

Public health - Public health is the science of protecting and improving the health of people and their communities. This work is achieved by promoting healthy lifestyles, researching disease and injury prevention, and detecting, preventing and responding to infectious diseases.

Overall, public health is concerned with protecting the health of entire populations. These populations can be as small as a local neighborhood, or as big as an entire country or region of the world.

Public health professionals try to prevent problems from happening or recurring through implementing educational programs, recommending policies, administering services and conducting research—in contrast to clinical professionals like doctors and nurses, who focus primarily on treating individuals after they become sick or injured. Public health also works to limit health disparities. A large part of public health is promoting healthcare equity, quality and accessibility.

Community health is a branch of public health which focuses on people and their role as determinants of their own and other peoples's health in contrast to environmental health which focuses on the physical environment and its impact on peoples health. Community health is a major field of study within the medical and clinical sciences which focuses on the maintenance, protection, and improvement of the health status of population groups and communities. It is a distinct field of study that may be taught within a separate school of public health or environmental health. The WHO defines community health as:

environmental, social, and economic resources to sustain emotional and physical well being among people in ways that advance their aspirations and satisfy their needs in their unique environment.

Medical interventions that occur in communities can be classified as three categories: primary healthcare, secondary healthcare, and tertiary healthcare. Each category focuses on a different level and approach towards the community or population group. In the United States, community health is rooted within primary healthcare achievements. Primary healthcare programs aim to reduce risk factors and increase health promotion and prevention. Secondary healthcare is related to "hospital care" where acute care is administered in a hospital department setting. Tertiary healthcare refers to highly specialized care usually involving disease or disability management.

Objectives of public health-

- The focus of a public health intervention is to prevent and mitigate diseases, injuries and other health conditions through surveillance of cases and the promotion of healthy behaviors, communities and environments.
- Many diseases are preventable through simple, nonmedical methods. For example, research has shown that the simple act of handwashing with soap can prevent the spread of many contagious diseases.

- In other cases, treating a disease or controlling a pathogen can be vital to preventing its spread to others, either during an outbreak of infectious disease or through contamination of food or water supplies. Public health communications programs, vaccination programs and distribution of condoms are examples of common preventive public health measures. Measures such as these have contributed greatly to the health of populations and increases in life expectancy.
- Public health plays an important role in disease prevention efforts in both the developing world and in developed countries through local health systems and non-governmental organizations. The World Health Organization (WHO) is the international agency that coordinates and acts on global public health issues. Most countries have their own governmental public health agency, often called the ministry of health, with responsibility for domestic health issues.
- In the United States, state and local health departments are on the front line of public health initiatives. In addition to their national duties, the United States Public Health Service (PHS), led by the Surgeon General of the United States, and the Centers for Disease Control and Prevention, headquartered in Atlanta, are also involved with international health activities.
- In Canada, the Public Health Agency of Canada is the national agency responsible for public health, emergency preparedness and response, and infectious and chronic disease control and prevention. The Public health system in India is managed by the Ministry of Health & Family Welfare of the government of India with state-owned health care facilities.

Definition

- It is a synthesis of nursing and public health practice applied to promoting and preserving the health of the people.
- Public health: It is the art and science of preventing illness, prolonging life and promoting through organized efforts of the society.
- Community health: It refers to the health status of the members of the community, to the problems affecting their health and to the totality of the health care provided for the community.

Aims of Community Health –

- To promote health and efficiency.
- Prevention and control diseases and disabilities.
- Need based health care to prolong life.

Objectives of Community Health-

- Provide antenatal, intranatal and postnatal, care to ensure safe pregnancy and delivery.
- Immunization
- Provide under five children care
- Health education
- To improve the ability of the community to deal with their own health problems
- To strengthen the community resources
- To prevent and control communicable and non-communicable diseases
- To provide specialized services
- To conduct research

Principles of Community Health-

- It should be planned based on the needs of the community.
- It is based on identified needs and functions.
- Integration of Health education, guidance and supervision with community health nursing services.
- Health services should be realistic in terms of available resources.
- Community is the focus which is the unit of health care services.
- Professional relationship with etiquette and dignity
- Community participation is the integral part of the community health services.
- Individual and family members participation in decision making.
- Health services must be continuous.
- Proper records and reports are essential.
- Proper evaluation of health services
- Health services must be available to all without any difference.

