

HEALTH AND HEALTH EDUCATION

Introduction

Health is a very important topic and so is health education. Healthy people constitute a healthy nation. It is necessary to explain the meaning of health as it is not merely absence of disease but much more. In this chapter apart from elaborating the meanings of health and health education, definitions of health and health education, and various dimensions of health, the objectives, the scope, principles and importance of health education have also been discussed.

MEANING OF HEALTH

The strength of a nation rests upon the health of its people and future of the health of the people depends, to a large extent, on what is done to promote, improve and preserve the health, as health is a fundamental human right. To be a good man is the first requisite to success in life and to be a nation of healthy citizens is the first condition to national prosperity. The natural question that arises is, *what health is ? and on what it depends ?*

The dictionary meaning of health is, "*freedom from disease, sound body and mind etc; that condition in which functions of body and mind are duly discharged*". Earlier, health was considered as a condition of being 'hale', i.e., *safe and sound*. A more searching and deep look in the subject would show that health is more than this. The implication of health is that, health may be a continuum along linear scale, from near death at one end to optimum health on the other. Optimum health would be that level which would enable the individual to live life to the fullest. Health is the ability of the body to sustain adaptive efforts and is used to imply body power, vitality, and ability to resist fatigue. Health is some times considered as the total outcome of

the organic, neuro-muscular, interpretive, and emotional development.

Health is man's greatest wealth, he who has health must cherish it with care, lest he should lose it. To this end he must have adequate knowledge of how to live healthy. Health is not merely absence of disease, it is positive quality of the living body, of which fitness for one's work and happiness are distinguishing marks. *Health is the way; there is no way to health. Let all the habits of living be health promoting.* The term health is not an abstract thing but a relative concept. In it we see a continuum of freedom from sickness to better health, and positive health.

Health educationists are slowly evolving away from the view that health is merely the treatment and prevention of illness; to a more open ended view that emphasizes the individual's own responsibility for his own well being. It may be emphasized that health is neither static nor isolated from external circumstances, our health depends on the way we relate to our environment and to each other; where we live, the jobs we do, the food we eat, the water we drink and air we breath are all important. We are now coming to realise that health is extricably bound up with our minds, environment and ways of living. *Health is basic to learning, to happiness, to success, to effective citizenship, and to worthwhile living. In Ayurved 'Swasthya' (health) has been defined as a well balanced metabolism, a happy state of being, the senses and the mind. Swami Vivekananda has said, "a weak person who has weak body or weak mind can never be master of a strong soul". Aristotle has also stated that a sound mind lives in a sound body.*

Health is a state of physical, mental, emotional, and social well being. Good health enables people to enjoy life and to have the opportunity to achieve the goals they have set for themselves. The real purpose of health is to develop and maintain vigour and vitality, to acquire interests and habits in ways

of living that are wholesome and to meet the demands put upon the individual efficiently, with energy and satisfaction. The concept of health has been very appropriately summed up by J. F. Williams, "Health is that quality of life that enables an individual to live most and serve best." Health can be achieved, maintained and improved by supplying the basic physical, mental, emotional and social needs in proper proportion. In fact health is the key to education, success, good citizenship and a happy life. Nowadays health and its maintenance is being considered as a major social investment and it is being felt that health involves individual, state and international responsibility.

DEFINITION OF HEALTH

"Health is a condition or quality of the human organism expressing the adequate functioning of the organism in given conditions, genetic and environmental."

– W.H.O. Tech. Rep. (1957)

"Health is the condition of the organism which measures the degree to which its aggregate powers are able to function."

– Oberteuffer

"Health is that state in which the individual is able to mobilize all his resources - intellectual, emotional, and physical, for optimum daily living."

– Encyclopaedia of Health

"Health means soundness of body or mind; that condition in which its functions are duly and efficiently discharged."

– Oxford English Dictionary.

"Health is a state of complete physical, mental and social well being and not merely an absence of diseases or infirmity."

Recently this definition has been amplified and it has been added, "attainment of a level of health that will enable every individual to lead a socially and economically productive life."

– World Health Organisation

"Health is considered as that condition, mental and physical, in which the individual is functionally well adjusted internally as concerns his body parts, and externally as concerns his environments."

– Voltmer and Esslinger

"Health is the condition of being sound in body, mind or spirit, especially freedom from physical disease or pain."

– Webster

"Health aims at making growth more perfect, life more vigorous, decay less rapid and death more remote."

– Siddalingaiya

"One's ideal of health should be the highest realisation of his physical, mental and spiritual possibilities rather than mere freedom from diseases and deformities."

– W. A. Yeager

"It is the quality of life that enables an individual to live most and serve best."

– J. F. Williams

"Health is a state of relative equilibrium of body form and function which results from its successful dynamic adjustment to forces tending to disturb it. It is not passive interplay between body substance and forces impinging upon it but an active response of body forces working towards readjustment."

– Perkins

Dimensions of Health

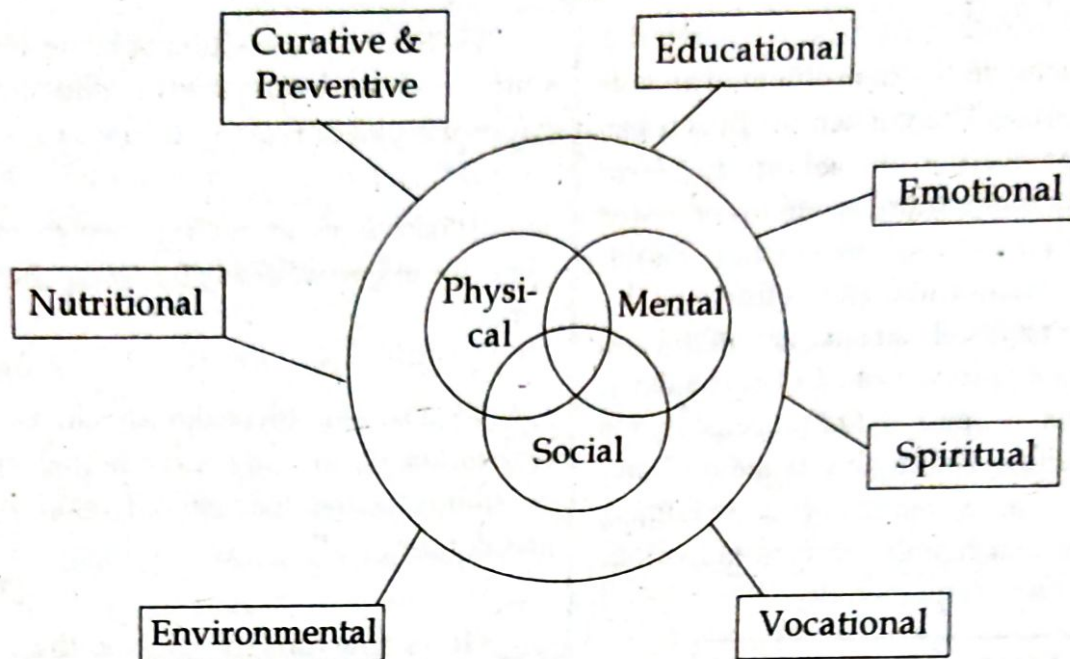
Authorities in the field of health have recognised three closely interwoven dimensions of health :

1. Physical dimension,
2. Mental dimension, and
3. Social dimension

However, recently it has been felt that few more dimensions of health can be added viz emotional, spiritual, vocational, educational, curative and preventive.

