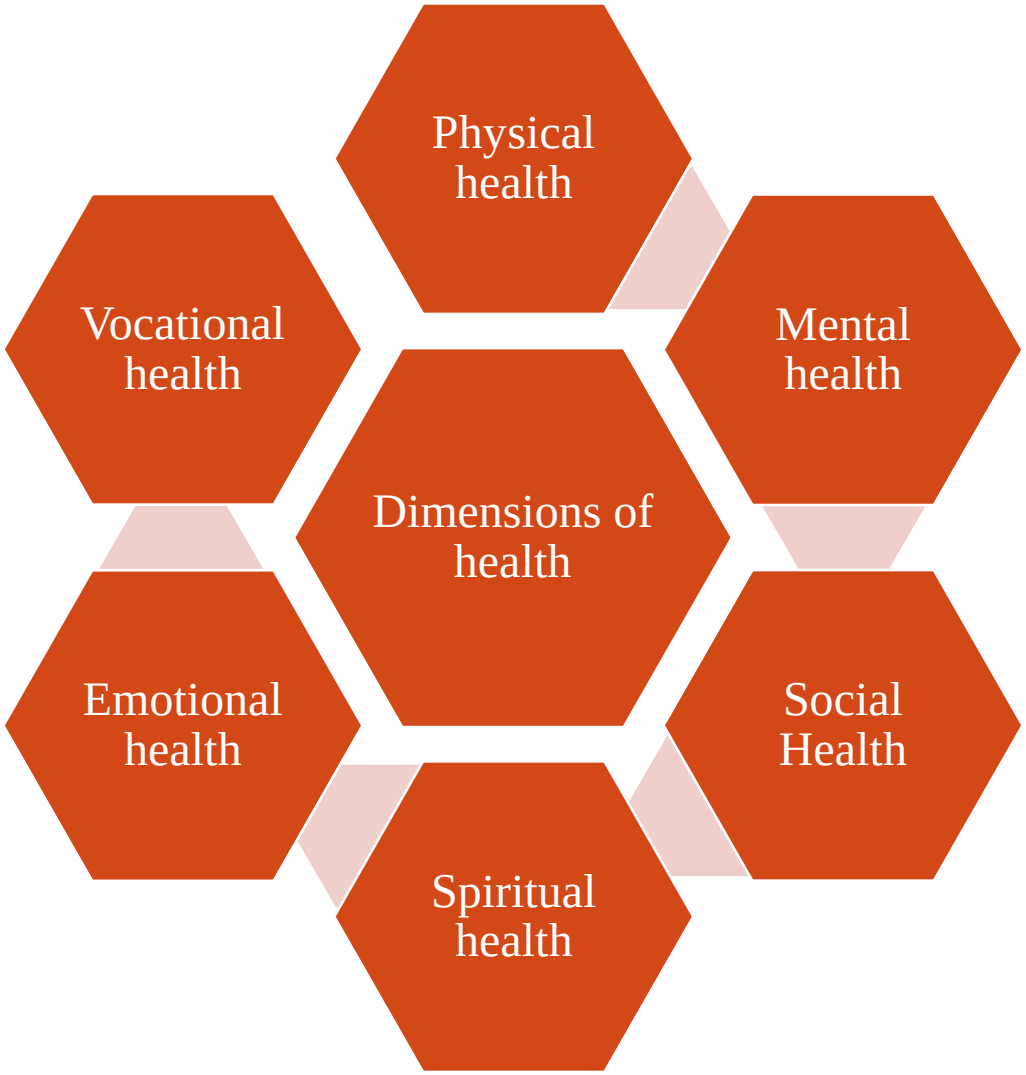
- “The extent to which an individual or group is able to realize aspirations and satisfy needs and to change or cope with the environment.”

  (World Health Organization, 1984)

CONCEPT OF HEALTH



Dimensions of health



- Every cell & organ in the body is functioning at optimum capacity & in harmony with the rest of other organs.

Physical health

- Sound relationships with friends, family & the community as a whole.

Social health

- keeping air, housing & water clean.
- Safe food & safe waste disposal.

Environmental health

- Job should be safe for health
- Comprises aspects of wellness that help achieve a balance between work & leisure.

Occupational health

- Express emotions in a positive, nondestructive way

Emotional health

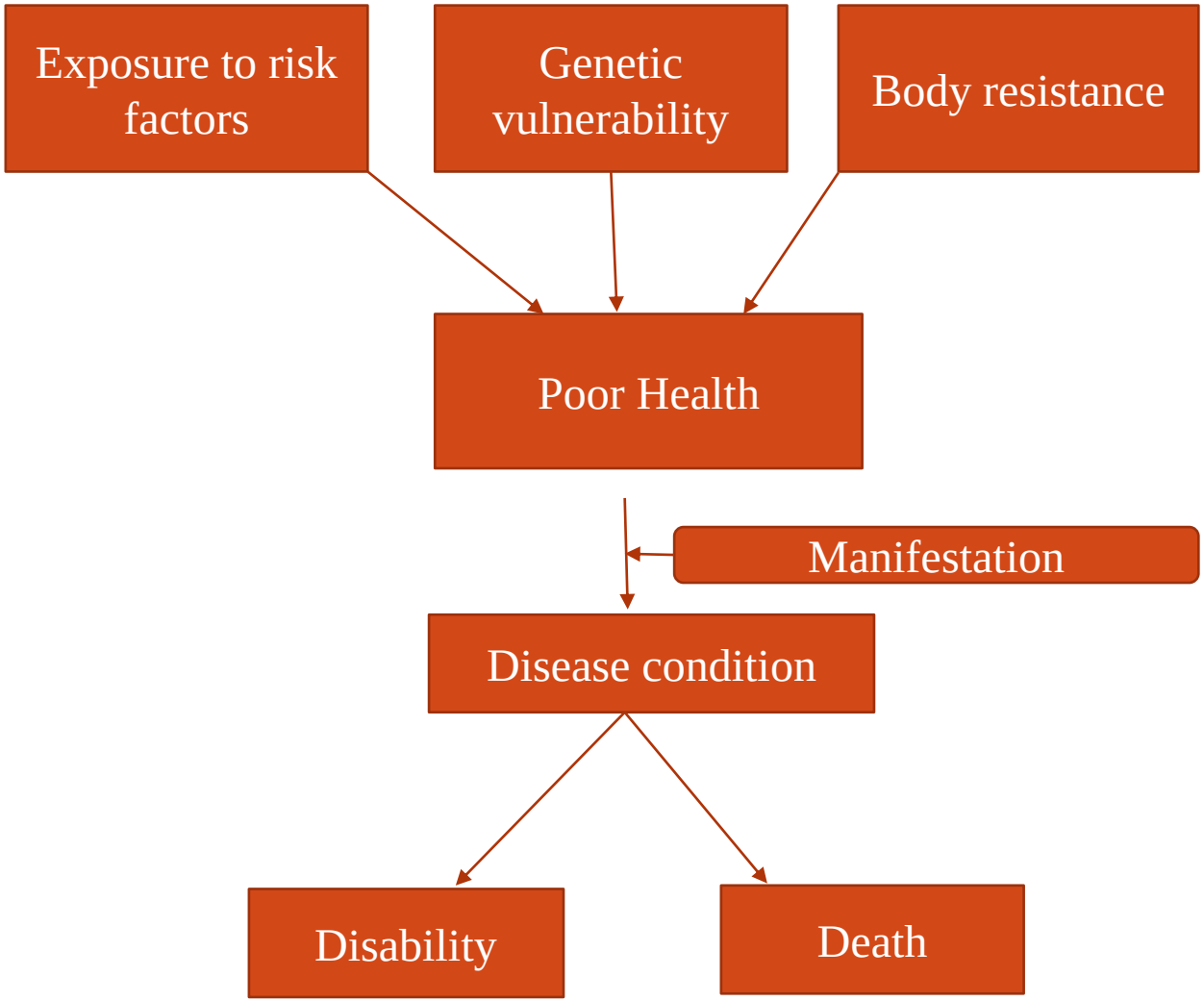
- Maintaining harmonious relationships with other living things
- Having spiritual direction & purpose.
- Living according to one's ethics, morals, & values.

