AgroScience Today

Popular Article

e-ISSN: 2583-0147

Volume 4 Issue 7
Page: 0623 – 0629

Food Groups and their Functions

Shivani Singh[1*], Seema Sonkar[2]

[1]Ph.D. Scholar, Food and Nutrition Science, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, India.

[2]Associate professor, Food and Nutrition Science, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, India.

Corresponding author's e-mail: seema07csa@gmail.com

Published on: July 31, 2023

ABSTRACT

Food is made up of various essential elements like carbohydrates, protein, fats, vitamins, and minerals. These elements are necessary for the proper growth, development, and overall well-being of the human body. The food pyramid is a graphical representation in the shape of a pyramid, illustrating the ideal quantity of servings recommended daily from various basic food groups. Foods have contained Antioxidant, Micronutrients and Macronutrients, Phenols and other constituents which serving are decided on the basis of food groups. Balance Diet for the specific people is recommended by using food groups accordingly to anthropometric measurement and type of works. Food from the lower levels of the food pyramid should be consumed in bigger portions than food from the higher levels. From top to bottom, the six levels correspond to the following dietary groups on top to bottom are: sweets, salty snacks, and sweetened or alcoholic beverages, Oils, fats, and nuts; milk, dairy products, meat, fish, and eggs; fruit and vegetables, whole grain products and pulses; other cereals and potatoes. The real lesson is to consume a diet that is as varied as possible and includes items from each level of the food pyramid in the proper proportions. The advice need not be followed every day, but rather over a lengthy period of time, such as a whole week.

INTRODUCTION

The food is defined as anything that can be eaten. This is essential need for humans and the basis of all life. The most basic requirement of a human is food, which is more important than clothing

and shelter Food contains a variety of nutrients, including proteins, fats, carbohydrates, vitamins, and minerals. These nutrients are necessary for development, growth, and the maintenance of good health over the course of a person's life. The large portion of our diet is made up of carbohydrates. The majority of the body's building blocks come from proteins. "Accessory nutrients" are vitamins. In the body, minerals serve as catalysts for a variety of biological processes. Water is the best vehicle for moving dissolved nutrients and waste products within the body.

In 1974, Sweden introduced the initial version of the food pyramid, and it was later referred to as the "Food Guide". Then, in 1992, the United States Department of Agriculture also unveiled its own version of the food pyramid, which was named the "Food Guide Pyramid" the food pyramid underwent revisions in 2005, and eventually, in 2011, it was replaced by a new approach called My Plate. Moreover, more than 25 other countries and organizations worldwide have also introduced their own variations of food pyramids to offer dietary recommendations and encourage healthy eating practices.

FOOD GROUPS

A food group is a selection of foods with related nutritional characteristics or biological categories. We create a balanced diet by classifying foods into the various food groups according to the nutrients they contain. Food groups are divided into 4 to 11 basic food groups, according to the US Department of Agriculture. Even though not all of the fundamental food groups are now consumed, we still need to be aware of each one in order to expand our knowledge. Roles that various food items perform can be broadly categorised into three groups as shown in the table.(Kapoor, 2018)

Table 1. Function of Foods

S.No.	Functions	Nutrients	Foods
1.	Energy giving food	Carbohydrates and Fats	Cereals, Fat, Sugar
2.	Body building food	Proteins	Pulses, Meat, Milk, Chicken
3.	Regulatory and Protective Foods	Vitamins and Minerals	Fruits and Vegetables

Source: Module-1 Home science in Daily Life

This category consists of foods that are abundant in carbohydrates, fats, and proteins. Each gram of carbohydrate provides 4 calories, each gram of protein provides 4 calories, and each gram of fat provides 9 calories.

FOOD PYRAMID

U.S. Department of Agriculture introduced the food reference pyramid in 1992 (USDA). It is a useful tool for creating a diet that promotes health. The food pyramid offers suggestions for the recommended daily serving sizes for each of the food groups. According to the "Food Pyramid,"

cereals are constitute the majority of a person's diet, including fruits ,vegetables, pulses, milk, and meat products, with less emphasis placed on sugar and oils. The food pyramid incorporates the concepts of balance, diversity, and moderation to assist people in selecting their favourite foods.