Physical Dimension

Physical dimension purely refers to the perfect functioning of the body externally as well as internally. *Externally* : having good physique, good appearance, good texture and complexion, attractive features, well structured and strong body parts and limbs, well groomed posture, graceful carriage and efficient movement. *Internally* : all systems of the human body, i.e., digestive, circulatory, respiratory,



nervous, and excretory system, and sensory organs are functioning optimally. The pulse rate, blood pressure and body weight being in normal limits according to the age and sex. Physical dimension i.e. physical health means proper functioning of the systems and physical well being of the body, cumulative result being perfect and harmonious functioning of the human body.

Mental Dimension

Mental health is the balanced development of an individual's personality and emotional attitudes which enable him to live harmoniously with his fellow beings. *Sartorius has defined mental health as "a state of balance between the individual and the surrounding world, a state of harmony between oneself and others, a co-existence between the realities of the self and that of other people, and that of the environment."* It is influenced by both biological and social factors. A good mental health implies that an individual has adjusted satisfactorily to his environment, home, work place, and other people of the society, so that he is realizing the maximum amount of happiness from living.

Generally mental ill health is the result of a combination of various psycho-bio-social factors. Some of the common causes of mental ill health are anxiety, tension, fear, insecurity, a sense of inequality and prejudices etc. However, mental health is not mere absence of mental illness. A

mentally healthy person is free from internal conflicts, feels comfortable and secure about himself, accepts his shortcomings, has self respect, feels right towards others and is able to feel a part of the group, takes responsibilities, is able to meet the demands of life, is able to identify and face the problems as they arise, takes his own decision, sets reasonable goals for himself and has control over his emotions, fear and anger. Mental health can be summed up in the words of H.B. English, "Mental health is a relatively enduring state wherein the person is well adjusted, has a zest for living, and is attaining self actualisation or self realisation. It is a positive state and no mere absence of mental disorder."

Social Dimension

Social health is the ability to get along with one self and with others, to be independent but at the same time to realize how dependent one is on others. *Donald has defined social well being as "the quantity and quality of an individual's interpersonal ties and the extent of involvement with the community"*.

Social health is concerned with helping an individual in making personal adjustment, group adjustment and adjustments as a member of the society. Sound social interaction at the early stage of life builds up correct attitude which go a long way in helping the child to adjust in the society.

Social maladjustment is a problem which is often reflected in reduced mental health. Thus social interaction becomes a means of achieving mental health. One's social health status is measured not in terms of personal feelings of well being but in terms of one's effect on the well being of others.

Each individual has certain basic social needs which include feeling of belongingness, recognition, self-respect and love, and fulfillment of these needs results in promoting social health. A socially healthy person possesses the desirable qualities of integrity, unselfishness, forgiveness, sense of fairness, co-operation etc.

Emotional Dimension

Emotions are the feelings which have great role in our life and lead to the modification of attitude, conducive to personal adjustment and well being. The environment we create by our behaviour, our attitudes, and our actions is the emotional environment and it greatly influences the personality of an individual. Emotion is an essential element in the adjustive nature of the life process.

Emotional health means emotional fitness and emotional control. A person can be called emotionally healthy if his emotions are always positive, and has full control over his emotions. On the other hand, a person who has no control over his emotions or is over powered with negative emotions can be called emotionally unbalance or emotionally ill.

Spiritual Dimension

In the context of Indian culture, where people are having faith in divine powers, and another distinctive feature of human life, the presence of spiritual element (spiritual health) refers to that part of the individual which reaches out and strives for meaning and purpose in life. Man is a complex multi-dimensional being. He is not only having spirit, he also has mind, body and life. But these multiple sides of his nature are not contradictory. He is indivisible and nothing in him can be rejected. According to Radhakrishnan, "the end of man is to let the spirit in him permeate his whole being, his

soul, flesh and affections". Thus, with divine philosophy having great influence on our culture, spiritual health is very important dimension of health. Sound spiritual aspect results in developing man into a healthy human being.

Vocational Dimension

Vocational dimension is essentially a sub-domain of physical, mental and social health. The capacities or limitations of an individual, in relation to his working and occupation, to achieve the desired targets, play an important role in promoting physical, social, and mental health. Livelihood is a very serious problem being faced by an individual. Vocational health emphasizes upon the problem of livelihood and ensures the fulfillment of the economic needs of an individual. Man's progress in all fields depends upon his capacity to earn his livelihood and to meet his wants. Vocational satisfaction provides him social efficiency, social status, social prestige, emotional stability and mental relaxation. Vocationally satisfied individuals also contribute to the increase in production and national wealth. Vocational health is thus of great national importance as well.

Educational Dimension

Education is the consciously controlled process whereby changes in behaviour are produced in the person, and through the person, in the group. It causes certain changes in one's behaviour and attitude enabling him to understand his responsibility to the society and the nation. Educational dimension of health, i.e., health education has heavy responsibility to discharge. Health education creates awareness regarding health rules, promotes health, builds up healthy environment and shows the path to follow towards the healthful living. Regarding the importance of educational dimension of health, *Ruth E. Grout* states, "health education is the translation of what is known about health into desirable individual and community behaviour patterns by means of the educational process."

Nutritional Dimension

Good nutrition is a basic component of health. It is of prime importance in the attainment of normal growth and development, and in the maintenance of health throughout life. There is a growing realization that adequate nutrition is a necessary step in improving the quality of life. The importance of malnutrition and under nutrition as an obstacle to social and economical development has brought nutritional health to the forefront of national and international concern.

Environmental Dimension

The internal environment of man himself and external environment which surrounds him reflect the health status of the individual, the society and the nation. Sanitation is one of the important aspects of environmental health. It is the quality of living that is expressed in clean home, clean neighbourhood and clean community. *Environmental sanitation can be defined as "the control of all those factors in man's physical environment which exercise or may exercise a negative effect on his physical development, health and survival."* Being a way of life, it must come from within the people. In the recent years, the subject of environment and its pollution has become a critical health area as much of the ill health in the country is due to defective and polluted environment. Understanding the environment is becoming more and more important as people have been placing ever larger demands on the environment and in the process bringing about ever more severe changes in it.