Spiritual health

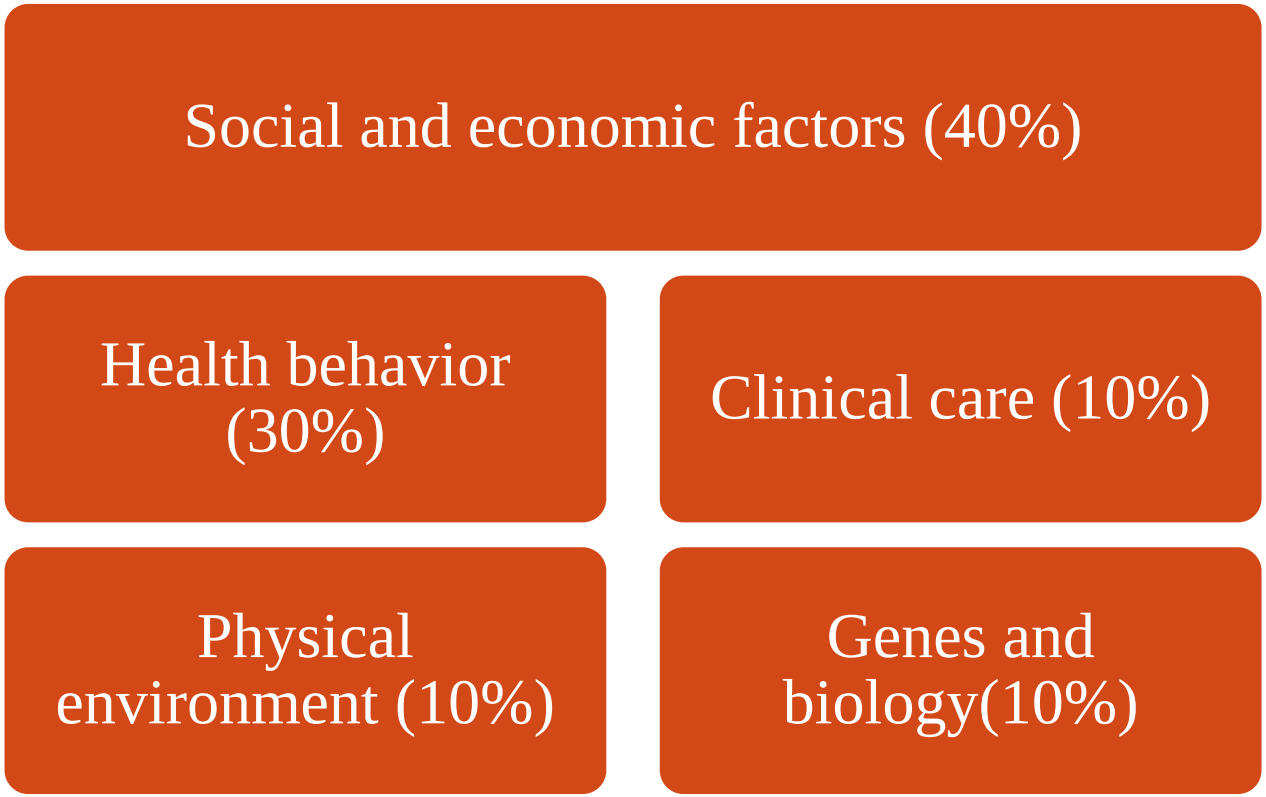
- Ability to recognize reality & cope with the demands of daily life.
- Sound thinking, taking decision, self esteem & dealing with conflicts.