Daily nutritional requirement-

The Department of Nutrition for Health and Development, in collaboration with FAO, continually reviews new research and information from around the world on human nutrient requirements and recommended nutrient intakes. This is a vast and never-ending task, given the large number of essential human nutrients. These nutrients include protein, energy, carbohydrates, fats and lipids, a range of vitamins, and a host of minerals and trace elements. Many countries rely on WHO and FAO to establish and disseminate this information, which they adopt as part of their national dietary allowances. Others use it as a base for their standards. The establishment of human nutrient requirements is the common foundation for all countries to develop food-based dietary guidelines for their populations.

Establishing requirements means that the public health and clinical significance of intake levels – both deficiency and excess – and associated disease patterns for each nutrient, need to be thoroughly reviewed for all age groups. Every ten to fifteen years, enough research is completed and new evidence accumulated to warrant WHO and FAO undertaking a revision of at least the major nutrient requirements and recommended intakes.

The following major revisions of nutrient requirements, including their role in health and disease, have been undertaken and published in the last four years:

- Trace elements in human nutrition and health (WHO/FAO/IAEA), WHO, Geneva 1996
- Fats and oils in human nutrition (FAO/WHO), FAO, Rome 1994
- Preparation and use of food-based dietary guidelines (WHO/FAO), WHO, Geneva 1996
- Carbohydrates in human nutrition (FAO/WHO), FAO, Rome 1998

During the 1980s WHO and FAO reviewed the requirements for protein, energy, vitamin A, folate, iron, and several other vitamins and minerals. With regard to vitamins and minerals, there is enough new research to once again justify updating our information on the subject.

For example, there is a great deal of new evidence indicating that besides preventing deficiency diseases, some vitamins and minerals play an important role in preventing diet-related chronic diseases, one of modern society's major causes of morbidity and mortality. Evidence is also mounting on the importance of micronutrients for immune function, physical work capacity, and cognitive development, including learning capacity in children.

Accordingly, WHO and FAO organized a joint expert consultation in Bangkok (September 1998). The principal purposes of this expert consultation were to:

- review new scientific information since the last FAO/WHO publication on specific nutrient requirements (1974) and prepare recommendations for daily nutrient intakes for infants, children, young and older adults, and pregnant and lactating women; and
- develop a report on human nutrition requirements to serve as an authoritative source of information for Member States in planning and procuring food supplies for population subgroups, interpreting food-consumption surveys, establishing standards for food-assistance programmes, and designing nutrition education programmes.

The scope of the expert consultation, and the subsequent recommended nutrient requirements, included over twenty essential nutrients. These nutrients comprise the basis of all human nutrition:

- protein, energy, vitamin A and carotene, vitamin D, vitamin E, vitamin K, thiamine, riboflavin, niacin, vitamin B6, pantothenic acid, biotin, vitamin B12, folate, vitamin C, antioxidants, calcium, iron, zinc, selenium, magnesium and iodine.

For each nutrient, consideration was given to function, metabolism, dietary intake patterns, requirement levels, and toxicity. Basal requirements, safe intake levels, recommended dietary allowances, and tolerable upper intake levels are to be established for each. A detailed technical report of the Joint WHO/FAO Expert Consultation, in addition to a briefer handbook on human nutrient requirements, were published in 1999. Micronutrients are the vitamins and minerals found in food that nourish your body and help keep you healthy. They are essential to your overall health.

Choosing foods each day that are rich in vitamins and minerals is the best way your body is getting what it needs to be healthy. However, research consistently finds that most Americans have diets that lack an appropriate amount of vitamins and minerals.

