CHAPTER - IV

NUTRITION
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"He who has health has hope, and
He who has hope has everything".

Arab Proverb

a) INTRODUCTION:

"Great is the man who eats the fruits of his own toils" says Talmund, a religious book of the Jews advocated a philosophy during the last century strongly campaigns the "right of each man to his own work and its fruits". These are, no doubt, laudable concepts. In real of life situation, every person/group of people may not be able to do the same work that is of him/them.

People always have known that they must eat to live, and to grow normal children and to keep adults strong. But food can do more than just satisfy physiological and social values. Modern science shows that all of us, regardless of economic conditions can add years to our lives if we apply our knowledge about the importance of Nutrition. The selection and use of food improves the conditions of health (Stiebling, 1959). Nutrition and diet are not synonymous, though they are popularly used in that fashion. Diet
consists of various ingredients of food, which are ingested and converted for use in the body for building up and maintaining its vital functions. Man's physical development, growth, his capacity and fitness of work can be considerably improved by means of better nutrition. People having different nutritional status and belonging to different ethnic groups present interesting differences in body form and proportions with different fertility and mortality rates. Body composition analysis plays an important role in determining nutritional status. The external morphology of the body, an expression of nutrition is also of the total feeding experience of the individual from birth onwards and even possibly from the time of conception.

Food is a prime necessity of life. The kind and amount of food available, play a vital role in the physical and mental well being of individuals as well as nations. The presence of essential nutrients incorporated in the food supply can determine the growth, health and efficiency of population. A number of factors effect the acceptability and utilization of different ingredients. These constitute habits, familiarity, associations, pleasant or unpleasant taste, cultural practices and knowledge of value of food to the healthy state. Certain food become symbols for special occasions. Food may be selected because of its
association with social status, religious connotation or regional pattern. The quantity and kinds of food consumed is largely dependent on economic condition. The most important function of food is that of meeting the nutritional needs of the body. Nutrition can be defined as the science that deals with the nutrients required for the maintenance of body growth and mental stability of an individual.

Cultures are many though man is one. Each individual has his/her own set of notions to the universal needs of man's physical and social life. The manner in which human meets these challenges is their own culture. In considering the matter of eating habits for example, man like every living being must transfer matter into energy from the food they eat. An unusual wide range of ingredients can be digested, but everywhere man has set up preferences and rejections so that some items are a luxury while others are not palatable. In response to cultural dictates, the human being may starve rather than eat tabooed food. In no culture is eating merely the gobbling of digestible substances. This is an important factor which bears a universal acceptance.
IMPORTANCE OF NUTRITION:

Nutrition as a biological process is more fundamental than sex (Richards, 1932:32). The factors governing human diet can be listed as follows:

1. Human beings obtain whatever environment provides for their nutritional needs.
2. Given a choice, they eat, whatever their ancestors have preferred.

Living beings do not eat like animals. They make it appetizing by preparing according to their taste and then display it, serve it and eat it according to rules, they observe. They invite others for meals for the important religious occasions. These kind of gatherings improves individual well being and gives a moral boost. The varied foods utilized on special religious occasions have an impact on the nutritional physiology of individuals. The diet of the people in a particular area is greatly influenced by the eco-system, local religions, customs and traditions relating to fasts, feasts and taboos.

The main things we get from the food is energy. As much as the primary function of food is to supply the body with energy materials. The energy demand must be satisfied before the body uses its own food for building and maintenances, or regulation. The three factors that govern
the total energy need of an individual are the basal metabolism, the physical activity and the specific dynamic effect of food. Energy for the performance of all types of physical activity ranks next to basal metabolism and in the amount of energy expended. Food serves as a fuel that drive the human machine, for body building, growth, renew or renovation of the body. The energy also is important for reproduction and to preserve a proper media in which biochemical process of the body can take place. If the food ingested fails to subserve these functions inadequately, the architecture of the living tissues become imperfect, transformation of energy in the body becomes deranged, and metabolic process declines resulting consequent abnormalities and malnutrition in the body. The diets of poor nutritional quality are directly responsible for the occurrence of specific deficiency diseases. If the excess food is consumed, the excess calorie will be converted into fat and deposit in the body. Sometimes this acts as a dead weight and reduces the speed of efficiency of performance in the metabolism. Similarly, if the food intake is inadequate, the body gets depleted resulting in loss of body weight.