Mental health

A MODEL OF HEALTH

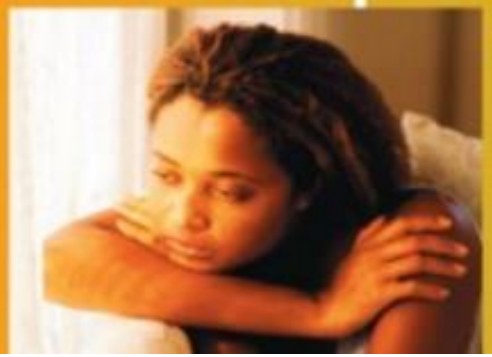


FACTORS INFLUNCING HEALTH AND WELL BEING



Psychosocially unhealthy → **Psychosocially healthy**

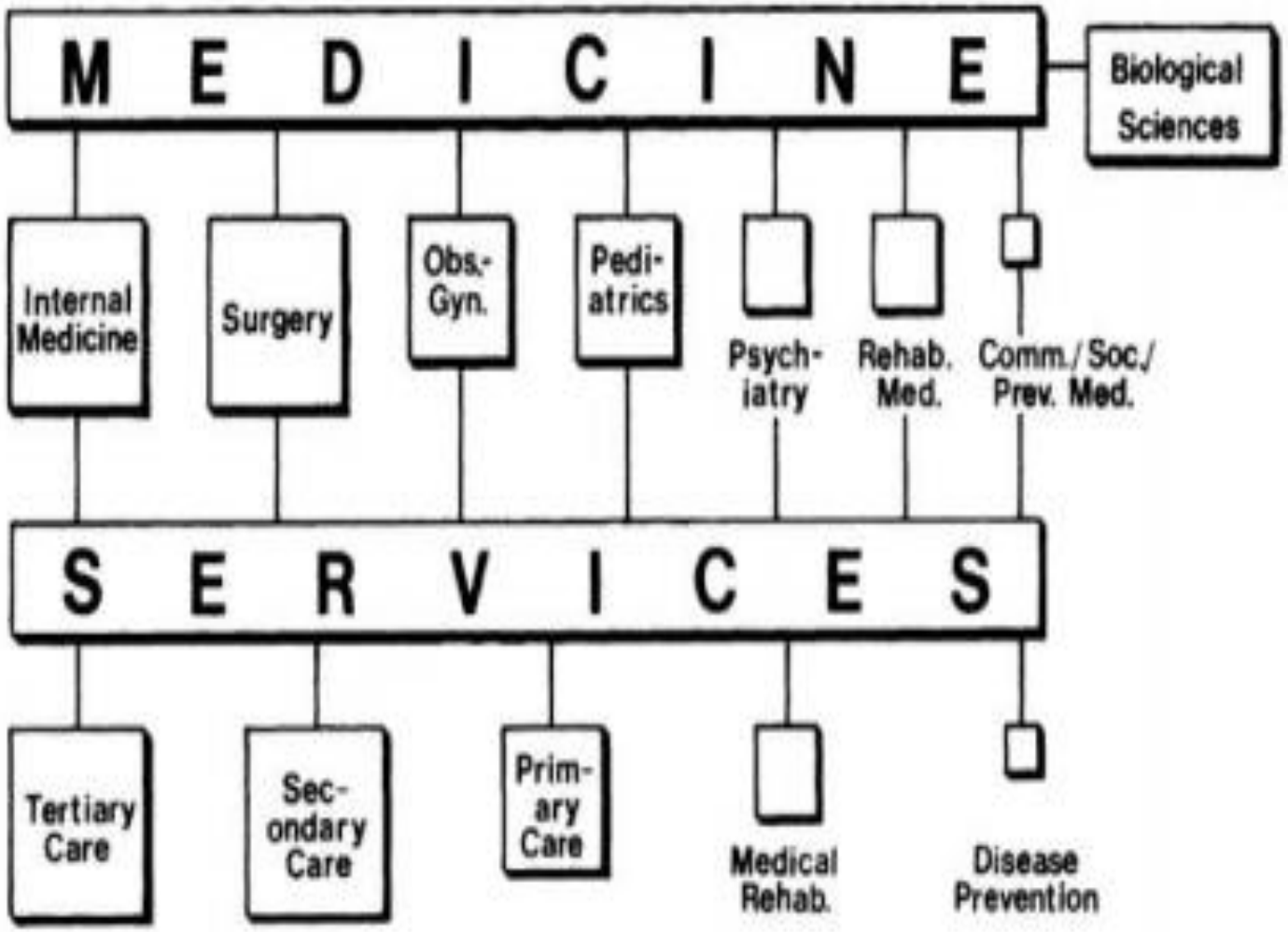
No zest for life; pessimistic/cynical most of the time; spiritually down Laughs, but usually at others, has little fun Has serious bouts of depression, "down" and tired much of time; has suicidal thoughts A "challenge" to be around, socially isolated Experiences many illnesses, headaches, aches/pains, gets colds/infections easily	Shows poorer coping than most, often overwhelmed by circumstances Has regular relationship problems, finds that others often disappoint Tends to be cynical/ critical of others; tends to have negative/critical friends Lacks focus much of the time, hard to keep intellectual acuity sharp Quick to anger, sense of humor and fun evident less often	Works to improve in all areas, recognizes strengths and weaknesses Healthy relationships with family and friends, capable of giving and receiving love and affection Has strong social support, may need to work on improving social skills but usually no major problems Has occasional emotional "dips" but overall good mental/ emotional adaptors	Possesses zest for life; spiritually healthy and intellectually thriving High energy, resilient, enjoys challenges, focused Realistic sense of self and others, sound coping skills, open minded Adapts to change easily, sensitive to others and environment Has strong social support and healthy relationships with family and friends