Curative and Preventive Dimension

This dimension deals with the study and application of curative medicine and preventive measures for the preservation of the health of an individual. The primary objective of curative medicine is the removal of disease. Over the years curative medicine has accumulated a vast body of scientific knowledge, technical skills, and machinery highly organised, not merely to treat disease, but to preserve life itself as far as it could be possible.

The main objective of preventive medicine is prevention of disease and promotion of health. It is applied to all healthy people. Modern preventive medicine can be defined as "the art and science of health promotion, disease prevention, disability limitation and rehabilitation." In simple words preventive medicine is a kind of anticipatory medicine and measure. Scientific advances, improved living standards, and fuller education of the public, have opened up a number of new avenues for curative and preventive medicine.

MEANING OF HEALTH EDUCATION

Health education is rather an abstract term, meaning different things to different people. To some, it is a matter of public relations stating the activities of health department, and to many others it provides knowledge about health and diseases.

Anything that educates anyone in the matter of health, is health education, i.e. the education given for identifying the health needs and matching it with suitable adaptive behaviour can be termed as health education. In simple words, the entire process of involving people in learning about health and disease, making efforts for improving health and facilitating them to act appropriately for overcoming ailments and promoting a positive health, is health education.

According to W.H.O. Technical Report (1954), "Health education, like general education, is concerned with changes in knowledge, feelings and behaviour of people. In its most usual forms, it concentrates on developing such health practices as are believed to bring about the best possible state of well being." It is apparent from this definition that health education is a process that helps people to find out their health needs, activates them for adopting suitable behaviour and building up right attitude for achieving and maintaining optimum health. Health education brings about changes in the knowledge and attitude of people and thereby effects the changes in their health practices. It is concerned with establishing changes in personal and group attitudes and behaviour that promote healthier living. *The object of health education is to "win friends and influence people"*.

and it is an essential tool of community health. Briefly it is stated, that health education recognises three basic components:

- (i) Unity of human beings in respect to their physical, mental, and social aspect.
- (ii) The knowledge, attitudes, and practices are important to influence health behaviour.
- (iii) The focus of health education on the individual, family and community.

All these components of health education are inter-dependent and constantly interact with each other.

Health educationists have recognised the importance of instilling in young and old alike, a body of health knowledge based on scientific facts, wholesome health attitude and desirable health practices. The art and science of engaging people in the process of learning, for the desired behaviour, for the preservation of health, is health education.

Health education is needed for all ages, both sexes, all classes of community, literate or illiterate, and in all parts of the world. Even in advanced countries, health education has assumed great importance due to ever changing conditions of life. Health education is thus, a never ending process.

DEFINITIONS OF HEALTH EDUCATION

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"Health education is a process that informs, motivates, and helps people to adopt and maintain healthy practices and life styles, advocates environmental changes, as needed, to facilitate this goal, and conducts professional training and research to the same end."

– *Anne R. Somers*

"Health education is concerned with the health related behaviour of people."

– *Sophie*

"Health education is a process that bridges the gap between health information and health practices. Health education motivates the person to take the information and do something with it, to keep himself healthier, by avoiding actions that are harmful, and practising those that are beneficial."

– *President's Committee on Health Education, New York (1973)*

"Health education is the sum of all those experiences in school, and elsewhere, that favourably influence habits, attitudes and knowledge related to individual, community and social health."

– *Thomas Wood*

"Health education is the translation of what is known about health into desirable individual and community behaviour patterns by means of the educational process."

– *Ruth. E. Grout*

"Health education aims at creating such a quality of life as may enable an individual to live most and to serve best."

– *W.H.O. Expert Committee on Health Education*

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– *Thomas Wood*

OBJECTIVES OF HEALTH EDUCATION

After analysing the definition of health education as given by *Somers and adopted by National Conference on Preventive Medicine (U.S.A.)*, *J.E. Park* stated three main objectives of health education:

- (i) Informing people.
- (ii) Motivating people.
- (iii) Guiding into action.

Some other authors have also suggested similar objectives, however, naming the same differently i.e.

- (i) Development of health knowledge.
- (ii) Development of desirable health attitude.
- (iii) Development of desirable health practices.

In order to overcome any confusion or ambiguity, if any, in the minds of readers/students

with regard to the above stated twin sets of objectives, having been clubbed, as given below :

1. Informing People/Development of Health Knowledge:

The first objective of health education is to inform people or to develop health knowledge by presenting and interpreting scientific health data based on research and discoveries. Such information will help the individuals to recognise health problems and to solve them by utilising this valid information. It will also help in removing *ignorance, prejudice, blind beliefs and misconceptions regarding health and hygiene.*

2. Motivating People/Development of Desirable Health Attitude:

Merely informing people about health is not enough. They must be motivated to the point that they want to apply this knowledge to every day living by favourably changing *their behaviour patterns, their attitudes, their habits and ways of living.* Individuals acquiring such healthful attitudes will tend to *transmit this knowledge to their families, community, society and nation, for healthful living.*

3. Guiding into Action/Development of Desirable Health Practices:

Knowledge will be of little use unless it ensures good health practices and guides people to adopt and maintain healthy life styles. The health practices will determine, to a great extent, the health status of the person. Adopting harmful habits or practices will result in poor health whereas beneficial health habits will result in good and positive health.

To sum up, knowledge without incentive or motivation will not ensure desirable health attitudes and health practices. Thus these three objectives have close relationship and contribute to each other.

Ruth E. Grout has stated four objectives of health education :

- Optimum development of the individual with special reference to physical and emotional development.
- Betterment of human relationships, particularly from the stand point of health.

- Application of health facts and principles in respect of economic efficiency in the production and consumption of goods and services.
- Civic responsibility, especially in respect to health.

These objectives are discussed as under :

(i) Optimum Development of the Individual with Special Reference to Physical and Emotional Development:

Optimum development of an individual refers to the development of all the aspects of his personality. It is that state in which the individual is able to utilise and mobilize all his resources to lead an optimum and meaningful life. An individual, who is physically fit and emotionally stable, tend to lead a healthy life.

By engaging in physical activities apart from physical fitness, one is able to achieve maximum satisfaction in everyday life, better neuro-muscular coordination, better mental judgements and better emotional control. He can withstand fatigue and tolerate the stress and strains of daily life. Similarly, an emotionally stable person is able to control his emotions and channelise his energies in a positive direction. For the development of the healthy personality, emotional stability and wholesome emotional expression is essential. Physically developed person will tend to be emotionally satisfied and will accept challenges. These two aspects are just like two sides of a coin, each supplement and complement one another.

