STUDY MATERIAL FOR 1ST SEM (Honours) NEP,2020

PAPER: FUNDAMENTAL NUTRITION

COURSE CONTENT: UNIT 1

[FOOD AND NUTRITION:BASIC CONCEPT]

FOOD AS SOURCE OF NUTRIENT

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FOOD

What is food?

Food is anything liquid, semi-solid or solid which contains nutrients and energy and when taken or eaten nourishes the body. Food contains important substances which provide energy to move, think, work, run our body systems, keep us healthy, help to boost our immune system and protect us from infections. When we eat or take food, our bodies absorb useful nutrients into the blood and they are transported to areas where they are needed or stored. The food we eat or take is used for growth, maintenance and body functions.

Food, is therefore a complex mixture of different nutrients and non-nutrients.

CLASSIFICATION OF FOOD

There are many ways of classification food:

1.Classification of foods according to their functions Foods may be classified according to their functions in the body:

a) Energy-giving foods ("GO" foods): Foods rich in carbohydrates and fats are called energy-giving foods or "GO" foods. They provide energy to the body and are essential for physical activity and basic functioning of the body. Foods like cereals, roots, tubers, starchy fruits and vegetables oils, milk, butter and ghee are good sources of energy.
b) Body-building foods ("GROW" foods) : Foods rich in protein are called body-building foods or "GROW" foods. These foods help to maintain life and promote growth, repair worn out and damaged body tissues. "GROW" foods come from animal and plant sources. Milk, meat, eggs and fish are good sources of animal proteins while legumes and nuts are good sources of plant protein. Animal protein sources are considered to be of high quality compared to plant sources, apart from soybeans.
c) Protective ("GLOW" foods): Foods rich in minerals and vitamins are known as protective or "GLOW" foods. They are essential for promoting body immunity and regulatory functions. Fruits and vegetables are the main sources of "GLOW" foods. Fortified foods, including iodized salt, are also good sources of "GLOW" foods.

2. Classification by origin:

a) Food of animal origin- such as meat, fish, milk, eggs

b) Food for plant origin- such as rice, wheat, potato.

3. Classification by chemical composition:

a. Protein rich food- such as meat, pulses.

b. Carbohydrates rich rood- such as rice, sugar.

c. Fats rich food- such as oil, butter.

d. Vitamins rich food- such as vegetables, fruits.

e. Mineral rich food-such as vegetable, fruits.

f. Water rich food- such as plain water, green coconut.

4. Classification by Nutritive value:

a. Cereals and millets

b. Pulses and legumes

c. Vegetables

d. Nuts and oil seeds

e. Fruits

f. Animal food

g. Fat and oils

h. Sugar and jaggery

i. Condiment and spices

j. Miscellaneous food

Functions of food

Food is important for life. To be healthy and active, we should certainly have enough food. The food we eat should be safe and rich in all the nutrients for our body needs. We should choose from a wide variety of foods and we should eat them regularly, every day. Do not forget that we should also enjoy the food that we eat; it should look, smell and taste good. Without good nutrition, children and

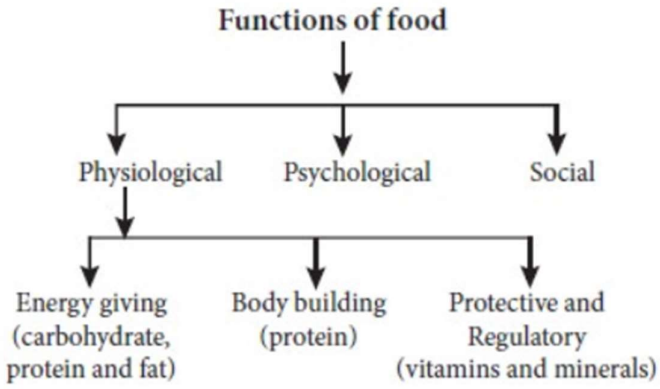
young people cannot develop their potential to the full and adults will have difficulty in doing their best.

Food provides our body with what they need to

stay alive, be active, move and work;

- Build new cells and tissues for growth;
- Stay healthy and heal themselves;
- Prevent and fight infections.

Foods are classified according to their functions in the body. The functions of food can be broadly classified into three main categories:



1.Physiological functions of food

The physiological functions of food can be further sub-divided as follows:

a. Energy giving

b. Body building

c. Protective and Regulatory

a. Energy giving

This group includes foods rich in carbohydrate, fats and proteins. Energy is defined in terms of kilo calories and thus one gram of carbohydrate gives 4 kcal,

one gram of protein gives 4 kcal, while one gram of fat gives 9 kcal. This group may be broadly divided into two groups:

- Cereals, pulses, nuts and oilseeds, roots and tubers.
- Simple carbohydrates like sugars, fats and oils.