PUBLIC HEALTH SYSTEM

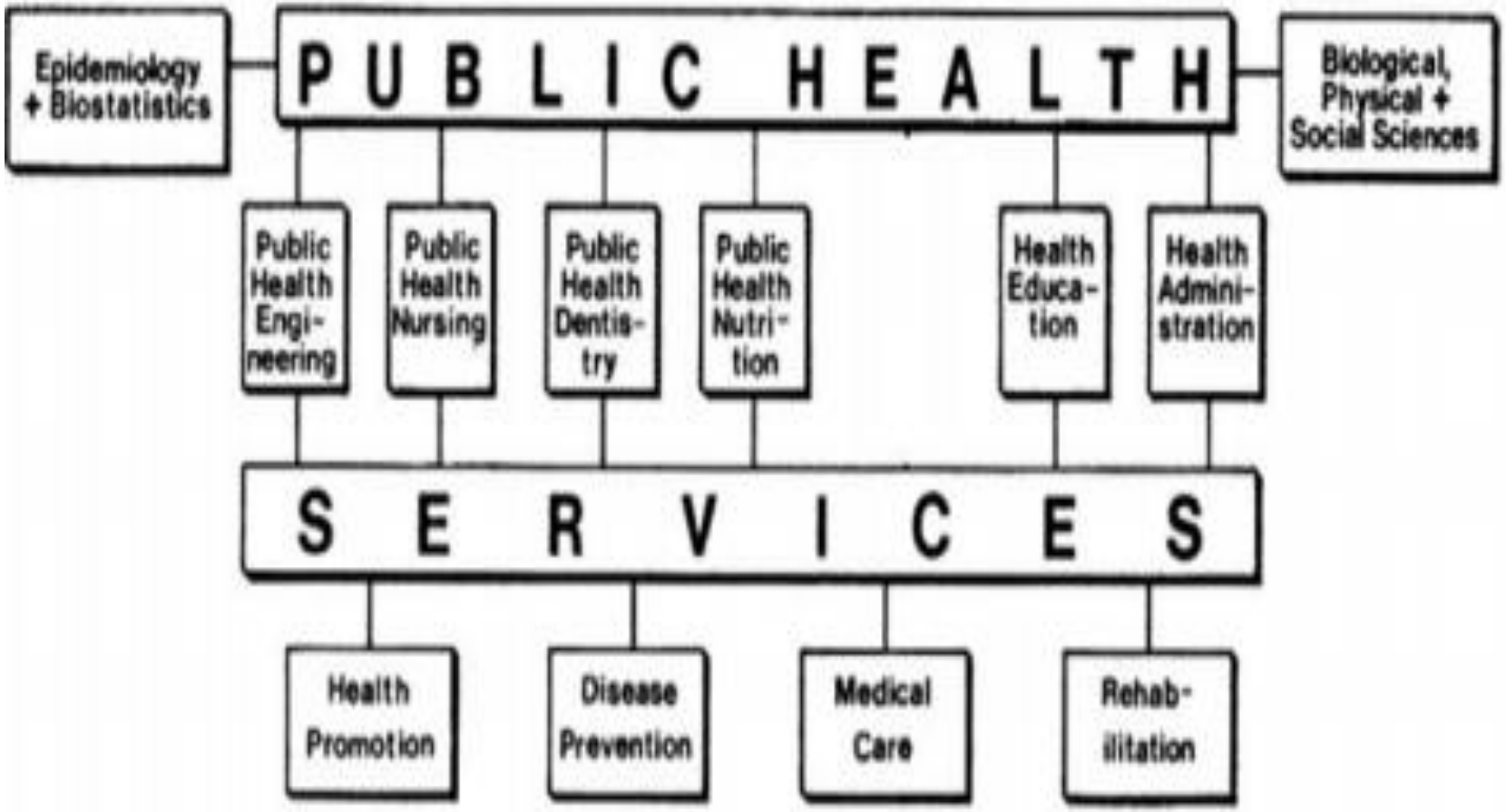
Dimensions of public health

The Community/Social/Preventive Medicine Concept



Items	Community medicine	Clinical medicine
Objective	To prevent diseases	To cure diseases
Customers	Population or all community (healthy and diseased)	Individual patients (diseased only)
Tools of diagnosis	Epidemiological & Statistical studies	History, clinical exam, & investigations.
Management	Community health programs	Medical/surgical treatment
Evaluation	Assessment of health programs & health status of a community by calculation of rates.	Follow up of patients
Branches	Epidemiology, statistics, nutrition, health services & management	Pediatrics, gynecology, general medicine, surgery

The Public Health Concept



HEALTH AND HYGIENE

- **Health** is defined as a state of complete physical, mental and social-being and not merely an absence of disease or infirmity.
- Physical health and mental health are inter-related. A sound mind in a sound body is an old and appropriate saying for good health.

A healthy human being has generally the following features

- A clear skin
- Bright, clear eyes
- A body neither too fat nor too thin
- Fresh breath
- Good appetite, Regular activity of bladder and bowels
- Sound sleep
- Coordinated body movements

1. HYGIENE

- Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases. Medical hygiene therefore includes a specific set of practices associated with this preservation of health.

2. Public hygiene

- Sewage and chemical wastes should not be released into the water bodies. Sewage should be chemically treated first before being released into the water bodies to avoid water-borne diseases.

3. Immunization

- Immunization and vaccination can prevent infectious diseases.

4. Personal hygiene

- Hand washing
- Careful dental care
- Bathing
- Put on clean clothes.

5. Healthy environment

- Garbage in covered bins
- Proper water treatment or disposal
- Covered drains
- Proper sewer lines connected to sewage treatment plants.
- Use of latrines and urinals

5. Healthy environment

- Maintain a healthy environment to prevent the spreading of diseases due to the breeding of mosquitoes, house flies and microorganisms.
- Garbage should be kept in covered bins so that flies do not breed on them.
- Do not allow water to stagnate outside your house and in your neighborhood.
- All drains should also be covered. This will avoid breeding of mosquitoes.
- There should be proper sewer lines connected to sewage treatment plants.
- Contamination of drinking water with a little amount of feces (human excreta) causes a number of diseases.

HYGIENE PRACTICES

- Keep your work place clean.
- Keep your tools, instruments and machinery clean
- Keep your office clean
- Never allow dust accumulation
- Never shy in cleaning your tables by yourself.
- Use toilets in proper ways
- Use more water to avoid smell and stains
- Wash your hands and mouth after you use the toilet
- Always close the doors of toilets
- Open the doors of ventilation

GOOD HYGIENE HABITS

Oral Hygiene

Bathing Ritual

Hair Care

Foot Hygiene

Toileting Hygiene

Hand Hygiene

Coughing and Sneezing Hygiene

Home Hygiene

FOOD IN RELATION TO NUTRITION AND HEALTH

FOOD

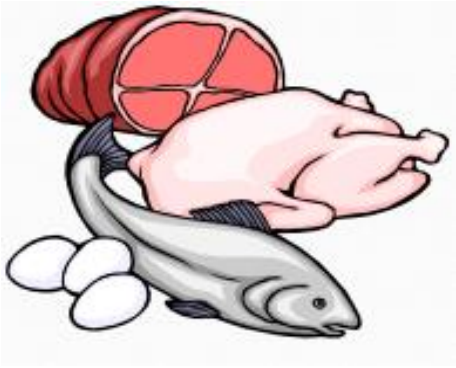
- Food is any edible material that supports growth, repair and maintenance of the body.
- Any edible substance that we consume to fulfill our daily requirement of nutrition is known as food.

NUTRITION

- Nutrition is the process by which body utilizes food for growth and maintenance and healthy living.
- Nutrition is the combination of processes by which the living organism receives & uses the food materials necessary for growth, maintenance of functions & repair of component parts.

Objectives of nutrition

- To promote the physical and mental growth and development of human beings
- Building and repairing of tissues and cell damaged by infection and injuries.
- To provide energy for doing works.
- To protect the human beings from infections and deficiency disorders.



Classification of food

1. Classification of foods by origin

- Foods of plants origin
- Foods of animal origin

2. Classification of foods by chemicals

- Carbohydrates
- Proteins
- Fats
- Vitamins
- Minerals

3. Classification of foods by predominant functions

- Energy supplying food: cereals, sugars, roots, tubers, fats and oils.
- Body building foods: milk, meat, poultry, eggs, fish, pulses and groundnuts.
- Repairing and maintenance foods: Vegetables, fruits, milk

4. Foods by sources:

- Cereals, millets and Legumes (pulses),
- Green vegetables and fruits
- Meat, Fish, eggs and milk,
- Fats and oils, Nuts and oil seeds,
- Sugar and jaggery

NUTRIENTS

- Organic and inorganic complexes contained in food are called as nutrients.
- Useful chemical substances derived from food by the body are called nutrients.
- Nutrient provides energy, helps to grow well and normal development and repair of tissues
- 50 different nutrients supplied by foods to our body.
- Each nutrient has its own specific function.
- Most of the foods contain more than one nutrient.

NUTRIENTS

Nutrients are divided into two parts mainly as Macro-nutrients and Micronutrients.