(ii) Betterment of Human Relationship, Particularly from the Stand Point of Health:

Human relationship is a key to happiness and a successful life. A healthy person is very much expected to have good relations with his fellow beings. The objective of health education is the establishment and improvement of human relations through positive interaction between human beings, within family, and community at large. Health education contributes to the betterment of

human relationships in many ways. A healthy person can easily identify himself with the group, he can think for betterment and welfare of the others, and try to cooperate and coordinate with others. Such a person is better adjusted in family, community and society, thus promoting much better human relationships.

(iii) **Application of Health Facts and Principles in Respect of Economic Efficacy in Production and Consumption of Goods and Services:** Each individual has to adopt some vocation, profession or trade, and has to be efficient in discharge of his functions. The economic efficiency, be it in production and consumption of goods or in providing services, has to be regulated and controlled by applying facts and principles of health, as any departure from the same might jeopardize the national health. Production and consumption has to be done in healthy and hygienic conditions. The basic facts and principles of health are not to remain confined to an individual's own personality but have to be reflected in the production and consumption of goods and services provided to the society, to ensure good health of the society. It is an objective of health education to educate the people on this important issue.

(iv) **Civic Responsibility, Especially in Respect to Health:** Another objective of health education is to contribute in cultivating a sense of civic responsibility in individuals. Health education aims to develop an individual in all aspects so as to produce a healthy, law abiding and useful citizens who possess all the civic qualities like co-operation, love, service to others, fellowship, sacrifice, sense of duty, sense of responsibility etc. Health education, through its service programmes, provide exposure to the individuals enabling them to imbibe a sense of duty, to spread the message of health. Such a healthy citizen can effectively play his role in the development of a healthy society as well as in the development of a healthy nation.

SCOPE OF HEALTH EDUCATION

Health education may be divided into three sections:

Although these three sections of health education have specific functions, but all of them serve the general purpose of educating the individuals regarding health education.

(i) **Healthful Living:** Healthful living covers the basic facts of health, hygiene and sanitary aspect of the environment where we live. This implies that environment or atmosphere has to be conducive to physical, social mental, and emotional health. Factors such as proper lighting, ventilation, proper water supply, adequate furniture and other such facilities at home, in school and at work place should be taken into consideration. The personality of the health instructor has a strong bearing on the health of the children too. A well balanced routine and schedule is also necessary for healthful living. There must be adequate time for rest, relaxation, play, work, and study. Even methods and modes have significant roll in imparting knowledge and conveying thoughts, and the same should be in accordance with good health practices.

(ii) **Health Services:** Health services comprise the activities designed to determine the health status of an individual. Health services are an important part of any health programme and should include health appraisal, counselling, examinations for disease and disability, protective measures of first aid, emergency care, mid-day meals, vaccinations and inoculations, and follow up procedures with remedial measures. The objective of health services is to help the individual in conserving, maintaining and improving his health. Health services also include periodical health check-ups, keeping of commutative records, and providing medical advice whenever demanded or required.

(iii) **Health Instructions:** Health instructions deal with the materials by which an individual is helped to acquire health habits, learn health

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skills, master health knowledge, and develop health attitudes. Health instructions provide knowledge regarding the structure and functioning of human body, the causes and methods of preventing certain disease, the factors contributing to and in maintaining good health, and the role of community in the health programmes. Such an instructional programme, if planned wisely and taught intelligently, will contribute to the development of sound health habits and healthy attitudes. Proper health instructions impress on each individual the responsibility for his own health and, as a member of a community, for the health of others. Health instructions promote understanding of health and the observance of desirable practices, and play a meaningful role in the lives of all people. Provision of health services and creating an environment for healthful living is not sufficient without health instructions.

PRINCIPLES OF HEALTH EDUCATION

1. Continuity of health programme is necessary to identify the problems, review the same from time to time and to find out its solution step by step.
2. Good human relations are of most importance in learning. The health educator must be kind, sympathetic and trust-worthy so that the people may rely on him and have faith in him.
3. Involvement of a local leader, teacher, well known personality, priest etc. in the health programme will lend credence to the programme and will go a long way to ensure its success.
4. This is a universal fact that people are not interested to listen those things which are not of their interest and therefore, health teaching and health programmes should be conducted in such a way that it relates to the interest of the people.
5. It is necessary to find out the real health needs of the people and only then people will gladly participate in the programme, i.e. programme should be need based.
6. Health education should not become an artificial situation or formal teaching - learning.
7. Health education programme should proceed from known to unknown. It is better to start from where people are and slowly be build up to avoid any clash of ideas and for better understanding.
8. It is important for health educationist to get into the culture of the community, and only thereafter, to introduce novel ideas with natural ease and a little caution as well.
9. Active participation is the key to learning. Through group discussions, workshops etc. positive and negative points should be discussed in detail and thoroughly dealt with.
10. A close study and application of relevant behavioural sciences is necessary for health education because these are concerned with individual, groups and society.
11. In health education, one must know the level of understanding, educational background, mental capacity and literacy of the people. One should use simple language so that they can understand it better.
12. Generally, it is difficult to demonstrate the beneficial effects of preventive and promotive health care. Therefore, to enable the people to understand the same, apart from reinforcement through repetitions at regular intervals, a close, friendly and sympathetic attitude of the teacher is must.
13. Success of any health programme depends on having a free flow of communication. It is necessary to get feed back and to get doubts cleared.
14. The health educator has to identify himself with the group by melting barriers, if any, and only thereafter meaningful interaction and exchange of ideas can take place.
15. It is necessary to motivate the people for participating in the health programme by providing appropriate incentives.
16. Health programme should be based on the well known principle of learning by doing.

and it should be practical oriented and positive in nature.

17. There has to be co-ordination and link between the people, teacher and the subject matter for effective results of the programmes.
18. A variety of teaching methods including audio-visual aids are essential not only for effective teaching of health but also for creating interest and involvement of the people.
19. Health education programme should be planned according to the needs, the resources available, and results to be achieved under the prevailing environmental conditions.
20. Health programme should deal not only with the problems of an individual but also of the family, community, society and nation as well.
21. Health education programme should be regularly evaluated through periodical appraisals. This will facilitate the instructor to carry out the programme with appropriate and suitable modifications.

IMPORTANCE OF HEALTH EDUCATION

Knowledge of health education assumes great importance in India, where most of the people are ignorant about the basic principles of health and hygiene. Because of this ignorance, they are unable to prevent the disease, most of which are preventable. There is an emergent need to remove this ignorance of masses. They are to be made aware of fundamental and basic principles of health and hygiene. Health education provides the scientific facts of community hygiene that could help in preventing and eradicating many diseases and remove ignorance. Health education programmes are basically of preventive and promotive nature. As prevention is better than cure, such programmes are very important in transmitting the knowledge, making the people aware of various dreaded diseases, occurrence of which could be easily avoided. In this way, health education can play an important role in eliminating many problems that adversely affect young people, adults, and society in general.