Cereals provide in addition to energy large amounts of protein, minerals and vitamins in the diet. Pulses also give protein and B vitamins besides giving energy to the body. Nuts and oilseeds are rich in energy yielding as they are good sources of fats and proteins. Roots and tubers though mainly provides energy, contribute to some extent to minerals and vitamins.

b. BODY BUILDING

The foods we eat become us. Thus one of the most important functions of food is that of building the body. They are classified into two groups:

- **Milk, egg, meat and fish:** They are rich in protein of high biological value. These proteins have all the essential amino acids in correct proportion for the synthesis of body tissues.
- **Pulses, oilseeds and nuts:** They are rich in protein but may not contain all the essential amino acids required by the human body.

c. Protective and Regulatory function

Foods rich in protein, vitamins and minerals have regulatory functions in the body eg. maintaining the heart beat, water balance and body temperature. Protective foods are broadly classified into two groups.

- Foods rich in vitamins, minerals and proteins of high biological value eg. milk, egg, fish and liver.
- Foods rich in certain vitamins and minerals only eg. green leafy vegetables and fruits.

2. Psychological Functions of food

The second major function of food is the psychological function. Food must also satisfy certain emotional needs. These include sense of security, love and attention. Everyone of us belong to a particular culture with its own unique food habits characteristics of that culture and caste.

3. Social function of Food

Food and eating has significant social meaning. Food is also a symbol of our social life Sharing food with any other person implies social acceptance. When you share a meal with someone, you are expressing your acceptance of friendship and respect for that person. Food is a medium through which we express our happiness. For example, feasts are given at specific stages of life, such as birth, birthday, marriage etc

ICMR FIVE FOOD GROUPS

FOOD GROUPS	NUTRIENT
I.Cereals, Grains and Products : Rice, Wheat, Ragi, Bajra, Maize, Jowar, Barley, Rice flakes, Wheat Flour.	Energy, protein, Invisible fat, B vitamins, iron, calcium, fiber
II. Pulses and Legumes : Bengal gram, Black gram, Green gram, Red gram, Lentil (whole as well as dhals) Cowpea, Peas, Rajmah, Soyabeans, Beans	Protein, energy, invisible fat, thiamine, riboflavin, folic acid, calcium, iron and fibre.
III. Milk and Meat Products : Milk: Milk Curd, Skimmed milk,	Protein, fat, riboflavin, calcium.

Cheese Meat:Chicken. Liver, Fish Egg Meat	
IV. Fruits and Vegetables : **Fruits**: Mango, Guava, Tomato Ripe, Papaya, Orange. Sweet Lime, Watermelon. **Vegetables (Green Leafy)** : Amaranth, Spinach, Drumstick leaves, Coriander leaves, Mustard leaves, fenugreek leaves **Other Vegetables** : Carrots, Brinjal, Ladies fingers, Capsicum, Beans, Onion, Drumstick, Cauliflower.	Carotenoids, vitamin C, riboflavin, folic acid, iron, fibre Riboflavin, folic acid, calcium, fibre, iron, carotenoids Carotenoids, folic acid, calcium and fibre
V. Fats and Sugars : **Fats :** butter, Ghee, Hydrogenated oils, Cooking oils like Groundnut, Mustard, Coconut. **Sugars su**gar, Jaggery	Energy, Essential fatty acids and fat soluble vitamins Energy and iron

BASIC FOUR FOOD GROUPS AND ITS SIGNIFICANCE

Food groups have been classified according to various methods from time to time. ICMR (2011) has classified the different foods items into four food groups as listed in. They are