- Macronutrients are proteins, fats and carbohydrates which are often called “Proximate Principles” because they form the main bulk of food.
- They contribute to the total energy intake as
  - Carbohydrates 60-80 %
  - Fats 10 - 30 %
  - Proteins 7-15 %
- Requires in small quantity and so called micro-nutrients i.e. vitamins and minerals.
- The quantity of nutrients required depends upon age, sex, weight, physical activity and health status of the body.

Carbohydrates

- Provides energy 4 Kcal/gm
- In balanced diet, carbohydrates provide 50-60% of total calories taken.
- In excess, the carbohydrates are converted into body fat.

Functions:

- energy production in the body;
- Useful in oxidation of fat, growth of useful bacteria, synthesis of vitamin B complex,
  - absorption of minerals,
  - prevention of constipation.

Source

Starch: cereals, roots and tubers.

Sugars: white sugar, honey, glucose etc.

Cellulose: indigestible contributes to dietary fibers.

Daily requirements

Children: 60-250 grams.

Adolescents: 400 grams

Men: 300 - 700 grams.

Proteins

- Protein is the building material for all body parts, such as muscle, brain, blood, skin, hair, nails, bones and body fluids.
- Protein constitutes 20% of adult body weight and made up of amino acids. Functions
- Acts as Building blocks of cells and tissues.
- Regulates hemoglobin.
- Regulates muscle contraction, formation of enzyme, hormones and other secretions which help synthesis of enzymes and produces digestive juices and antibodies.
- Act as a source of energy: 1 gm of protein gives 4 kcal.

SOURCES OF PROTEIN

There are 2 main sources of protein.

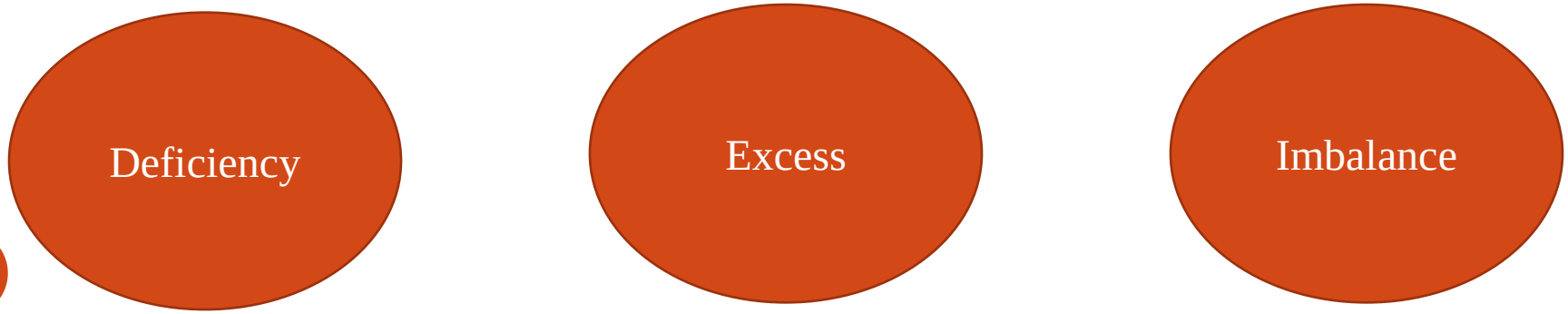
1. Animal sources: Milk, eggs, meat, fish, cheese etc.
2. Plant sources: Pulses, cereals, beans. nuts, soya bean etc.

PROTEIN DEFICIENCY DISEASES AND DISORDERS

- Protein deficiency malnutrition: Kwashiorkor (edema) and Marasmus (wasting) and also lead to Marasmic Kwashiorkor.

Malnutrition

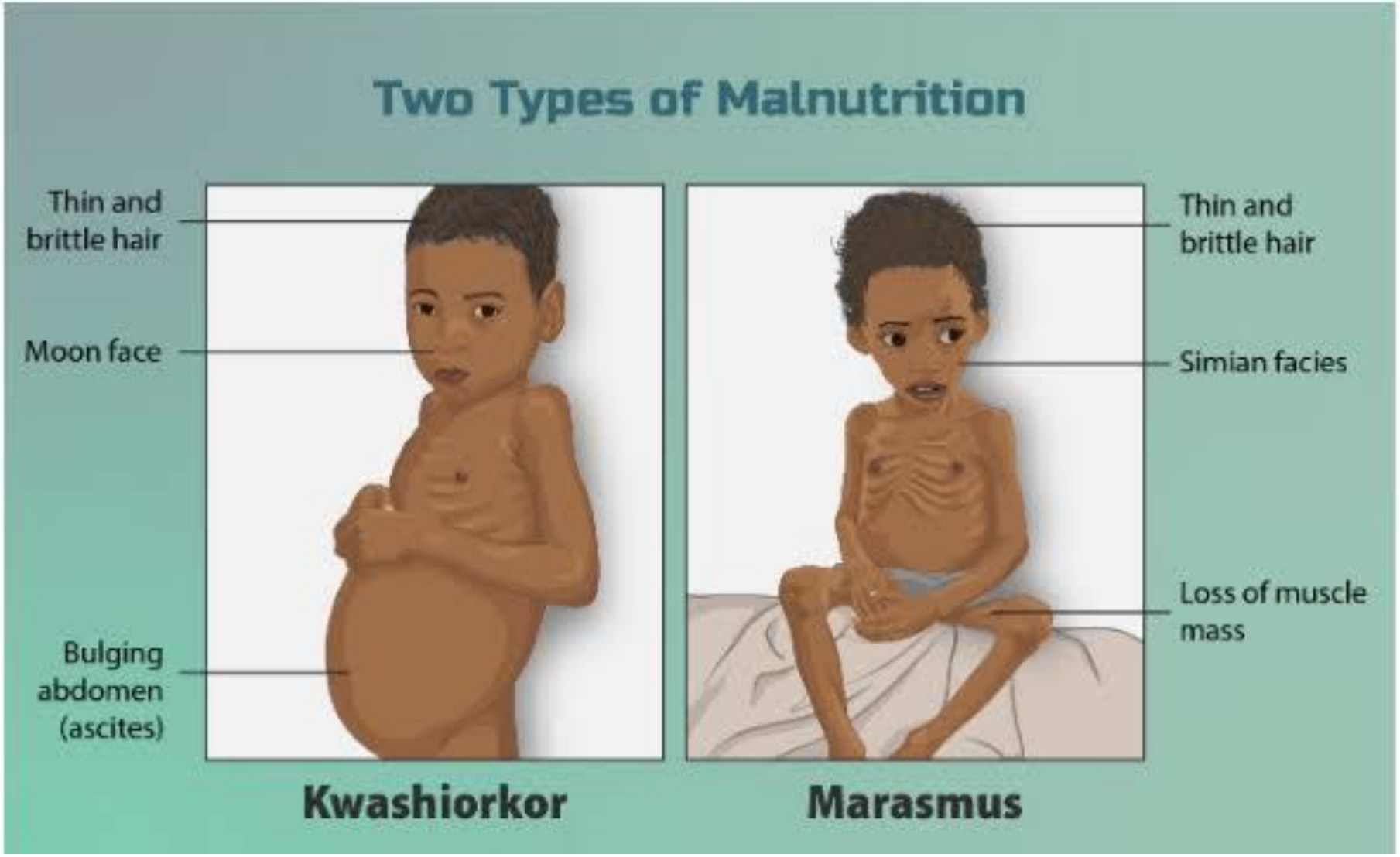
The World Health Organization (WHO) defines malnutrition as "the cellular imbalance between the supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions."



