

Social Pharmacy | Chapter 3 | Nutrition and Health

Nutrition:

Nutrition is the biochemical and physiological processes by which an organism uses food support its life.

It includes injection, absorption, assimilation biosynthesis catabolism and excretion.

Nutrition is a method in which the food is consumed by the organisms into the body and utilizing the nutrients from the food.

Health:

Health is a state of complete physical, mental and social well being and absence of disease.

The oldest definition of health is absence of disease.

Type of Health:

- 1. Physical Health**
- 2. Social Health**
- 3. Spiritual Health**
- 4. Emotional Health**

1. Physical Health:

It is define as the state in which every cell and every organ is functioning at optimum capacity and imperfect harmony will the rest of the body.

The physical health indicate that all body organ are structurally and functionally in a normal state and their the organ and organ systems.

2. Mental health:

It is define as a state of balance between the individual and surrounding world including environment and a state of hormony between onself and other.

Type of mental health:

- I. Neurosis**
- II. Dipression**
- III. Schizophrenia**

3. Social health:

It is define as a quantity and quality an enter personality and the extent of envolvment with community.

4. Spiritual Health:

It is conversion with spiritual soul which direct the person to world right thing and keep away from bad habits.

Spiritual Health refer to part of the individual which reaches purpose of life.

Macro Nutrient:

Macro nutrients are essential nutrients the body needs in large quantities to remain healthy.

Macro nutrients provide the body energy help prevent disease and allow the body to function correctly.

They are 3 main types of macro nutrients.

1. Protein
2. Fats
3. Carbohydrates

1. Protein: It consists of long chain of amino acids.

They help in the growth, development, repair and maintenance of body tissues.

Requirement:- 10 - 35%

Source:- Meat, Chicken, fish, nuts, seed, whole grains, beans, eggs, dairy, and soy.

2. Fats: They are important part of the diet that can also provide the body with energy.

Requirement:- 20 - 35%

Source:- oily fish, olive oil, nuts, meat, butter and cheese.

3. Carbohydrates: Carbohydrates are a preferred source of energy for several body tissues and primary energy sources of the brain.

Requirement:- 45 - 65%

Source:- Rice, potatoes, corn, honey, dairy and beans sugars etc.

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Micro nutrients:

They are one of the major groups of nutrients your body needs. They include vitamins and minerals.

The content of each food is different so it's best to eat a variety of foods to get enough vitamins and minerals.

They are critical for several important functions in your body and must be consumed from food.

Importance of Water-

Water is the universal solvent used in most of the reaction and product formation. Water is neutral in nature but in the reaction it shows both amphoteric properties (acid as well as base).

- About 2.5 to 3.5 litres/perday of water required for an adult human.
- Ideal characteristics of water is colourless, tasteless and odourless. Some common importance of water.

1. Help in digestion - Initially, when we consume the food then watery saliva helps in the lubrication and break down the food in smaller particles.

When the smaller food particles reach to the stomach/Intestine then it converted into absorbable form in the presence water.

Finally, water helps in the softening of fecal matter for easily pass out from the rectum.

2. In circulation - Nutrition absorbs by the blood/lymph vessels from the stomach and intestine directly from the one parts to another parts of the body, it is possible due to watery nature of blood and lymph.

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3. Organ functioning- Each and every organs requires the water for their proper working and metabolism. Ex- brain, heart, lungs, kidney, liver etc.

4. Regulation in body temperature - Water play an important role in the thermoregulation.

- i. ***In Winter-*** When we consume the water then metabolic activity are active and produce huge amount of heat and energy, thus it regulates the body temperature.
- ii. ***In Summer-*** After the metabolism activity water are remove from the body in the form of sweat and shows the cooling effects, thus it regulates the body temperature.

5. Joint and muscles activity - For the activity of muscles and joints water is very important.

A. Some joint and muscle activity works in the presence of ions so, some time water acts as an ion replacement factor and helps in the activity of contraction and relaxation.