The lack of nutritious food greatly affects the well being. Hence, living being has to consume adequate
nutritional food in order to work, live in a healthy way and perform the work assigned will show an impact on the society.

The human body is made up of different chemical substances which are correlated to the food we take. Scientists have determined the chemical substances present in different foods and their role in the body. They call these substances "Nutrients" and classified them in classes namely carbohydrates, proteins, fats, vitamins, minerals and water. They should be included in the meals in a correct proportion. This need can be fulfilled from a single dish or from a combination of dishes prepared from a wide variety of food resources. If one of the ingredients of this recipe is deleted, one loses the corresponding nutrients.

Food habits vary from place to place and from country to country. Chapatis are the staple food in many families of India whereas rice is staple food in other families and parts of India. This is also true in case of Iran. These habits are mostly due to the availability of a particular type of food. No single item of food contains exactly the same nutrients as any other single item.
Major nutrients are as follows:

**Carbohydrates and fats:**
These are a main energy source for the body. Carbohydrates are easily available and are the best source of energy. Fats also serve as an "emergency energy store", in the body, when enough food is not available due to fasting or starvation, the fat which is retained in the body serves as a storage of energy.

**Proteins:**
They are molecules used for building muscles, skin, blood and bones. They repair the tissues which are constantly destroyed. Hence it is essential to have proteins periodically. Proteins can also serve as an energy source, if the energy requirement of the body is not met by carbohydrates and fats. These proteins called body building foods.

**Minerals and Vitamins:**
Minerals and vitamins are not a source of energy but they are necessary in many of the catalytic processes which are involved in a release of energy in the cells. Minerals, such as Calcium, are the basic components of bone and teeth. Iron is a component of the red pigment of blood called Haemoglobin. Minerals are important in
transmission of nerve impulses and for muscle contraction and relaxation. Vitamins and minerals are called Protective foods.

Water:

It is a component of all body fluids such as blood, digestive juice, etc. Water accounts for about 50 to 70% of the body weight. It is essential for various metabolic activities. Digestion converts food into a soluble form, so that it is readily absorbed and is carried by the blood to the metabolism where it is needed. The waste products like urea are carried by the blood to the kidneys from where they are excreted as end products of protein. Water also plays a role in regulating the body temperature. The daily water requirement of the body depends on the climate, activity and the kind of food intake and the metabolic state of the individual.

Our body has a biochemical factory which can make any compounds for its needs. However, there are limits to this, and what our body cannot take has to be provided by a suitable choice of food. Such compounds are called essential nutrients. Each one of the nutrients has many components. For example, most proteins are composed of twelve to twentytwo different amino acids. Ten of them cannot be manufactured by the body and have to be supplied
through a diet. They are called essential amino acids. The remaining are non-essential amino acids, in the sense that they can be made in the body from any protein food source. Similarly, a large number of vitamins and minerals and some fatty acids cannot be made in the body. Hence they must be included in the diet.

Proteins can be obtained from a variety of sources, such as grains, pulses, nuts, millets, fish, meat, eggs, etc. But the nutritive quality and digestibility of these proteins are not the same. They are present in different amounts in different food stuffs and their quality and the ease with which they can be digested also differs. Animal proteins have all the essential amino acids and are called complete or high quality proteins. Plant proteins lack one or more essential amino acids and are called incomplete proteins. Their digestibility is about 60%. Proteins, obtained from a variety of plant sources can together be made as good as a single unit for the adequate meal. Surprisingly, Indians have been eating a combination of chapati-dhal or rice-dhal over the years, probably for the body needs without having much knowledge of the existence of amino acids.

A mixed diet of various cereals, millets and pulses can fulfil the total nutritional requirement of vegetarians.
Soyabean is the richest source of plant protein. In comparison to other legumes, it contains twice as much protein. Eggs are relatively a cheaper source of high quality proteins when compared to meat. In India, a large percentage of people can afford only cereals which contain mostly carbohydrates. In Iran diet is a combination of high proteins and carbohydrates. Scientists all over the world are trying to find ways and means of obtaining proteins from new sources. Methods of extracting proteins from Ordinarily fresh green leaves, Algae and other sources are under the process of scientific research. An average adult requires one gram of protein per kilogram of body weight. So the daily intake of man should include varieties of food which contains, carbohydrates, fats, proteins, minerals, vitamins and water. This makes a balanced diet for a healthy living individual.