Clinical forms of acute malnutrition

There are 3 clinical forms of acute malnutrition.

- **Marasmus** – severe weight loss or wasting
- **Kwashiorkor** – bloated appearance due to water retention (bi-lateral oedema).
- **Marasmic-kwashiorkor** – a combination of both wasting and bi-lateral oedema.


Two Types of Malnutrition
Thin and brittle hair
Moon face
Bulging abdomen (ascites)
Kwashiorkor
Thin and brittle hair
Simian facies
Loss of muscle mass
Marasmus

FATS

- Composed of smaller units called fatty acids.
- Saturated fatty acids: All animal fats except fish oil.
- Unsaturated fatty acids: All vegetable oils except coconut and palm oils. Saturated fatty acids are cholesterologenic, i.e. they increase blood cholesterol level.

Functions

- Fats provide energy: 1 gram of fat provides 9 calories of energy.
- Dietary fats supplies essential fatty acids needed for growth and maintenance of the integrity of the skin.
- They maintain our body temperature.
- Fats provide support for many organs in our body such as heart, kidneys, intestine etc.

SOURCE

Animal sources: ghee, butter, fat of meat, fish oils etc.

Vegetable sources: groundnut oil, ginger oil, mustard oil, cotton seed and nut oil and coconut oil etc.

Daily requirements

Man: 20-60 gm

Woman: 20-40 gm

Fats and diseases

Obesity, Phrynoderma (rough and dry skin “toad skin”), Coronary Heart Disease (high intake of saturated fats), Cancer (Some recent studies show that high intake of fats increase the risk of colon and intestinal cancer) and Kwashiorkor .

VITAMIN A

- It is a fat soluble vitamin generally found in two forms: Retinol and Beta carotene.
- An adult person (men/women/pregnancy) needs 600 µg of retinol or 2400 µg of β- carotene.

Source

Retinol: Present in animal foods: liver, meat, fatty fish, eggs and milk fat and Beta carotene: Present especially in plants: dark green leafy vegetables, bright yellow fruits.

Functions of Vitamin A

- Important nutrient for normal vision especially in the dark.
- Maintain and help in rebuilding of glandular and epithelial tissues.
- Necessary for normal skeletal growth of human beings.
- It also acts as anti-infective agent.

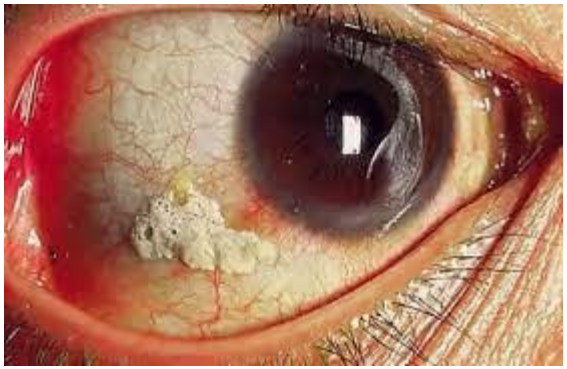
Deficiency:

- Night blindness: inability to see in dim light.
- Conjunctival Xerosis: conjunctiva becomes dry and nonwettable.
- Bitot's spots: Triangular, pearly-white or yellowish foamy spots on the bolbular conjunctiva.

Deficiency:

- Corneal xerosis: The cornea appears dull, dry and non wettable and in more advanced corneal ulceration.
- Keratomalacia: The cornea may become soft and may burst open.
- Corneal Ulcer: Keratomalacia can lead to perforation of the cornea and corneal ulcer leading to permanent blindness.

- **Bitot's spots**



- **Keratomalacia**

- **Conjuctival Xerosis and Corneal xerosis**

- **Corneal Ulcer**

VITAMIN D

- Fat soluble found in two important forms: Calceferol (D2) and Cholecalceferol (D3).
- Calceferol may be derived by plant sterols & ergo sterols; where as cholocalceferol is found in animal fats and fish oils.
- Sunlight (ultra- violet ray) also converts the cholesterol of the body skin to vitamin D.

Functions

- Promotes the intestinal absorption of calcium and phosphorus;
- Promotes bones dissolution and mineralization;
- Prevent from Rickets in children, Increase the tubular reabsorption of phosphate and variable effect on reabsorption of calcium.
- Facilitates in calcium deposition in the bones and teeth.

Sources

Sunlight

Vitamin D3 is formed by the exposure of 7- dehydrocholesterol, which is present in the skin, to the ultraviolet ray of the sunlight