According to the U.S. Department of Agriculture (USDA), adult Americans do not typically get enough of the following nutrients:

- calcium
- potassium

- **fiber**
- magnesium
- vitamins A, C, D, and E

Path to improved health

Try to incorporate more of these nutrients in your daily diet. Keep in mind that it's best to get these nutrients through food, instead of just taking a multivitamin. This is because it is easier for your body to absorb micronutrients through food.

If you are unable to get all the nutrients you need from food alone, ask your doctor if **dietary supplements** are right for you.

Calcium

Your body needs calcium to build strong bones and teeth in childhood and adolescence. As an adult, you need calcium to maintain bone mass. According to the USDA, the average American adult (eating roughly 2,000 calories per day) should get 1,136 milligrams of calcium each day.

The following foods are good sources of calcium:

- nonfat or low-fat yogurt (8 ounces = 345-452 milligrams)
- nonfat or low-fat cheese (2 ounces = 400 milligrams)
- low-fat milk (1 cup = 290 milligrams) or skim milk (1 cup = 306 milligrams)
- fish and seafood such as sardines (3 ounces = 325 milligrams), pink salmon (3 ounces = 181 milligrams) and ocean perch (3 ounces = 116 milligrams)
- beans such as soybeans (1/2 cup = 130 milligrams) and white beans (1/2 cup = 96 milligrams)
- spinach (1/2 cup = 146 milligrams)
- oatmeal (1 packet = 99-110 milligrams).

Who might not get enough?

- Boys ages 9 to 13 years.
- Girls ages 9 to 18 years.
- Men older than 70 years.
- Women older than 50 years.
- Vegans and vegetarians.
- People who are lactose intolerant.

Quick Tip: Almonds contain calcium and are the perfect snack. Pack a handful to take to work or school for a healthy boost.

Potassium

A diet rich in potassium helps your body maintain a healthy blood pressure. The USDA recommends that the average American consume 4,044 milligrams of potassium each day.

The following foods are good sources of potassium:

- Potatoes:
 - sweet potatoes (1 sweet potato = 694 milligrams)
 - white potatoes (1 potato = 610 milligrams)
- Beans:
- Yogurt
- Milk

- Fruit:
- Fish:

Potassium is the nutrient Americans are missing most.

Quick Tip: Cut up a banana and mix it with a cup of low- or nonfat yogurt to make a healthy snack or light lunch.

Magnesium

Magnesium is a nutrient that helps your body produce energy, and helps your muscles, arteries, and heart work properly. According to the USDA, the average American adult should get 380 milligrams of magnesium each day.

The following foods are good sources of magnesium:

- Vegetables:
- Beans:
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- Tofu (1/2 cup = 47 milligrams)
- Brown rice (1/2 cup = 42 milligrams)
- Nuts:

Vitamin A

Vitamin A is associated with vision development and cellular growth and maintenance.

The following foods are good sources of vitamin A:

- Organ meats, such as liver and giblets (3 ounces = 1490-9126 micrograms)
- Vegetables:

Vitamin C

Vitamin C helps the body form collagen (which is the main protein used as connective tissue in the body) in blood vessels, bones, cartilage, and muscle.

The following foods are good sources of vitamin C:

Vitamin D

Your body needs vitamin D so that it can absorb calcium to promote bone growth and maintain strong bones and teeth. The average adult needs 600 International Units (IU) of vitamin D each day. Older adults (ages 70 and older) need 800 IU each day. Most people get some level of vitamin D through exposure to sunlight. However, using sunscreen will decrease your exposure to vitamin D.

It is also difficult to get enough vitamin D through diet alone because there are not a lot of food choices rich in vitamin D. In fact, some primary food sources of vitamin D come from foods that have added vitamin D (called fortified foods).

The following foods are sources of vitamin D:

- Fatty fish:
 - salmon
- Fortified milk Fortified orange juice
- Fortified cereal
- **Vitamin E**

Vitamin E is an antioxidant, which is a nutrient that helps fight damage to the cells in the body.