A balanced diet is a combination of various foods which can fulfil energy needs of a person and can provide proteins, vitamins and minerals in proper quantity and proportion for a healthy growth and proper functioning of the body. The percentage of calories derived from different food in a balanced diet according to Nutrient requirement is that of 15-20% of fats, 7-12% of fruits and vegetables, 5% of sugar and 60-70% of carbohydrates. Table No.15 shows the food items and their major nutrients.
TABLE - 15
FOOD ITEMS AND THEIR MAJOR NUTRIENTS

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>FOOD ITEMS</th>
<th>MAJOR NUTRIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cereals and Millets</td>
<td>Carbohydrates, proteins, iron and vitamins of B group.</td>
</tr>
<tr>
<td>2.</td>
<td>Pulses and Legumes</td>
<td>Proteins, carbohydrates, iron and vitamin of B group.</td>
</tr>
<tr>
<td>3.</td>
<td>Nuts and oil seeds</td>
<td>Fats and proteins</td>
</tr>
<tr>
<td>4.</td>
<td>Milk and milk products</td>
<td>Fats, proteins and vitamins</td>
</tr>
<tr>
<td>5.</td>
<td>Meat, fish and eggs</td>
<td>Proteins and some vitamins and amino acids.</td>
</tr>
<tr>
<td>6.</td>
<td>Fats and oils</td>
<td>Fats</td>
</tr>
<tr>
<td>7.</td>
<td>Sugar</td>
<td>Carbohydrate specially mono-saccarines.</td>
</tr>
<tr>
<td>8.</td>
<td>Roots and Tubers</td>
<td>Carbohydrates</td>
</tr>
<tr>
<td>9.</td>
<td>Vegetables and Fruits</td>
<td>Vitamins and Minerals</td>
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b) HISTORY OF NUTRITION:

The science of Nutrition has been developed by using the combined knowledge of the physical and biological sciences. Its application involves the social science, related to man's behaviour like Psychology, Sociology, Anthropology and Economics. Until World War I (1911-14) the significance of nutrition was recognized by a relatively small group of scientists and physicians. Since
that time onwards a wider awareness has developed that nutrition plays a great role in the health and efficiency of individuals and the economic development of nations.

Some studies conducted on animals have revealed the facts which can be applied to human nutrition. Reaumur (1683-1757) used birds to study the digestion of food. Other investigators used animals such as rats, mice and guinea pigs. The use of such animals has helped in solving many nutritional problems. Their life span is much shorter than that of man and allows conclusions to be drawn on experiments which involves several generations. Microorganisms have also been used in the study of nutrition and have made spectacular contribution to the understanding of many aspects. Another significant development has come with the use of isotopes. These substances enable the investigation to follow the pathway of nutrients and their chemical components as they entered the body.

Mayow (1670) an English Physiologist and Chemist was the first to suggest that the inhaled air by animals was taken up by the blood in the lungs and transported to different part of the body. Lavoisier, (1743-1793) who has been called the "father of Nutrition", showed that oxygen was a part of the air and there was a relation between breathing and the combustion of substances.
Using dogs as an experimental animal, Magendie (1839) a French Physiologist, was able to demonstrate that food containing nitrogen were essential to life. Mulder (1838) gave the name 'protein' to food, containing nitrogen.

Viot (1866-1873) studied the utilization of nitrogen on a quantity basis and laid the foundation for a series of studies on the nitrogen requirements. Atware (1894) one of Viot's students continued nitrogen studies in the U.S.A. Viot also developed a caloriometer, an instrument used to measure the energy value of foods. This instrument was used to determine the energy values of carbohydrate, proteins and food values which are in use even till today. In addition he carried out systematic studies on the food commonly used in the U.S.A., it includes the chemical composition of protein and other nutrients.