B. Water acts as lubrication agents in between the joints so, it overcomes the frictions and damage between them.

6. Removal of toxins/excretory matters- More of the toxics and excretory product are excrete out of the body in the form of watery fluid. Ex urine, sweat.

Fortification of Food -

Fortification is the practice of deliberately increasing the content of one or more micronutrients like vitamins and minerals in a food or condiment to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health.

Due to involvement of Fortification and genetic engineering we are able maintain and recover our populations need an requirement.

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Importance Of Fortification

- Fortification helps in the prevention, reduction and control of micronutrient deficiencies.
- It can be used to correct a demonstrated micronutrient deficiency in the general population such as children, pregnant women and the beneficiaries of social protection programmes.

Example of fortified food-

- Fortified milk (rich vitamin A&D)
- Fortified Grains (vitamins rich wheat, pulses and rice etc.)
- Fortified salts (Iodine+Iron)
- Fortified oil and ghee.

Importance of Fibres-

Fibres are the essential substances needed for the digestion, excretion and proper function of the body. Generally fibres are made up of cellulose or lignin of the plant parts. Cellulose is not digested in the body so, on the basis of digestion fibres are divided into two categories -

A. **Soluble fibres-** In these fibres cellulosic components are less and they are easily digested by the proteolytic enzymes of the body and convert into gel form. It makes the digestion process slow

Ex-Seeds, beans, apples, nuts, and some citrus fruits.

B. **Insoluble fibres-** In these fibres cellulosic components are more and they are not digested by proteolytic enzymes and they pass relatively unchanged through the stomach and give the support in digestion process.

Ex- Grains, papaya, banana, and some vegetables.

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Important functions of fibres-

1. Help in digestion- Fibres play an important role in the digestion by providing the support to the food material. In the intestine food material are combine with the fibrous material and easly pass out through the anal/rectal region.

2.Maintain the cholesterol level- In our body cholesterol are not easly pass out from the body but due to involvement of fibres unwanted cholesterol are ligate with the fibre and easily excrete from the body.

3. Maintain the blood sugar level- By helping in the digestion process fibres allow the essential substances absorbtion and removal so it regulates the blood sugar level.

4. Prevention in GIT infections- Some time indigestion, constipation and distrub digestion, cause the infections in the GIT. For the treatment of these conditions Doctor are recommended to take of more fibres fruit or vegetable. Fibres are also prevent the severe problems like piles.

Calorific value

- Calorific value is defined as the "amount of energy produced by the complete combustion of 1gm of food material or substances in the calorimeter".
- It is calculated by laboratrical method and value is known as experimental value.

Physiological value or nutritive value.

Physiological value is defined as the "amount of energy produced by the complete combustion of 1gm of food material or substances in the respiratory mechanism in the human body".

Comparison between calorific and nutritive value of carbohydrates, protein and fats

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Nutrient	Physiological value or Nutritive value	Calorific value
Carbohydrate	4.0	4.1
Fat	9.0	9.45
Protein	4.0	5.65

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Food

Introduction:

- Food is necessary for all living beings.
- They consist of other nutrients used in the body of an organism to sustain growth and vital processes and to furnish energy.

Classification of food on the basis of their function:

The dietary constituents of food are proteins, carbohydrates, fats, vitamins, minerals and water. Protein, fats and carbohydrates are called macro nutrients as they form the bulk of food.

Vitamins and minerals are known as micro nutrients due to their requirement in small amounts.

A) Energy producing food: These foods are rich in carbohydrates and fats.

They supply heat and energy to the body

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Eg: sugar, honey, jellies

B) Bodybuilding Foods:

These are foods rich in proteins. They are required for body building and are anabolic foods.

Eg: Meat, fish, pulses, oils, seeds, eggs, nuts, milk etc.