Food group	Nutrient
Cereals, Millets and Pulses: Cereals and millets: Rice, wheat, ragi, maize, bajra, jowar, rice flakes, puffed rice. Pulses and legumes: Bengal gram, black gram, cow pea, peas (dry) rajma, soyabeans.	Energy, protein, invisible fat, thiamine, folic acid, riboflavin, iron and fibre. Energy, protein, invisible fat, thiamine, riboflavin, folic acid, iron and fibre.
Milk and Animal Products: Milk, curd, skimmed milk, cheese Chicken, liver, fish, egg and meat	Protein, fat, riboflavin, calcium. Protein, fat and iron.
IV. Fruits and Vegetables : **Fruits**: Mango, Guava, Tomato Ripe, Papaya, Orange. Sweet Lime, Watermelon. **Vegetables (Green Leafy)** : Amaranth, Spinach, Drumstick leaves, Coriander leaves, Mustard leaves, fenugreek leaves **Other Vegetables** : Carrots, Brinjal, Ladies fingers, Capsicum, Beans, Onion, Drumstick, Cauliflower.	Carotenoids, vitamin C, riboflavin, folic acid, iron and fibre. Riboflavin, folic acid, calcium, fibre, iron, carotenoids. Riboflavin, folic acid, calcium, fibre, iron, carotenoids.
Fats and Sugars : **Fats :** butter, Ghee, Hydrogenated oils, Cooking oils like Groundnut, Mustard, Coconut. **Sugars su**gar, Jaggery	Energy, essential fatty acids and fat soluble vitamins. Energy, jaggery has iron. Protein and w-fatty acids

Significance of the Four-Food Group System

The four food group system can be used for the following purposes:

i. Planning wholesome balanced menus to achieve nutritional ade-quacy.
ii. Assessing nutritional status – a brief diet history of an individual can disclose inadequacies of food and nutrients from any of the four groups.

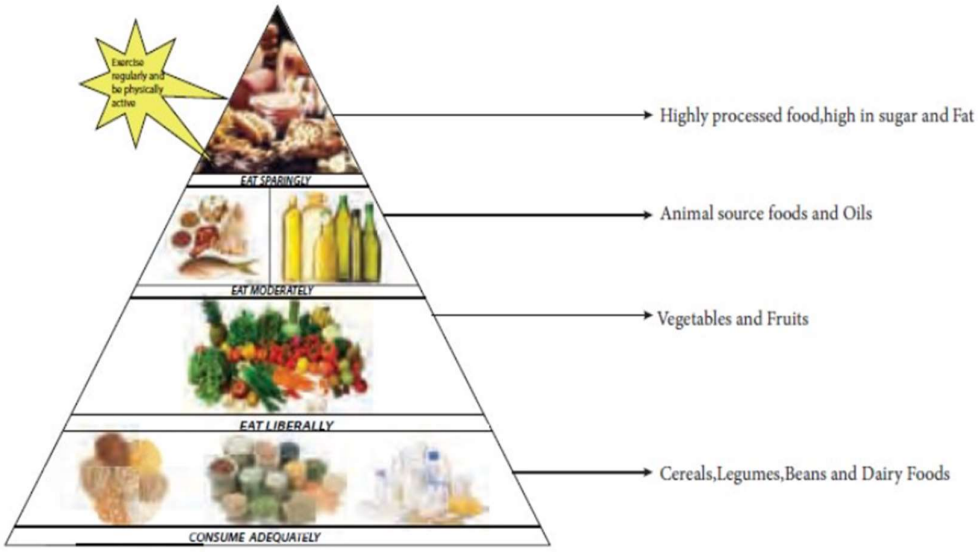
Based on the assessment, nutrition education can be imparted to the individual.

Nutrients

Organic and inorganic complex contain in food are called as nutrient. Useful chemical substances obtained from food and used in the body to provide energy. structural materials, and regulating agents to support growth, maintenance, and repair of the body's tissues. Each nutrient has its own specific function. Most of foods contain more than one nutrient.

Broadly the nutrients are classified based on the amount required as macronutrients and micronutrients. Carbohydrate, fat, and protein are called macronutrients because the body requires them in relatively large amounts (many grams daily). In contrast, vitamins and minerals are micronutrients, required only in small amounts (milligrams or micrograms daily).

FOOD PYRAMID : Food pyramid is meant for use by the general healthy population as a guide for the types of foods and its proportion to be included in the daily diet. In order to assist in selecting food items from each food group the food pyramid has been developed.



The food guide pyramid was introduced in 1992 by USDA (United States Department of Agriculture) as a general plan of what to eat each day. The food guide pyramid is a valuable tool for planning a health promoting diet.

By incorporating the principle of balance, variety and moderation, an individual can still eat their favourite foods while following the food guide pyramid.

Balance:

It means choosing food from different food groups.

Variety:

This means including different foods within each food group. For eg. consuming a variety of fruits.

Moderation:

This means keeping serving sizes reasonable. This involves self control.
The food guide pyramid provides recommendation for the number of daily servings that should be consumed from each of the food groups.