This work was continued by Macollum (1913) who introduced the concept of vitamins. Later it was discovered that vitamins were responsible for this protective action and Hopkins (1906) the English scientist had postulated earlier that there were certain accessory food substance, whose deficiency could cause disease (Maxine Mcdvitt and Umatir Modambi, 1973).
c) THE FOSSIL RECORD OF VEGETARIAN FOOD:

The fossil records suggest that approximately 35,40,000 B.P. Modern Homo sapiens started his world of conquest and apparently supplanted other forms of Homo. According to a still disputed theory he was responsible for the extinction of a large proportion of the animal species. As Ardrey (1976) suggests his predecessors had most likely been carnivorous hunters, the latest using the weapons similar to his, but they had not been able to reduce the number of species significantly in the course of 2,000,000 years. Homo sapiens were able to do this with innate aggressiveness on a highly developed weaponry. They cultivated a better organization for hunting and war than that of his predecessors. Studies of human coprolites dating from the middle pleistocene (Terra Amata) and from the early wurm (Lazaret) have indicated that plant food played a very insignificant part in the diet of Neandertals and pre-Neandertals during the pleistocene in Europe. This suggests that European Pre-Sapients were obligate carnivores predators and their prey tend to exist in a dynamic equilibrium. And over activity results in scarcity of prey and a consequent domination of the carnivore population. With this characteristic insight, human population solely are dependent on hunting for their survival (Martin, 1967).
The situation for omnivorous human population which can switch increasingly to vegetarian diet as animal source of food becomes scarce. Hence, it is not necessarily depend on a constant supply of meat and can survive in an area where most of the big games have been depleted. Corpolites of Homo sapiens testifying by means of fossil study suggesting the extensive use of vegetable food. The diet of early Sapiens is unknown, although burned seeds have been found by Hansen and Renfrew (1978) in late Paleolithic deposits. Ardrey (1976) suggests that our present high-calorie food is unsuitable for eating without cooking. Hence the use of fire for cooking known among pre-sapiens was a must for plant food usage. In any case, the hunting on all continents and islands appears to have started after the pre-sapiens arrived there and is still continued around the globe. In area where an invading omnivorous population encountered an endemic carnivorous species the former would be favoured by natural selection. The differential amount of suitable food would also permit a greater density of the omnivorous population. The hunting activities of the dense omnivorous population might reduce the standing prey population to a level insufficient for the subsistence of the obligate carnivores. The carnivores would not be able to change their dietary habits, possibly because many generations of obligate carnivorous habit has affected the physiology of the
species to such an extent that utilization of vegetable food was insufficient.

The more effective dietary adaptations are better examples for inherent aggressiveness of particular study of coprolites of early sapient man.

The Anthropology of food is an emergent discipline, newly finds its ways. It is a central pillar to Anthropology. This includes the question of food production and distribution for human nutrition and has entered in some form into Anthropological research. This receives a lot of attention in prehistory, in biological Anthropology, and in socio-cultural Anthropology. Each branch treats the food as part of a larger issues which dominate the disciplinary perspectives and applies to them their traditional techniques of investigation.

Actual human variability offers a challenge to many official attempts to set universal standards of nutrition. Eskimos defy official standards by doing without cereals, Africans by doing without animal protein, other societies survive in which the majority of members seem to be getting much less than the supposed minimum needs of calory intake. Anthropologists are researching these problems of human nutrition contribute by filling in the blanks of
The evolutionary background of mankind and its nutritive needs by examining the relation between nutrition and energy expenditure, in populations which are inhabiting extraordinarily constrained environments. The concept of nutritional well-being can probably be approached from an Anthropological perspective which takes account of the individual's social and cultural environment. A critical history of the development of nutritional standards also provide basis for fundamental research on human variability and the problems underlying. In many countries women are the main food producers. Their levels of physical work often exceed those of men. In addition, they bear and nurse the children. Their enormous energy expenditure is supported by food intake which seems to be less than those anticipated by any standard nutritional needs.

d) NUTRITION AND ENVIRONMENT:

Human biologists have been slow to recognize the tremendous importance of nutrition as a key environmental factor affecting man's evolution and variability. The studies conducted by Boas (1911), strongly suggested that postnatal growth, maturation and adult morphology were strongly influenced by diet. Later, their interests expanded. Garn (1966) states the primate nutrition, both human and infrahuman is closely connected to many of the key problems and the traditional interest of physical Anthropology.
History of man depicted as a hunter with a strong dependence upon animal food; a concept referred back to at least one million years. There were temporal and regional variations in the amounts of animal food versus collected with vegetable food consumed during man's hunting phase. Butzer (1971) states that, from the variety and volume of animal bones found in Homo erectus, living sites in the old world, pleistocene megafauna was apparently indicated hunting was at large scale, possibly eclipsing the importance of vegetable foods in many areas. However, Service (1966) says "in only a few instances (the Eskimo, particularly) in the hunting of animals as productive as the gathering of seeds, roots, fruits, nuts and berries". Meggitts (1964) estimates that in aboriginal Australia even in the north coast where game and fish are in abundance, vegetable foods, collected principally by women, made up 70 to 80% of the diet. However, it could be argued that most surviving hunter-gather populations had been squeezed out of game rich territories. Hence, they would depend heavily upon collected wild vegetables for their food supply.