DIFFERENT TYPES OF FOOD GROUPS

1. Basic Four Food groups: According to Indian Council of Medical Research (ICMR) the nutria nutrients in Basic four food groups are:

Table 2.

Source: Nutritive value of Indian food, National Institute of Nutrition, ICMR(2017)

S.No.	Food Group	Main Nutrient
1.	Cereals, millets, and pulses Some examples include whole grain and enriched breads, bajra, maize, ragi, jowar, rice flakes, wheat flour, malted cereals, Bengal gram, green gram, red gram, cowpea, rajma, and soya bean.	Foods that are rich sources of energy, protein, invisible fat, thiamine (Vitamin B1), riboflavin (Vitamin B2), folic acid, iron, calcium, and fiber. These nutrients are essential for maintaining good health and overall well-being. Including foods from this group in your diet can help ensure that you get a balanced intake of these important nutrients.
2.	Vegetables and Fruits Green leafy vegetables: Amaranth, spinach, drumstick leaves, beetroot leaves, curry leaves, mustard leaves fenugreek leaves Other vegetables: Carrot, capsicum, beans, cauliflower, onion, brinjal Fruits: Guava, tomato, mango ripe, papaya, orange, water melon grapes, amla	Carotenoids, folic acids, riboflavin, iron, fibre, calcium Carotenoids, folic acid, calcium, fibre Carotenoids, polyphenols, vitamin-C, fibre
3.	Milk and milk products, egg, meat, and fish Milk and milk products: Milk, curd, skimmed milk, cheese Egg Meat: Chiken, liver, mutton Fish	Protein, fat, riboflavin, calcium High biological value protein, Vitamin-A Omega 3 fatty acid, Vitamin A& E
4.	Oil & fats, Nuts & oilseed: Butter, ghee, hydrogenated fat, gingelly oil, groundnut oil, mustard oil, coconut oil Sunflower seed, flax seed, Almond	Energy fat, essential fatty acids, fat soluble vitamins

2. FIVE FOOD GROUP

The U.S. Department of Agriculture's dietary recommendations mainly emphasise the five major food groups. Food group recommendations for the daily consumption of calories and key

elements were first proposed in 1916.The objectives which can be achieved by applying the five food group system:

- Making healthful, well-balanced menu plans to ensure adequate nourishment.
- Evaluating nutritional status - A simple examination of a person's eating history can reveal a lack of foods and nutrients from any of the five food groups.(USDA)

As per the Indian Council of Medical Research (ICMR), foods can be categorized into different groups depending on their nutritional value.

1. CEREALS, GRAINS AND PRODUCT

In this group, cereals and millets such as rice, wheat, ragi, bajra, maize, jowar, barley, rice flakes, and wheat flour. These foods are rich in essential nutrients like energy, protein, invisible fat, thiamine, niacin, vitamin B2, folic acid, iron, and fiber. They are particularly popular among low-income groups due to their affordability, and as a result, they are consumed in significant quantities. Cereals such as wheat, maize and rice are the main component of our diet. These are consumed in large amount, which produce main source of energy in our diet. Whole cereals and grains contain excess amount of fibre. Fibres are not a nutrient, but it contributes in maintaining a healthy digestive system.(NIOS)

2. PULSES AND LEGUMES

Legumes such as Bengal gram, Black gram, Green gram, Red gram, Cowpea, Peas, Rajmah, Soybeans, and Beans. These legumes are rich in nutrients like energy, protein, invisible fat, Vitamin B1, Vitamin B2, Folic Acid, Calcium, Iron, and Fiber. These foods are protein-rich and can aid with protein dietary supplements as well as addressing protein energy deficiency.

