

## **4. Nutritional Impact and Public Health Implication**

**Ajit D. Gaikwad**

Abhinav Education Society's College of Education (B.Ed.),  
Ambegaon (Bk) Pune.

### **4.1 Introduction:**

Public health nutrition is the field of study that is concerned with promotion of good health through prevention of nutrition-related illnesses. Public health nutritionists use large scale, organised and multidisciplinary approaches to solve the problems that affect the population. Therefore, this field is multidisciplinary in nature and is built on the foundations of biological and social sciences.

Food is one of the basic needs of the human being. It is required for the normal functioning of the body parts and for a healthy growth. Food is any substance, composed of carbohydrates, water, fats and proteins that is eaten or drunk by animal, including humans, for nutrition.

Considered food may be sourced from plants, animals or another source. Public awareness serves as both a challenge and a stimulus to public health. Nutrition is a critical part of health and development. Better nutrition is related to improve infant, child and maternal health. Stronger immune systems, lower risk of non-communicable diseases and longevity.

Food nutrition is a study concerned with all nutritional aspects of food, beginning with harvesting or slaughtering, and ending with its cooking and consumption. It is considered one of the life sciences and is a highly interdisciplinary including Microbiology, Chemical and Biotechnology, Biochemistry and many others.

Any professional in the field of public nutrition has to promote good nutrition and /or to prevent nutritional problems, for which it is important to identify the problem and its magnitude, understand how and why these problems occur and then plan strategies and

actions to implement them and evaluate their impact. In any society, nutritional problems are not just linked to food but to a variety of interacting/interrelated factors at various levels. While poverty is often the underlying cause, the situation becomes worse when a substantial proportion of families do not have access to basic amenities. Rural households have less access to toilets. Poor sanitation results in loss of work days and further economic loss. Further, considerable proportion of the population does not have safe drink. Nutritious food can enhance your physical and mental potential. This particular study focuses on importance of the food in daily life, to enhance awareness to the community by using recent science and Biotechnological knowledge to the society.

### **A. Food:**

Any substance which nourishes the body and is fit to eat is called food. Food is essential for human life because it is the source of energy and nutrients. Our body is made up of the foods we eat. Food contains chemical components similar to those that make up the body. These chemical components of food are called nutrients.

### **Why Do We Need Food?**

- Foods supply the body with specific nutrients.
- These nutrients are necessary for our: Physical growth and development, Repair and maintenance of normal body functions. Protection against infections.
- Nutritious food is, thus needed to sustain life and physical activity. No single food contains all nutrients. Therefore, a combination of varied foods is needed.

### **B. Nutrition:**

- Nutrition is the science of food and its relation to health. It deals with food and is a basic prerequisite to sustain life. The way our body makes use of these nutrients affects our health and wellbeing. Variety in food is not only the spice of life but also the essence of nutrition and health. Various studies reported that plant-based product are nutrient rich which can be used as food product.

## **Nutrients:**

Nutrients give your body energy and enable bodily functions. They are usually classified in two major groups:

- **Macronutrients**, in the form of protein, carbohydrate, or fat, primarily provide energy to your body. The different macronutrients serve different energy pathways and functions in the body. Energy from macronutrients in food is measured in units called calories.
- **Micronutrients**, known as vitamins and minerals, are required by the body in minute amounts. They protect and promote various bodily functions, including processing energy from macronutrients. Although critical to health, micronutrients do not supply energy.

Healthy diets with an optimal balance of nutrients help people accomplish daily physical activities and mental processes. Within your diet, a deficiency or excess of certain nutrients can affect health.

The term diet refers to foods and beverages consumed over time in all settings, such as worksites, schools, restaurants, and the home. Diet also often means a specific nutritional plan or eating pattern.

India currently faces twin challenges in the nutrition sector – under nutrition manifesting in several health problems as well as increasing problem of overweight and obesity, contributing to the burden of non-communicable diseases.

In order to provide a snapshot of all relevant data and information about nutrition, the Hyderabad-based National Institute of Nutrition (NIN) has developed the country's first Nutrition Atlas. The Nutrition Atlas provides information and data on nutritional status of population groups at national and state levels, along with an overview of nutrition related deficiencies, disorders and prevalence levels in various parts of the country. In addition, it provides information on nutrients, nutrient rich foods, nutritional deficiency disorders and a host of other topics.

## **Why Do We Need Nutritionally Adequate Food?**

Our diet must provide all essential nutrients in the required amounts. Requirements of essential nutrients vary with age, gender, physiological status and physical activity. Eating too little food during infancy, childhood, adolescence, pregnancy etc. or too much food at any age can lead to harmful consequences.

Therefore, an adequate diet, providing all nutrients, is needed throughout our lives. Nutritious food can enhance your physical and mental potential.

Different factors in a person's daily activity or diet can cause nutritional disturbances and affect nutritional intake and retention. Learn more about nutritional disturbances, such as vomiting, heartburn, obesity, anorexia, and discover how they relate to malnutrition.