Man's long hunting phase undoubtedly brought a high proportion of animal food into his diet and appears to have brought notable changes in both social life and metabolically controlled growth and constitutional patterns. As the next to the last link in the complex food
chain leading to man (who may, himself, be consumed by predators), the flesh of game animals, is packed with nutrients. Meat is handy, portable, concentrated food and in the terminal Mousterian and upper paleolithic appears to have been harvested twice annually from migratory herds and possibly stored by smoking or drying (Binford, 1970).

Prime dependence upon animal food during the million year hunting phase may very well altered through evolution. The amount and the kind of man's protein requirements are changed through passing of time. Infant and early childhood protein requirements are high, as much as four times per unit body weight as adult requirements. Moreover, only the amino acid balance of animal protein provides for the optimum human utilization. The FAO (1957) reference pattern for the proportions of the eight essential amino acids (plus histidine for growth) is closely approached only by proteins of animal derivation. Lederberg (1969) has recently described protein malnutrition in man as a rather peculiar kind of genetic deficiency disease. Arguing that man has evolved from precursors which had the capacity to synthesize all of the essential nutrients from simpler sources in the diet. Lederberg (1969) maintains that man now lacks whole sets of genes needed for the manufacture of the eight essential amino acids. Although Lederberg (1969) does not say so, it
seems that it is a coincidence that man derives these amino acids, in a best complement, from animal protein. Stone (1965) has also suggested that man and the few higher primates tested may lack the gene(s) controlling the final step in synthesising ascorbing acid. There is some evidence to show that modern human populations subsisting on bulky vegetarian food have developed elongated intestinal tracts (Steiner, 1946). But for man, the protein from seeds, tubers, and other storage parts of plants are usually deficient in one or several of the eight essential amino acids. Except for Legumes and especially soyabees, seeds and tuber protein is in low concentration (Dubos, 1964). It would seem clear that for protein and the dietary metals, at least, modern man is simply not well adapted to an almost exclusively vegetable diet.

e) FOOD AND CIVILIZATION:

When Homo Sapiens appeared on the planetary scene, the prime necesssities of water and oxygen containing air were already available to them. But they needed food in order to live. For a long time they obtained this by hunting and fishing and by gathering fruits, seeds and grains, roots, tubers and leaves which they had learned by experience. Civilization became possible when they learned to domesticate plants and animals besides took up agriculture and animal husbandry, a mere 10,000 years ago.
The history of agriculture is closely interwoven with the progress of culture and the development of crop and animal husbandry that enabled human beings to settle down in certain localities where soil and climate were favourable and to certain amount of leisure to create the initial ingredients of civilization (Every man's Science, 1982:17).

Bread has rightfully been called the staple food of life from ancient times, and the origin of bread is lost in the very beginning of civilization. The remains of the Swiss Lake dwellers of about 10,000 years ago show that these people had developed baking. The earlier form of bread may have been made from crushed corns or other nuts. In recent times, the Indians of our pacific slopes ate corn cake made of crushed corns, soaked in boiling water, squeezed into a cake and dried.

Barley and wheat were raised in the Nile valley for thousands of years, and a fat barley cake was probably the staple food for many civilizations. The tomb painting from ancient Egypt shows not only the planting and harvesting of wheat but also the flour grinding, mixing and baking.

It is known that as early as 100 B.C., there were more than 200 bakeries in Rome and that the Emperor Trajan (98-117, AD) established a school for bakers. Even in
ancient Rome there was argument over whole wheat bread versus, white bread, and it was said that whole wheat bread was fit only for the slaves.