It is necessary for a prosperous country to have healthy citizens. Health education has a very significant role to play as it comprises health knowledge, health habits and health attitudes. It can improve the individual, family and community life for a bright and prosperous future.

Health education helps an individual to distinguish between good and bad health habits and encourages him to make good habits as enduring and lasting healthful behaviour. Health education is essential to assure that proper health habits are established early in life, as habits and behaviour adopted in childhood remain unchanged even in adult life. The good health habits instilled in children during their formative years reflect in their life, making them healthy, useful, and effective citizen of the country. In this way health education also contributes to national growth.

Many physical defects and ailments like hearing and sight problems, bad posture, malnutrition etc occur during early childhood. Health education plays an important role in checking, preventing and curing these defects and ailments by promoting intelligent health attitudes among children.

Health education is a comprehensive, qualitative and a dynamic process of education as:

1. It develops sound attitudes towards the importance of good health and safety practice at home and in the community.
2. It provides direct learning experience to encourage the practice of wholesome healthy habits in daily living.
3. It introduces students to the areas of health knowledge, enabling them to better understand and cope-up with individual and community health problems.
4. It introduces students to the basic mechanism and functions of human body.
5. It integrates many sources of health information in the biological, social and physical sciences so that they can be applied in a meaningful way towards establishing a total health concept.
6. It helps students to achieve deeper insight into the nature of social relationships and family life.

7. It furnishes a setting for learning which enables the students to realize their fullest potentialities.
8. It encourages the development of responsibility and cooperation among students in observing environmental controls.
9. It establishes procedures for providing students with satisfactory health counselling and guidance services.
10. It contributes to the education of physically challenged people, enabling them to make the most of educational opportunities available.

Health education has become increasingly important in the recent years due to the attention given by the print and electronic media with regard to the general concern about social - medical problems. Nowadays health is considered as a worldwide social goal. Health education is of great importance as its main aim is to achieve optimum health of an individual which include all the dimensions of health i.e. physical, mental, social, emotional and spiritual. Health education has become one of the most important disciplines of education. Health education is basic to learning, to happiness, to success, to effective citizenship, and to worthwhile living.

NUTRITION

Introduction

Nutrition is the science that deals with food and its uses by the body. We, like all other living things need food to live. Food supplies the energy for every action we undertake from eating banana to running a race. Food also provides material that our body needs to build up and repair its tissues and to regulate the functions of its organs and systems.

To keep our body cells running properly, they must be supplied with correct amount of food having required chemicals in ratio of the food. The chemicals in food, which our body needs, are called nutrients.

What we eat directly affects our health. A proper diet helps in prevention of certain illnesses and also helps in recovery from diseases/injuries. An

inadequate or improper diet increases the risk of different diseases. Eating a balanced diet is the right way to have all the nutrients that our body needs.

BALANCED DIET

The balanced diet is the intake of appropriate types and adequate amounts of foods and drinks to supply nutrition and energy for the maintenance of body cells, tissues and organs and to support normal growth and development.

"A balanced diet is that which contains the proper amounts of each nutrient."

Functions of Diet

1. It provides energy for the various activities of the body.
2. It helps the body to grow and replace worn out tissues.
3. It has the chemicals, which help to control the body functions and protect the body from diseases.

Factors Affecting Diet

Diet depends on the following factors :

1. **Age, sex and body surface area:** Diet differs from age to age. Young ones need different types of food both in quality as well as quantity as compared to older people who need diet in less quantity and with lesser fats.
2. **Types and duration of activity:** Diet also depends on types of activity that we do and its duration. An athlete involving in vigorous training needs more caloric food as compared to office clerk. A sedentary person requires light food whereas a worker who does eight to ten hour hard work needs good diet.
3. **Eating habits and social customs:** Eating habits and social customs also affect the diet of an individual. Some individuals are habitual of eating fast food whereas others do not like it. Similarly, our social customs play an important role in food preparation. A section of society prefers nonvegetarian food whereas in other section of society only vegetarian food is served.

4. **Climatic factors:** Food is varied in different climates. As you have an experience of having different diet in summer and winter. Similarly, people living in different climatic zones have different foods.
5. **Health status and growth:** If you are in good state of health then you will have good diet whereas unhealthy individual cannot have similar diet. In growing age we give good food to the children. Sick individuals cannot have normal diet; usually they take light meal or as recommended by a doctor.
6. **Psychological considerations:** Some of the psychological factors affect the diet like how the food is cooked or what is the taste of food? If the meal is tasty then everybody likes to have it.

Elements of Balanced Diet

There are hundreds of nutrients in the food. These are mainly grouped into six classes namely carbohydrates, proteins, fats, vitamins, minerals and water. Three nutrients, carbohydrates, proteins and fats supply us energy. Before details of these we must know about measuring unit of energy. The energy value of food is measured in heat units called calorie or kilo calorie. Calorie is the amount of heat required to raise the temperature of 1 gram of water by 1°. A Kilocalorie is equal to 1000 calories. A Kilocalorie is written as calorie with a capital C.

DAILY ENERGY REQUIREMENTS

Personal energy requirement = basic energy requirements + extra energy requirements

Basic Energy Requirements

- For every kg of body weight 1.3 calories of energy is required every hour. (An athlete weighing 50 kg would require $1.3 \times 24 \text{ hrs} \times 50 \text{ kg} = 1560$ calories/day).

Extra Energy Requirements

- For each hour of training you require 8.5 calories of energy for each kg of body weight. (For a two hour training session a 50

kg athlete would require $8.5 \times 2 \text{ hrs} \times 50 \text{ kg} = 850$ calories)

An athlete weighing 50 kg who trains for two hours would require an intake of approx. 2410 calories (1560 + 850)

Energy Fuel

Like fuel for a car, the energy we need has to be mixed. The mixture that we require is as follows :

- 57% Carbohydrates (sugar, sweets, bread, cakes)
- 30% Fats (dairy products, oil)
- 13% Protein (eggs, milk, meat, poultry, fish)

The energy yield per gram is as follows:
Carbohydrate - 4 calories, Fats - 9 calories and Protein - 4 calories.

What does a 50kg athlete require in terms of carbohydrates, fats and protein?

- *Carbohydrates* - 57% of 2410 = 1374 calories - at 4 calories per gram = $1374/4 = 343$ grams.
- *Fats* - 30% of 2410 = 723 calories - at 9 calories per gram = $723/9 = 80$ grams.
- *Protein* - 13% of 2410 = 313 calories - at 4 calories per gram = $313/4 = 78$ grams.
50kg athlete requires : 343 grams of Carbohydrates, 80 grams of Fat and 78 grams of Protein.