C) Protective foods :-

- These are foods rich in proteins, vitamins, minerals and water.
- They provide material for repair in the body as wear and tear goes on constantly and required for the maintenance and regulation of tissues functions.

Eg: Milk, eggs, liver, green leafy vegetables, fruits.

Food safety/ Food Hygiene

The routine in the preparation, handling and storage of food meant to prevent foodborne illness and injury.

Food safety is important as ensure that the food you handle and produce is safe for consumption.

Food safety rules according to WHO

- a. Prevent contaminating food with pathogens spreading from people, pets and pests.
- b. Separate raw and cooked foods to prevent contaminating the cooked foods.

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- c. Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
- d. Store food at the proper temperature.
- e. Use safe water and safe raw materials.

Food Adulteration:

It is define the process of adulterating food or contamination of food materials by adding a few substances which are collectively called adulterants.

The process of contaminating food adding to the food components is a common phenomenon in developing countries.

Ex:- Milk can be diluted by adding water to increase its quantity.

Artificial Ripening:

It is the process when harvested fruits are subjected to treatment without considering their maturity status besides the quantity of ripening agent required to induce ripening for better cosmetic quality and appearance.

Effect of artificially ripening:-

1. Artificial ripening of fruits:

The appearance of the artificially ripening fruits improve the properties like taste, smell and touch are found to be weak.

In artificially ripening agent like ethylene and acetylene promote the ripening process and cause colour change in fruits.

2. Natural ripening of fruits:

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Natural ripening of fruits is a physiological processes which makes them edible tasty and nutrients.

It is the process makes the fruits soft, increase sweetness, decrease bitterness and there are changes in colour and appearance.

3. In adverse health effects of artificial ripening:

The symptoms of arsenic or phosphorus poisoning are diarrhoea, weakness, vomiting burning sensation in the chest and abdomen.

Pesticides:-

- Pesticides are used to protect crops against insects, weeds, fungi, and other pests.
- Pesticides are potentially toxic to human and can have both acute and chronic health effects, depending on the quantity and ways in which a person is exposed.
- Pesticides play a significant role in food production.
- They protect and the number of times per year a crop can be grown on the same land.

Uses of pesticides:-

- ✓ They are used in agriculture to control weeds, insect infestation and disease.
- ✓ Sales of seed leads Genetically to increased use of pesticides.
- ✓ Big agriculture markets stronger more harmful pesticides to combat, superweeds.
- ✓ They controlling organism that harm other human activities and structures.

Genetically modified food:-

They are derived from organism whose genetic material (DNA) has been modified in a way that does not occur naturally.

Eg : The introduced of a gene from different organism.

Or

Genetically modified food is known as bioengineered foods are foods are foods produced from organisms that have had changed introduced into their DNA using the method of genetic engineering.

Genetic Engineering foods have had their DNA changed using genes from other plants or animals.

Scientists take the gene for a desired trait in one plant or animals and they insert that gene into a cell of another plant and animals.

Benifits of genetically modified food:

- Tasties food
- Less use of pesticides
- Faster growing plants and animals
- Medicinal food that could be used as vaccine.

Dietary supplements / Food supplements

- Food supplements and Dietary supplements are vitamins, minerals, herbs and many other products.
- They are available in pills, capsule, powders and energy bar.
- They help you get adequate amount of essential nutrients if you don't eat and nutritious variety of foods.

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Nutraceuticals:-

- They are define as a substance which has physiological benefits or provide protection against chronic disease.
- Nutraceuticals are products, which other than nutrition are also used as medicine.
- It used to improve health prevent chronic disease and increase life expectancy.
- The Products are isolated from herbal products, dietary supplements (nutrients) specific diets.

Drug-Food Interaction:-

- A change in a drug's effect on the body when the drug is taken together with certain foods (or beverages). Not all drugs are affected by food, and some drugs are affected by only certain foods.
- A drug-food interaction can delay, decrease, or enhance absorption of a drug. This can decrease or increase the action of the drug or cause adverse effects.