The following foods are good sources of vitamin E:

- Nuts and seeds:
- Turnip greens puree)
- Trace elements (or trace metals) are minerals present in living tissues in small amounts. Some of them are known to be nutritionally essential, others may be essential (although the evidence is only suggestive or incomplete), and the remainder are considered to be nonessential. Trace elements function primarily as catalysts in enzyme systems; some metallic ions, such as iron and copper, participate in oxidation-reduction reactions in energy metabolism. Iron, as a constituent of hemoglobin and myoglobin, also plays a vital role in the transport of oxygen.
- All trace elements are toxic if consumed at sufficiently high levels for long enough periods. The difference between toxic intakes and optimal intakes to meet physiological needs for essential trace elements is great for some elements but is much smaller for others.
- This chapter is a summary of the role of the following essential trace elements in the etiology and prevention of chronic diseases: iron, zinc, fluoride, selenium, copper, chromium, iodine, manganese, and molybdenum. Also discussed are aluminum, cadmium, mercury, arsenic, and lead; these elements have not been demonstrated to be essential for humans but were reviewed by the committee because they are frequently ingested as contaminants in food or water. Interactions between the various trace elements are also briefly considered.

Iron-

Iron is present in all body cells. As a component of hemoglobin and myoglobin, it functions as a carrier of oxygen in the blood and muscles. Because of iron losses during menstruation, women in their reproductive years require higher iron intakes than men. Therefore, the Recommended Dietary Allowance (RDA) for women 11 to 50 years of age is 18 mg/day, but for men 19 years and older is only 10 mg/day. Women have difficulty achieving this high intake, because they generally have a relatively low caloric intake, and the usual U.S. diet provides only 6 to 7 mg of iron per 1,000 kcal. Since the need for iron is greater during periods of rapid growth, children from infancy through adolescence, as well as pregnant women, may fail to consume sufficient iron to meet their needs.

The greater prevalence of iron deficiency among women, compared to men, has been proposed as an explanation for the lower coronary heart disease (CHD) rate among premenopausal women (Sullivan, 1986); however, no epidemiologic evidence supports this hypothesis.

Iron-deficiency anemia is the state in which the amount of iron in the body is less than that required for normal formation of hemoglobin, iron enzymes, and other functioning iron compounds. It is the most widespread nutritional deficiency in the world

Zinc, a constituent of more than 200 enzymes, plays an important role in nucleic acid metabolism, cell replication, tissue repair, and growth through its function in nucleic acid polymerases. These zinc-dependent enzymes include the potentially rate-limiting enzymes involved in DNA synthesis. Zinc also has many recognized and biologically important

interactions with hormones and plays a role in production, storage, and secretion of individual hormones. Severe, moderate, and marginal zinc deficiencies have been reported in the United States

Few epidemiologic studies have been conducted to examine the relationship between exposure to zinc, especially dietary zinc, and cancer risk. In correlation analyses, zinc levels in soil, food, or blood have been positively associated with several different cancers .

Fluoride- Fluoride is an integral part of the food chain. Kumpulainen and Koivistoinen (1977) reported that the measured fluoride content of the diet is three times higher in communities with fluoridated water than in those where the water is not fluoridated. Singer and Ophaug (1979) found that the fluoride content of dry cereals is strongly influenced by the fluoride content of the water in which they were processed. They also reported that baby foods contain high levels of fluoride (Singer and Ophaug, 1979). Fluoride is also consumed unintentionally from two major sources: products containing mechanically boned meat and fluoridated dentifrices. The highest daily average consumption (equivalent to 0.3 mg of fluoride) is reported for children under the age of 5

Selenium-

In the 1950s, recognition of the economic importance of selenium deficiency in food animals led to the mapping of selenium distributions in the soils, forages, and blood of humans in several continents. Extreme differences in exposure were found, even within countries. This knowledge enabled investigators to make epidemiologic correlations of diseases in humans and animals

Several reports on the relationship of serum selenium to the risk of cardiovascular diseases

Many correlation studies suggest that a deficiency of dietary selenium might increase the risk of cancer in humans