NUTRIENT BALANCE

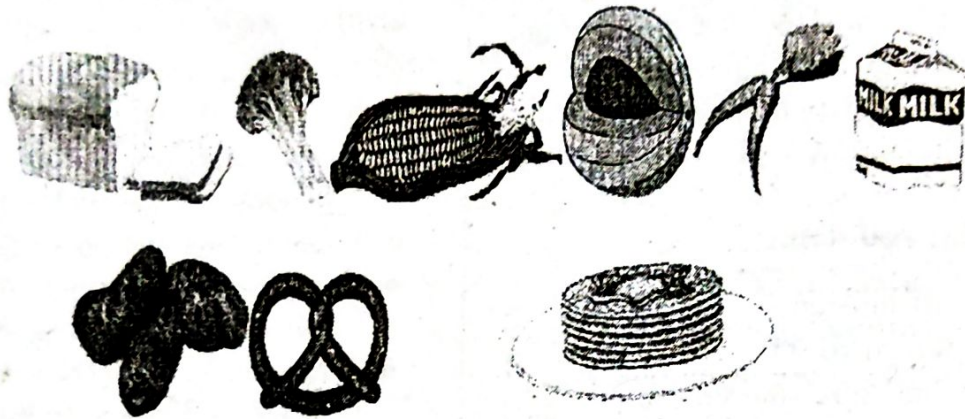
Carefully planned nutrition must provide an energy balance and a nutrient balance. The nutrients are:

- **Carbohydrates:** our main source of energy.
- **Proteins:** essential growth and repair of muscles and other body tissues.
- **Fats:** a source of energy which is important in relation to fat-soluble vitamins.
- **Vitamins:** water and fat-soluble groups play important roles in many chemical processes in the body.
- **Minerals:** those inorganic elements occurring in the body and which are critical to its normal functions.
- **Water:** essential to normal body function - as a vehicle for carrying other nutrients and because 60% of the human body is water.

Carbohydrates

Carbohydrates are the main source of energy in all activities. They provide quick energy to the body and are not stored in the body for long. The ratio of carbohydrates is increased in endurance events/activities. Carbohydrates i.e. CHO_2 are compounds of **carbon, hydrogen and oxygen**. Carbohydrates are of two types (a) *simple carbohydrates* (b) *complex carbohydrates*.

(a) *Simple carbohydrates contain vitamins and minerals. Sugars are simple carbohydrates,*



(b) *Complex carbohydrates are good source of minerals, vitamins and fibres. Starches are complex carbohydrates that contain several sugar molecules combined together chemically. Their energy content is higher than sugar but is released more slowly.*

Sources of complex carbohydrates : They are found in breads, cereals (wheat, bajra, rice), starchy vegetables and whole pulses (chana, moong, rajma).

Function of Carbohydrates

The primary function of carbohydrates is to provide energy to the body, especially the brain and nervous system. The body breaks down starches and sugars into substance called glucose that is used for energy by the body.

Recommendations

Nutrition experts recommend that 55 to 60% of our total calories should come from carbohydrates, preferably from complex carbohydrates (starches and naturally occurring sugars rather than processed or refined sugars).

which are used to provide energy immediately. These are called quick energy foods.

Sources of simple carbohydrates : They naturally occur in fruits, milk and milk products and vegetables (potatoes, carrots). They are also found in processed and refined sugars such as honey, jam, cakes, pastries, cream, table sugar, candy, syrups and regular carbonated beverages (drinks), jaggery (gur). Refined sugars provide calories, but lack vitamins, minerals and fibres.

To increase complex carbohydrates we should eat more fruits, vegetables whole grains, rice, bread and cereals and also more beans, dried peas and low fat milk.

Excess of carbohydrates are converted into fat by the liver and stored in adipose tissue.

It is recommended by the experts that processed and refined sugars should be used within the limits. *The consumption of excess sugar prior to exercise reduces performance and endurance.*

Proteins

Proteins are the basic structure of all living cells. These are complex organic compounds. **The basic structure of proteins is a chain of amino acids that contain carbon, oxygen, hydrogen and nitrogen.** The presence of nitrogen differentiates protein from carbohydrate and fat. There are two types of proteins (a) Non essential proteins (b) Essential proteins.

(a) **Non-essential protein :** The human body needs approximately 20 amino acids for the synthesis of its proteins. The body can make



only 13 of the amino acids that are known as the non-essential proteins or amino acids. In fact, they are essential but we do not have to get them from food we eat.

(b) **Essential proteins:** There are 9 essential amino acids, which are taken only from food and not made in the body. Thus, they are called essential proteins or amino acids.

If the proteins of a food supplied is enough of the essential amino acids it is called a complete protein food. If the proteins of a food does not supply all the essential amino acids, it is called an incomplete protein food.

(i) **Sources of Complete Proteins:** All meat and other animal products are sources of proteins.

The best sources of complete proteins are (eggs, milk, meat, poultry, beef and milk products.)

(ii) **Sources of Incomplete Proteins:** Grains, fruits and vegetables are the sources of incomplete proteins as they lack one of the essential amino acids.

The plant protein can be combined to all of the essential amino acids and form a complete protein. For example complete plant proteins are (rice and beans, milk and wheat cereal, and corn and beans.)

(iii) **Functions of Proteins:** Protein is the main component of muscles, organs, and glands. Every living cell and all body fluid except

urine and bile contain protein. The cell of muscles, tendons and ligaments are maintained with protein. Proteins are needed for growth and development of children and adolescents. Proteins are required for the formation of hormones, enzymes and haemoglobin.

It works as a source of energy in starvation (hunger) otherwise it is not a source of energy.

(iv) **Recommendations:** Protein requirements depend on the individual and daily activity. *Tissue growth whether due to growth, injury, weight training or pregnancy, affects protein requirements. During sickness, proteins are not only needed for repair work but are also used as an energy source.* Experts recommend that approximately 20% of the total daily calories should come from protein. Two or three servings of protein rich food will meet the daily needs of most adults.

In other terms, sedentary individuals need 0.8 g/kg/ b w/day (0.8 gram per kilo gram bodyweight per day). Athletes who participate in activities that demand different degrees of strength, speed and endurance may require up to 1.8 g/kg/bw/day.

It is important to note that exercise is the key for stimulating growth of new muscle tissue. Protein only supplies the materials.

(v) **Special Considerations:** High intake of proteins creates extra load on the body due

to disposal of nitrogen especially for kidneys and liver.

Dehydration can occur because of disposal of nitrogen, which may affect workout. It is, therefore, important to have adequate water when consuming increased level of proteins.