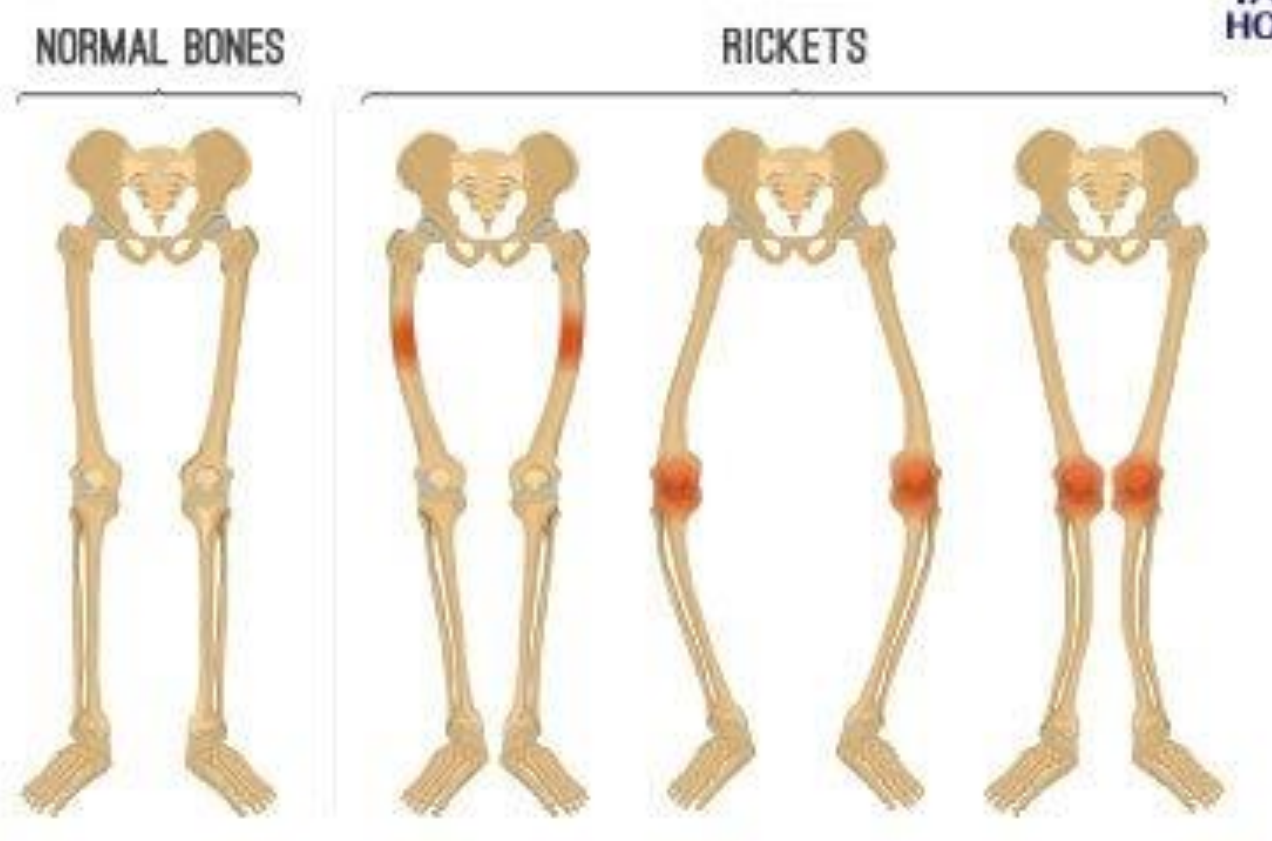
Foods: only in food of animal origin. Liver, egg yolk, butter, cheese and some species of fish. Daily requirement:

Adult: 2.5 mcg (100 IU)

Deficiency:

- Decrease calcium and phosphorus in the blood
- low deposition of calcium phosphate in the growing bones
- Rickets : a condition that affects bone development in children. It causes bone pain, poor growth and soft, weak bones that can lead to bone deformities
- Oesteomalacia: softening of the bones

YASHODA HOSPITALS



VITAMIN E

Fat soluble vitamin also known as Tocopherol “a Anti-sterility Vitamin.”

Functions

- Acts as an antioxidant and reduce oxidation of unsaturated fatty acids.
- Due to anti- neoplastic effect raises the concentration of high density lipids cholesterol.
- With Vitamin E, selenium plays the role of preventing destruction of lipids by oxidation.
- Maintains stability of cell membranes. when externally applied would minimize wrinkles, scars and scratch marks.

Sources of Vitamin E

Plants based foods: Vegetable oils, hydrogenated fats, dark green leafy vegetables, nuts, whole grain, and legumes. Food rich in polyunsaturated fatty acids are also rich in vitamin E.

Daily Requirements

Adults: 10 mg (15 IU)

Deficiency

- Deficiency is usually not found as in almost many vegetables foods have Vitamin E.
- Loss of reflexes, ataxia of trunks and limbs, muscle weaknesses
- Among premature babies, presence of hemolytic anemia.
- Associated with habitual abortion.

VITAMIN K

- Cofactor of enzyme and acts as the catalyst for the formation of prothrombiN
- Two types Phylloquinone – K1 and Manaquinone - K2.
- Vitamin K1 is found in fresh and dark green leafy vegetables where as Vitamin K2 by the synthesis of bacterias in the intestines.
- Destroyed by freezing, by mineral oils and rancid fats.
- Functions Essential Vitamin for the formation of prothrombin.
- Stimulates the production of coagulation factors.
- Synthesize the required protein for the human body.
- Acts as the catalyst for activating the enzyme.

Daily requirement

- 0.03 mg/kg body weight for adults.

Sources

- Found in fresh green vegetables and fruits.
- Dark green leafy vegetables, Cabbage, Cauliflower, are richest source.
- Also found in liver and cow milk.

Deficiency

- Hemorrhage, bleeding disorders.
- Increased risk of hemorrhage among premature or in the new born babies with complicated labour.

VITAMIN C

- It is known as Ascorbic acid.
- It is a water soluble vitamin.
- It is most unstable of all Vitamins and rapidly destroyed by high temperature, oxidation, drying or storage.

Functions

- Vitamin C is the potent antioxidant and has an important role in tissue oxidation.
- It helps to increase the general resistance of the body to fight infections.
- Involves in absorption, mobilization, distribution, and intoxication of metal ions.
- Helps transfer of iron from plasma into tissues and store in bone marrow, spleen and liver
- Protects eyes and lungs from oxidizing agents.
- Reduces oxidation of low density lipoprotein and also Vitamin A & E.

Sources

- Almost all citrus fruits have Vitamin C.
- Also include tomatoes, green leafy vegetables, cabbage, germinating legumes Liver and kidney.
- It is destroyed by cooking

Daily requirements: 40 mg/day for adult

Deficiency

- Scurvy
- Conjunctival haemorrhage;
- Bleeding of gums and petechiae of skin (round , purplish red spot);
- Frequent diarrhoea, fever, vomiting due decrease in body's general resistance to infections.

VITAMIN B1 (THIAMINE)

- It is a water soluble vitamin.
- It is relatively stable at heat but is destroyed in neutral or alkaline solution.

Functions: It plays an important part in carbohydrate metabolism. It is essential for the proper functioning of the nervous system.

Sources

- Richest source: unmilled cereals, pulses and nuts. Poor source: Meat, fish, eggs, liver, dark green leafy vegetables, fruits, dried yeast. Milk is important source for infants.

Daily Requirement: 1-2 mg per day or 0.5 mg per 1000 kcal of energy intake.

Deficiency:

Beri Beri

VITAMIN B2 (RIBOFLAVIN)

Functions

- It involves protein, fat & Carbohydrate metabolism. Fundamental role in cellular oxidation .
- Cofactors of various enzymes which plays the metabolism to form the energy.
- Synthesize the glycogen and erythropoiesis which changes the pyridoxines and folic acids to the coenzymes.
- Helps in oxidation of fatty acids and transport H+ Sources: Milk and milk products, eggs, liver, green leafy vegetables are good sources.
- Wheat, millet and pulses are fair sources. Rice is a poor source. Germinating pulses also furnish riboflavin.
- Riboflavin is synthesized by bacteria is the large intestine. Daily requirement is 1-2 mg or 0.6 mg. per 1000 Kcal intake.