3. MILK AND MEAT PRODUCTS

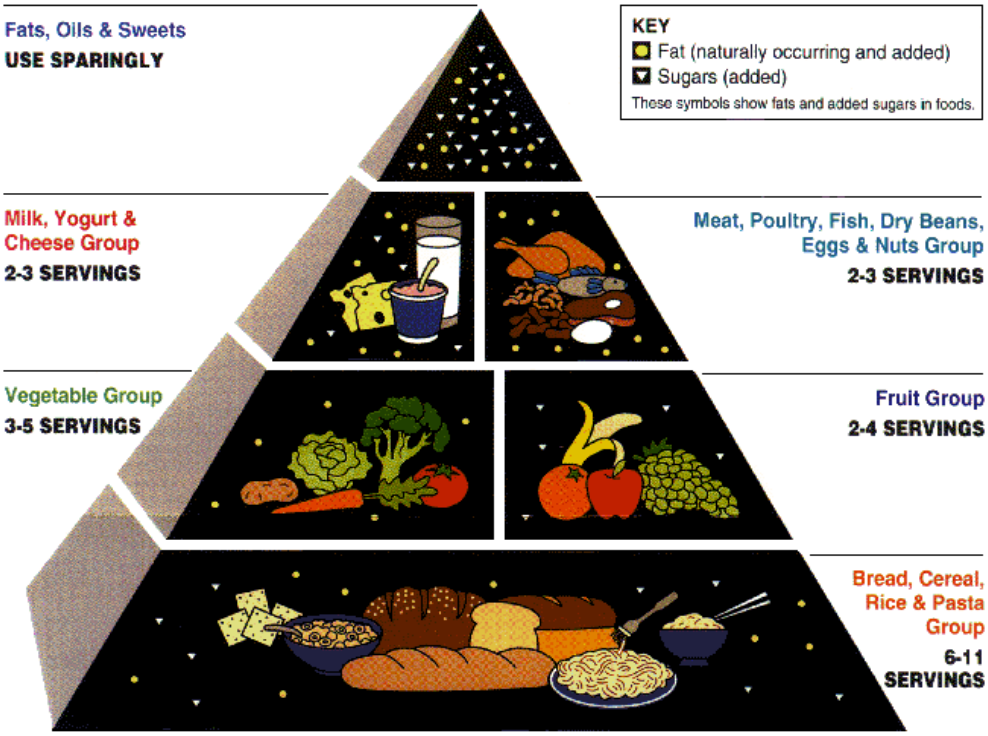
- **Milk:** Milk, Curd, Skimmed milk, Cheese
- **Meat:** Chicken, Liver, Fish,
- **Egg:** Except vitamin C, eggs are a great source of practically all nutrients. Eggs are specifically advised for developing youngsters, pregnant women, and breastfeeding moms since they contain high-quality proteins.

4. FRUITS AND VEGETABLES

- **Fruits:** fruits such as orange, mango, guava, ripe tomato, papaya, watermelon, and sweet lime. All these fruits are abundant in fiber, vitamin C, and carotenoids.
- **Green Leafy Vegetables:** The vegetables in this group include amaranth, spinach, drumstick leaves, coriander leaves, mustard leaves, and fenugreek leaves. Carotenoids, Vitamin B2, Folic Acid, Calcium, Iron, and Fiber are the main nutrients.
- **Other Vegetables:** This category also includes carrots, brinjal, ladies' fingers, capsicum, beans, onions, drumsticks, and cauliflower, all of which include the nutrients carotenoids, folic acid, calcium, and fibre. These foods give the diet variety in terms of taste and texture as well as roughage.

5. Sugars and Fats

- **Sugars:** Jaggery and sugar are both present, and it has energy. These food items are all concentrated energy sources. About 1/6th of the diet's total energy value comes from this group.
- **Fats:** Butter, ghee, hydrogenated oils, and cooking oils including groundnut, mustard, and coconut belong to this category of nutrients. They also provide energy and essential fatty acids.



Source: https://commons.wikimedia.org/wiki/File:USDA_Food_Pyramid.gif

Figure 1. Five Food Groups

3. BASIC 7 FOOD GROUP

In 1943, the USDA released a dietary guide advocating the "Basic 7" food groups during World War II. From 1943 until 1956, the "Basic 7" food groupings of the USDA were in place. Under food rationing during the war, it aided in maintaining nutritional standards.(USDA)

Objective: To protect body, boost immune system and avoid microbes and ill health. Provide structure, strength and energy to the body.