Fats

Like carbohydrates, fats also contain carbon, hydrogen and oxygen. They are the most concentrated source of energy in foods. One gram of fat provides double the energy provided by one gram of carbohydrates. Since our body can store fats, they work as energy banks and are called stored energy foods. The energy is provided when there is a need. If we eat more carbohydrates than required by our body the body converts the extra amount into fats and stores it. Our body mainly stores fats under skin and also in the regions of the kidneys and the liver.

Simple Fats

Consist of a glyceride molecule linked to one, two, or three units of fatty acids. According to the number of fatty acids attached, simple fats are divided into *monoglycerides* (one fatty acids), *diglycerides* (two fatty acids), and *triglycerides* (three fatty acids). *More than 95 percent of the stored fat in the human body is in the form of triglycerides.*

Based on the degree of hydrogen saturation, fatty acids are said to be *saturated* or *unsaturated*.

In saturated fatty acids the carbon atoms are fully saturated with hydrogens, therefore only single bonds like the carbon atoms on the chain (see Table). These saturated fatty acids are frequently referred to as saturated fats. The major sources of saturated fats are meats, cheese, and butter (Animal Origin).

In *unsaturated* fatty acids, the carbon atoms are not completely saturated with hydrogen, rather double bonds are formed between the unsaturated carbon atoms (see Table). These are generally found in plant products.

Unsaturated fatty acids can be further classified as :

- Monounsaturated Fatty Acids, and
- Poly-unsaturated Fatty Acids

In monounsaturated fatty acids, only one double bond is found along the chain. Olive oil is the best example of triglycerides high in monounsaturated fatty acids.

In polyunsaturated fatty acids, two or more double bonds between unsaturated carbon atoms along the chain are available. Corn or cottonseed oils are high in polyunsaturated fatty acids.

Tables: Chemical structure of saturated and unsaturated fats.

Note: In general, saturated fats increase the blood cholesterol level, and polyunsaturated fats tends to decrease cholesterol.

Compound fats are a combination of simple fats and other chemicals. Examples of compound fats are *Phospholipids*, *Glucolipids*, and *Lipoproteines*. Phospholipids are similar to triglycerides; *Glucolipids* are formed by a combination of carbohydrates, fatty acids, and nitrogen; and *Lipoproteins* are water soluble aggregates of protein with either *triglycerides*, *phospholipids*, or cholesterol. Lipoproteins transport fats (Cholesterol, triglycerides) in the blood and have a significant role in the development and prevention of heart disease. The total cholesterol / HDL-cholesterol ratio should be 4.5 and 4.0 or lower for men and women respectively. For the information of readers, HDL-cholesterol refers to High Density Lipoprotein cholesterol, also known as "good cholesterol" Whereas, LDL-cholesterol refers to Low-Density Lipoprotein Cholesterol, this type of cholesterol is not good for the heart, it increases proportionally with the amount of saturated fat and cholesterol intake in the regular diet. Total fat consumption on a daily basis should not exceed 30% of the total caloric intake, and less than half of the fat consumed should be in the form of saturated fat. The average intake of cholesterol also should be limited to less than 300 mg per day. The LDL-cholesterol can be further lowered by lossing excess body fat and using medication.

Derived Fats are a combination of simple and compound fats. Sterols are an example of derived fats.

MAJOR TYPES OF FATS LIPIDS

Unsaturated	Saturated
Sunflower oil	Beef
Olive Oil	Bacon
Rice Oil	Cheese
Nuts	Butter
Rapeseed Oil	Biscuits
Fish-Oil - Sardines	Crisps

(a) **Sources of Fats:** Saturated fats are found in foods from both animal and vegetable sources. Animal sources include meat, poultry and dairy products like milk, cream, cheese, butter and ice cream. Vegetable sources include palm, coconut oils. Monounsaturated fat is found in large amounts in foods from plants including peanut and olive oil. Polyunsaturated fats are found in foods from plants including sunflower, corn and soyabean and also fish oil.

(b) **Functions of Fats:** Fat is one of the three nutrients (along with carbohydrates and protein), which supplies calories (energy) to the body.

Fat is important for the proper functioning of the body. Fatty acids provide the raw materials, which help in the control of blood pressure, blood clotting and other body functions.

Fats are also an important energy source. When the body has used up the calories from carbohydrate, which occurs after the first 20 minutes of exercises, it begins to depend on the calories from fat.

Fats help in transportation of fat-soluble vitamins A, D, E and K. Fat maintains skin and hair.

(c) **Recommendations:** Experts recommend that saturated fat should be limited to 10% of the total calories for the day and remainder of the day's fat (ie. 20%) intake should be equal amounts of monounsaturated and polyunsaturated fat.

Today, many people are worried with the amount of fat in their diet. Diets those are high in fat lead to increase the risk of obesity

(over weight) and heart disease. It is, therefore, recommended by the experts that fat intake should not exceed 30% of daily calories.

(d) **Special Considerations:** It is to be noted that fats are not easily digested. It also requires more oxygen for releasing energy, for example, if one litre of oxygen is required to release 5 K calories from carbohydrates whereas 3.7 litre of oxygen will be required to release the same amount of calories i.e. 5 K calories from fats.

Insufficient Fats Produce Fast Fatigue

Blood cholesterol is the most affected by the amount of fat we eat. We can reduce fat intake by choosing low fat or non-fat dairy products (cheese, milk and yogurt), lean meat, fruits, vegetables, whole grains and foods that are baked, boiled, steamed or roasted.

Vitamins

Vitamins are compounds of carbon that are absolutely essential for the normal working of the body. They are required in very small quantities. However, if our diet is lacking in any vitamin, we suffer from certain diseases called deficiency diseases.

Vitamins are obtained from food, except for vitamins D and vitamin K, which the body can produce. There are 13 vitamins needed by the body. The important ones are vitamins A, C, D, E, K and B complex (B₁ and B₂) Niacin (B₃) and B₁₂. These vitamins can be divided into two groups (A) fat soluble and (B) water soluble.

(A) **Fat Soluble Vitamins:** The fat-soluble vitamins, which include vitamin A, D, E and K are stored in the liver and in body fat.

(i) Vitamin A is found in milk, butter, egg, carrots, cod liver oil, tomatoes, pumpkin and green leafy vegetables. Vitamin A is needed for normal growth especially for keeping the eyes and skin healthy.

(ii) Vitamin D is found in cheese, butter, milk, green vegetables, fish liver oil and sunlight. Vitamin D is important for formation of strong bones and teeth. It is also known as the "Sunshine Vitamin".

(iii) Vitamin E is found in vegetable oils, butter, milk, whole grains, corn, nuts, seeds, spinach and other green leafy vegetables. Vitamin E is important to protect the cell membranes and also important in the formation of red blood cells (RBC).