Deficiency

- **Glossitis**

- **scaly dermatitis**

- **circumcorneal vascularization**

- **keratitis**

VITAMIN B3 (NIACIN)

Function

- It is required by the body for the utilization of carbohydrates and tissue respiration.
- Essential for normal functions of skin, gastrointestinal and nervous system. Helps in synthesis of DNA and its repairment.
- Controls blood cholesterol and lipids.

Sources

- Rich in whole grain cereals, nuts, pulses, meat, liver and chicken, dried yeast, ground nuts. Poor source in maize.

Daily Requirements

- 20 mg. per day or 6.6 mg per 1000 calorie intake.

Deficiency

gastrointestinal disorder, diarrhoea, loss of appetite, nausea, vomiting, neurological manifestation, loss of memory, pigmented scaly skin, cracks of hand and neck.

VITAMIN B 6 (PYRIDOXINE)

- It plays an important role in the metabolism of amino acids, fats and carbohydrates.
- Daily requirements: 1.5 - 2 mg per day.
- Sources: Liver, meat, fish, whole cereals and legumes.
- Deficiency is generally unusual as most of the foods like meat, fish, legumes, and cereals contain pyridoxine.
- But in some cases may have clinical manifestation of convulsion, loss of weight and abdominal distress.

VITAMIN B12 (CYNOCOBALAMINE)

- It is necessary for synthesis of DNA and also fatty acids.
- It is required for carbohydrate, fat and protein metabolism.
- It is used for making red blood cells.
- **Sources:** Liver, eggs, fish and milk. It loses its potency when over cooked
- **Daily requirement:-** 1 microgram for adult. And 0.2-1 microgram for children.
- **Deficiency:** Megaloblastic anemia (pernicious anemia) and impairing of DNA thus leading to formation of immatured RBCs causing anemia.

FOLIC ACID

- It is essential for DNA Synthesis.
- Needed for making red blood cells.
- Sources: Green leaves, vegetables, liver, egg, pulses, cereals, nuts, whole grains and oil seeds.
- Daily Requirements

  Adults: 100 micro grams per day.

  pregnant women: 300 micrograms

  For lactating women additional 150 micrograms.

  Children need 100 micrograms.

MINERALS

- Inorganic chemical elements present throughout the body in varying amounts. Act as co-factors of enzymes for metabolism.
- Form part of the structure of body tissues, such as bones, teeth and nails, blood, nerves and muscles.
- Vital to physical and mental development.
- They also help protect the body against infections.
- Meat, fish, milk, cheese, green leafy vegetables and legumes provide most of the minerals needed by the body.

Minerals	Functions
Calcium	Mineralization of bones and teeth; regulator of many of the body's biochemical processes; involved in blood clotting, muscle contraction and relaxation, nerve function, blood pressure and immune defenses.
Phosphorus	Mineralization of bones and teeth; part of every cell; used in energy transfer and maintenance of acid-base balance.
Sodium	Maintains normal fluid and electrolyte balance, assists nerve impulse initiation and muscle contraction.
Chloride	Maintains normal fluid and electrolyte balance.
Chromium	Works with insulin and is required for release of energy from glucose.
Copper	Necessary for absorption and use of iron in the formation of hemoglobin.

Minerals	Functions
Fluoride	Involved in the formation of dental enamel and prevents dental caries; involved in the formation of teeth and skeleton and inhibits osteoporosis in old age.
Iodine	As part of the two thyroid hormones, iodine regulates growth, physical and mental development and metabolic rate
Iron	Essential in the formation of blood; involved in the transport and storage of oxygen in the blood and is a cofactor bound to several non-heme enzymes required for the proper functioning of cells.
Sulphur	Integral part of vitamins, biotin and thiamin, as well as the hormone insulin.
Zinc	Essential for normal growth, development, reproduction and immunity.
Magnesium	Involved in bone formation and tissue energy metabolism.

BALANCED DIET

- A balanced diet is defined as one which contains a variety of foods in such quantities and proportions that the need for energy, amino acids, vitamins, minerals, fats, carbohydrates and other nutrients is adequately met for maintaining health, vitality and general well-being and also makes small provisions for extra nutrients to withstand short duration of leanness.
- A balanced diet is the accepted means to safeguard a population from nutritional deficiencies.

BALANCED DIET

The dietary goals recommended by WHO

- Dietary fats should be limited to approximately 15-30% of daily intake of energy.
- Saturated fats should contribute no more than 10% of total energy intake. Remaining fats requirement should replace by the unsaturated fats.
- Excessive consumption of refined carbohydrates should be avoided and some amount of carbohydrate rich in natural fibers should be taken.

- Sources rich in energy such as fats and alcohols should be avoided.
- Salt intake should not increase more than 5 gm/day.
- Protein should be at-least 15-20% of total energy intake.
- Junk foods such as colas, ketchup that supply empty calories should be reduced.

FOOD PYRAMID

- The Food Guide Pyramid is an outline of what to eat each day based on the Dietary Guidelines.
- It provides a general guide that lets you choose a healthy diet that’s right for you.
- The Pyramid calls for eating a variety of foods to get the nutrients you need and at the same time, the right amount of calories to maintaining healthy and physical wellbeing.


Fats, oils & confectionery
Meat, fish & alternatives
Milk, cheese & dairy
Fruit & vegetables
Bread, cereals & potatoes
RICE
Healthy Food Pyramid

FOOD HYGIENE

- Food is the major source of infection and possible to contaminate by microorganism during its production, handling, distribution, storing, and serving of all types of food.
- Basic concept of food hygiene is to prevent food poisoning and food borne diseases.
- Food hygiene can be defined as " all condition and measures that are necessary during the production, processing, storage, preparation and distribution of food to ensure that is safe, sound, wholesome and fit for human consumption."

  - World Health Organization
- Food hygiene may be defined as sanitary science, which aims to produce food that is safe and good keeping quality.
- It implies hygiene in production, handling, distribution and serving of all kinds of foods.

- The primary aim of food hygiene is to prevent food poisoning and other food borne illness.
- Safe food:
  - Containing no harmful microorganism
  - Containing no parasites
  - Containing no toxin such a falotoxins
  - Containing no harmful chemical such as pesticides
- Food and water became contaminated when micro organism are carried in food out by hand; flies, cockroaches & other insects; rates, mites and other animals; and dirty container and dishes.

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