- Group one includes nutritious green leafy vegetables and vibrant yellow vegetables.
- Group two consists of refreshing citrus fruits, rich in essential vitamins.
- Group three encompasses a variety of vegetables, including potatoes and others, adding diversity to the diet.
- The fourth group is the meat group, which includes pulses, meat, poultry, and eggs, providing a good source of protein.
- Group five represents milk, a vital source of calcium and other nutrients.

- Cereals and breads make up group six, offering energy and carbohydrates.
- The final group is sugar and fats, including butter and fortified margarine with added Vitamin A. (e-cource)

4. BASIC NINE FOOD GROUPS

The United States Department of Agriculture (USDA) has categorized food into nine basic groups as follows:

1. Cereal, Grain, and Millet
2. Whole Pulses, Lentils, and Legumes
3. Milk and Milk Products
4. Nuts and Oilseeds
5. Fats and Oils
6. Vegetables
7. Fruits
8. Herbs, Condiments, and Spices
9. Meat, Poultry, and Seafood

These groups represent a diverse range of essential foods, each contributing unique nutrients to a balanced diet.

5. Basic Eleven Food Groups

The United States Department of Agriculture (USDA) has advised following the Basic 11 food group approach, which includes the following categories:

1. Pulses (whole pulses, lentil, black gram, chickpeas, Bengal gram green gram
2. Nuts and Oilseeds (Almond, walnuts, musterd seed, flax seed, sunflower seeds)
3. Cereals and Millets(Rice, flakes rice, jowar, bajra, ragi, poroso millets, finger millets)
4. Vegetables(Green leafy vegetables, Roots and tubers, Other vegetables)
5. Fruits
6. Milk and Milk products
7. Eggs
8. Meat, Fish and Other animal foods
9. Fats and Oils
10. Sugar and Other Carbohydrate Foods
11. Spices and Condiments (coriander seeds, Nutmeg, Turmeric, cardamom, cinnamon etc.)

FUNCTIONS OF FOOD PYRAMID/FOOD GROUPS

- A food pyramid is one way to show the fundamental dietary groups. The shape of a food pyramid makes it easy to comprehend the significance of the different dietary groups.
- The food pyramid can be used to plan a diet that is well balanced.
- This is a useful tool for teaching the community about the importance of the different food groups in maintaining a healthy nutritional status. It is possible to create nutrition and health guidelines using the food pyramid. It encourages healthy eating in an approachable way. (kalpna)

- The food pyramid was created to help people understand what foods are nutritious and in what quantities they should be taken. Foods that are healthy have the right amounts of carbohydrates, proteins, fats, vitamins, and minerals which make a balance food plate.
- In each block of the pyramid, foods with the same nutritional value are maintained together. Which can use the Food groups as a reference to find the ideal ratio of nutrient-dense meals within required calorie range.
- According to studies, we consume too many calories from foods and beverages on the top shelf of the food pyramid that are high in fat, sugar, and salt but low in vitamins and minerals.

CONCLUSION

To concluding the food groups have particular nutritional advantages; foods from each group should be eaten every day. Eating more fruits, vegetables, whole grains, and dairy products compared to foods from the meat, fish, and bean groups is crucial for a well-balanced diet. By incorporating various foods from each group into our meals, we receive a diverse array of macronutrients and micronutrients, ensuring our diet are healthy and balanced. This diversity of foods makes our meals flavorful, colorful, and exciting, making healthy eating an enjoyable experience.

REFERENCES

Dr.A.C. Kalpna, (2018), Food Science and Food group, e-postgraduate pathshala.

https://www.brainkart.com/article/Four-Food-Groups-and-Food-Pyramid_35145/ICMR.

https://www.brainkart.com/subject/Food-Service-Management-11th-std_343/.

https://sos.cg.nic.in/E-Books/12th/English/eng National Institute of open schooling under MHRD book%20321%20Home%20Science/321_pdf.

https://www.nutritionfact.in/nutrition-facts/function-of-food-food-groupsfood-pyramid.

Radhikakapoor,(2018),https://www.researchgate.net/publication/323725772_Home_Science_in_Everyday_Life.

The food Guide Pyramide, USDAs Human Nutrition Information Service. Tiie address is: U.S. Department of Agriculture Human Nutrition Information Service 6505 Bclcrcst Road HyattsNillc. MD 20782.