(iv) Vitamin K is found in cabbage, cauliflower, spinach and other green leafy vegetables, cereals, soyabeans. Bacteria in the intestines normally also produce vitamin K. Vitamin K helps in the clotting of blood.

(B) **Water soluble vitamins:** The water soluble vitamins which include vitamin B₁, B₂, Niacin (B₃), B₁₂ and vitamin C are not stored by the body.

(i) Vitamin B₁ also called thiamin is found in seafood, milk, meat, peas, cereals and green vegetables. Vitamin B₁ is important for growth and development. It is necessary for changing carbohydrates into energy.

(ii) Vitamin B₂ or riboflavin is found in yeast, egg, meat and peas. It is important for body growth and red blood cell production. It also helps in releasing energy from carbohydrates.

(iii) Vitamin B₃ or niacin is found in whole cereals, tomatoes, potatoes, meat and fish. It is important for healthy skin, digestion and nervous system.

(iv) Vitamin B₁₂ is found in liver, milk, eggs and fish. Vitamin B₁₂ is needed for forming red blood cells (RBCs) and for a healthy nervous system.

(v) Vitamin C is found in amla, citrus fruits, tomatoes, green leafy vegetables and potatoes. Vitamin C is needed for the maintenance of the ligaments, tendons, and other supportive tissue and strong blood vessels.

Special Considerations

- (i) Vitamins are essential for metabolism of fats and carbohydrate.
- (ii) Vitamins do not yield energy but act for repair and maintenance work.

DISEASE OCCURRING IN HUMAN BEING DUE TO DEFICIENCY OF VARIOUS VITAMINS

Vitamin	Chemical Name	Diseases due to lack of corresponding vitamin
Vitamin-A	<u>Retinal</u>	Night blindness, terror of infections, xerophthalmia
Vitamin-B ₁	<u>Thiamin</u>	Beri-Beri
Vitamin-B ₂	Riboflavin	Cracking in skin, appearance of red eyes, cracking in tongue etc.
Vitamin-B ₃	Pantothenic acid	Hair to be whitened, mental stupidity etc.
Vitamin-B ₅	Nicotinamide or Niacin	Pelagra (Skin irritation)
Vitamin-B ₆	Pyridoxi	Anaemia, Skin disease
Vitamin-B ₇	Biotin	Paralysis, body ache, hair fall etc.
Vitamin-B ₁₂	<u>Cynocobalamin</u> or <u>Cobalamin</u>	Anaemia (Megalocytic anaemia)
Vitamin-C	<u>Ascorbic acid</u>	Scurvy, Swelling or gums
Vitamin-D	<u>Calciferol</u>	Rickets (in children)
Vitamin-K	Filqubonone	To delay in blood clotting

(iii) Water-soluble vitamins (B and C) are not stored; thus supplement of vitamin B and C is required.

(iv) Fat-soluble vitamins (A, D, E and K) can be stored in liver and fatty tissues.

(v) Vitamins do not increase physical work capacity; rather it is a psychological concept.

(vi) Vitamin E helps in recovery of muscle cramps.

(vii) During training fresh fruits and vegetables are recommended.

Minerals

Minerals contain elements needed by our body in small quantities. But these are essential for proper growth and functioning of the body. Their deficiency in our diet causes deficiency diseases. They are supplied in the form of salts by different foods. Some of the important minerals are mentioned below:

- (i) Iron is important for the formation of haemoglobin which is the oxygen-carrying pigment found in red blood cells (RBC). Iron is found in meat, fish, liver, eggs, green vegetables, turnip, germinating wheat grains

and yeast. Recommended daily allowance of iron is about 10 mg.

- (ii) Calcium is needed for the formation of strong bones and teeth and also for clotting of blood and muscle contraction. Calcium is found in milk, milk products and green leafy vegetables. Daily recommended allowances of calcium are about 800 mg.
- (iii) Phosphorus is required for the development of strong bones and teeth and also for making energy rich compounds in the cells from body. Phosphorus is available in meat, eggs, fish and whole grains. 750 mg. of phosphorus is recommended daily allowance.
- (iv) Potassium is important for growth and keeping cells and blood healthy. It is available in green and yellow vegetables. The recommended daily allowance of potassium is about 2000 mg.
- (v) Sodium is needed for the proper functioning of the nervous system. It is found in common salt and also in meat and milk products. Daily-recommended allowances of sodium is about 500 mg.
- (vi) Iodine is essential for proper thyroid function. Its deficiency causes a disease called goiter in which a gland in the throat swells up. Iodine is found in iodized salt, seafood and water.
- (vii) Fluoride is important to make the enamel (polish) of the teeth hard and prevent dental cavities. It is available in coffee, spinach, onion and tea. Daily-recommended allowances of fluoride is 4 mg.
- (viii) Copper is helpful in red blood cells, connective tissue and nerve fibres formation and functioning. It is found in grains, nuts and chocolate. Recommended daily allowances of copper is 3 mg.
- (ix) Zinc is required for insulin production and also for functioning of male prostate, digestion and metabolism. It is available in meat, eggs and fish.
- (x) Chloride is needed for muscle and nerve function and also for digestion. It is found in meat, milk products and fish. Daily-recommended allowances of chloride is 750 mg.

Special Consideration

- (i) Minerals are essential in tropical climatic conditions and strenuous physical activity.
- (ii) Supplementation of iron is must in females.
- (iii) Supplements of calcium and phosphorus may be given to young athletes.

Water

Water is a nutrient that makes up almost 70 per cent of our body weight. Most of this water is in our cells. Some is between the cells and some in the blood. Life processes cannot occur without water. Water plays an important role in the body's molecules.

1. In the digestive system water helps to break down complex food molecules.
2. Water transports food, wastes, chemicals and gases throughout the body.
3. It carries waste products from the body through urine and sweat.
4. The body is cooled by the evaporation of water in the form of sweat from the skin.

We lose a lot of water every day as we sweat, breathe, cry or get rid of our wastes. The water in the food we eat replaces approximately half of this water. Vegetables and fruits contain large amount of water. The other half is replaced when we drink liquids. Normally we need 2.5 liter or 8 glasses of water every day to stay healthy. Athletes and sportspersons who are active in sports should drink enough water to replace the water they lose through sweating.

Water Loading

1. Drink at least eight glasses of water a day.
2. Drink regularly throughout the day; do not wait until you feel thirsty.
3. Carry a bottle of water with you as you commute.
4. Coffee and alcohol cause water loss. So never substitute tea, coffee, soft drinks or alcohol for water.
5. Always start the day with a glass of water. This helps the kidneys work more efficiently. Our body loses water during sleep, so drink a glass before going to bed.