**There are various strategies that can be used to combat public nutrition problems. They are broadly classified as:**

- a) Diet or food-based strategies
- b) Nutrient-based approach or medicinal approach

They are preventive and comprehensive strategies that use food as a tool to overcome nutritional deficiencies. They can play an important role in preventing micronutrient deficiencies by increasing the availability and consumption of micronutrient-rich foods.

One of the important advantages of this strategy is that it is sustainable and will have long-term benefits. Other benefits are that they are cost-effective, can be adapted to different cultural and dietary traditions and very importantly they do not carry risk of overdose or toxicity which may happen in case of nutrient-based / medicinal approach.

Some important food-based approaches include dietary diversification and modification, horticulture interventions e.g., home gardening, nutrition and health education, food fortification. Nutrient-based or medicinal approach: In this approach nutrient supplements are given to vulnerable groups i.e., those who are at risk of deficiency and those who have

deficiency. It is a short-term strategy particularly used for vitamin A, iron and folic acid in India. Supplementation programmes are often expensive and there may be problems of coverage. Key target groups are different for various nutrients.

#### **4.2 Bio Fortification:**

Is a public health nutrition intervention under development that aims to improve the nutritional quality of plant foods through agricultural and Biotechnological means.

Processed food products, biofortification indicates that the additional nutrient content is endogenous, resulting from biological processes of the plant.

Research to develop biofortified foods is ongoing and has largely focused on increasing the micronutrient content of the world's most important staple food crops including maize, rice, wheat, cassava, potato, sweet potato, common beans, pearl millet, sorghum, tomatoes, and carrots, and oilseed crops.

The most concerted research efforts have focused on increasing the content of provitamin A carotenoids, iron, and zinc due to the high prevalence of deficiencies associated with these micronutrients in the developing world.

Cereal grains tend to have a high content of phytate, a phosphorus storage compound that inhibits the intestinal absorption of minerals such as iron and zinc.

As a secondary strategy, biofortification research has also sought to improve mineral bioavailability from cereals by reducing the inhibitory effect of phytate, primarily through reduction in phytate content or increase in phytase activity in the grain.

#### **4.3 Summary:**

Health is much more than the absence of disease. It is a positive quality, emphasizing physical, social, intellectual, emotional, and spiritual wellbeing. Optimum nutrition, providing all nutrients in both kind and amount, is the cornerstone of good health and the cutting edge of prevention.

The rapid changes in diet, activity and obesity that are facing billions of residents of lower- and middle-income countries are cause for great concern. Linked with these changes will be a rapid increase in chronic diseases. The developmental, economic, social, and medical impacts of the global burden of malnutrition are serious and lasting for individuals and their families, for communities and for countries. Innovation and phytochemical extraction based natural product is the key area for the development of nutrient rich food for the human beings.

#### **4.4 References:**

1. Kulkarni, S., Gaikwad, A., Bhoi, N., Hade, A., Kokwar, M., & Gulwade, M. (2024). Isolation, purification and structure elucidation of eight saponin compounds from *Calotropis gigantea*.
2. Natural Product Research, 1–12. <https://doi.org/10.1080/14786419.2024.2331605>
3. Gaikwad, A. Food Microbiology. Microbiology and Immunology. 53-60. 2022. K D PUBLICATIONS PUNE.
4. Gaikwad, A. 6. Impact of covid 19 on environment, environment in 21st century. 67-74. 2021. k d publications pune.
5. Gaikwad, A. Adsorption as the useful technology for industrial wastewater treatment. Environment: issues and mitigation strategies. 157-165 (2021). Book one graphics New Delhi.
6. Gaikwad, A. Biotechnological innovation and nature-based solutions to the sustainable environment. Biodiversity sustainability & environmental education. 123-133, 2021. Global books organisation.
7. Gaikwad, A. Nanoparticles in drug delivery. International journal of research and analysis in science and engineering 3 5 23- 28 2022. kd publication pune.
8. Gaikwad, A. Biomaterials. Advanced materials and applications. 2023. kd publications pune india.
9. Sailaja p, Gaikwad, A., zaskar r, thosare a. Ultrasonic extraction of phenolics from seasonal fruits and investigation of the adsorption capacity of ultrasonicated fruit residues. Ijarse. 422-431 2014.  
[http://www.ijarse.com/images/fullpdf/1412369915\\_370\\_IJARSE.pdf](http://www.ijarse.com/images/fullpdf/1412369915_370_IJARSE.pdf).

10. Gaikwad A. 2020. Role of vitamin D as an immuno-modulator in Covid-19. IJRSSIS, Spl.Issue(III):132...137. [https://ijrssi.in/upload\\_papers/0208202003173825%20Ajit/20Dilip%20Gaikwad.pdf](https://ijrssi.in/upload_papers/0208202003173825%20Ajit/20Dilip%20Gaikwad.pdf). Google Scholar
11. Ute Alexy, Mathilde Kersting, **Food and Meals in Vegetarian Children and Adolescents** in Vegetarian and Plant-Based Diets in Health and Disease Prevention, 2017.