The greatest advancement was made in the history of civilization at about 7,000 years ago, when man made the transition from a food gatherer to a food producer. As long as man had to depend on gathering or food he was at the mercy of the weather, the seasons and the availability of wild animals. His primary aim in life was seeking the next meal as we still see today in the remnants of primitive tribes.

Civilization depends on man's ability to produce foods. The great early civilization of Mesopotamia and Egypt did not appear until food production methods had been worked out (Piggott, Stuart, 1961).

Once the control of the cultivation of the grass was obtained and by grass we mean rice, wheat, millet, and barley, we can presume civilization commenced. Man could stop his careless roaming in search of food and settle in villages and a larger variety of food became available from which selections could be made. His health and life depended on the selection of foods which would provide him with the more than thirty kinds of nutrient requirement.
The toxic and poisonous animals and plants, such as poisonous mushrooms, either made him ill or killed him, therefore he has learned to avoid them. There is much evidence that the under stress of hunger and famine, man will try to eat everything. Those who survived this early experiment found more or less satisfactory pattern of eating the foods in their area which enabled them to survive. This pattern of survival led to preferences and tastes for food. It may be also regarded with distaste or even with repulsion.

Earlier man, in addition to cereal grains, rice, wheat, millet and barley, ate variety of meat, nuts, vegetables, fruits and berries by hunting them and collecting them. When he changed to a food producer. Later on continued to mix meat and animal products with cereals, nuts, vegetables, fruits and berries and basically this pattern constitutes the basic principles of cooking. The differences that we see in the various parts of the world are due to the variation in the available sources and these are almost infinite from the Arctic to the Tropics, from the desert to the jungles and from the seashore to the mountains. Today we have settled largely on cattle, sheep, hogs, turkeys, chickens, ducks, vegetables, wheat, rice, fruits, roots and so on. In other countries other animals such as the horse in France, the camel in the Middle East,
monkeys in the Tropics and dogs in other areas. Other animals that are eaten and enjoyed are porcupines, kangaroos, lions, elephants, hippopotamus.

Among the animal products, milk is very important, milk is the complete food of life for infants and young children. In India the cow's milk, goats milk and buffalos milk is widely consumed. In Iran the sheeps milk, camel milk and goat milk is equally used. The difficulties in preserving milk led to its fermentation by various organisms with production of yoghurt and a hundred kinds of cheeses according to the condition of the preparation in Iran and many other countries.

Between 600 and 700 years ago Marcopolo (C.1254-C.1324), described how the Tartan Cavalry men prepared dried skim milk. This was done by boiling the milk skimming off the fat for butter, and drying the curd in the sun. The days supply of food was mixed with water in a leather case and attached to the saddle, so that it was shaken during the days ride and was ready for dinner (Mote, 1961).

From the marshes, swamps, rivers and seas, everything that lives seems to have been edible. Even from fish and crustaceans to alligators and snakes are also edible.
Every kind of fish and seafood from the whale and shark to the smallest mollusk and crustaceon are eaten either in raw or whole, like oyster are cooked. Sardines are prepared in an infinite variety of cooked dishes. In some areas, where there is a limited supply, insects are an important item of food. These include grasshoppers, bees, ants, termites, locusts, silkworm, larvae and other worms. They may be fried in fat or eaten raw.

Among the vegetables, the carrot and yam are very ancient. A wide variety of beans, specially the soyabean the broad beans and the grams of India, make an important contribution to the supplementation of nutrient food.

It is needless to say, that the maize, tobacco, potato, tomato etc., are originally from America. In South-West Asia barley and wheat were long invented by man as they were used as nourishing food. The guerds and many types of creepers were used by man in Africa even when he hunted the forest animals. It is well known that in South-east Asia rice, coconut, beetles, palm trees, banana plantation were used since ancient times in the cultures of South East Asia. Just like the pig and cattle were the animals of South-east Asia, in the same way, bananas and rice were the staple food for men. In India people were much influenced by the crops and depend upon cultivation of
variety of grains. Europeans were much influenced by South-West Asian agriculture and the plants and animals of the Mediterranean Region.

In the modern era the plants and animals are not restricted to any region. It was amazing to note that how the tomato was seen in the African Continent, the plant which is that of American origin. Modern Iran is not an exception to any restricted of plants and vegetation, 90% of the world plants are grown in Iran.

f) hUMAN FOOD REQUIREMENT:

The change from nomadic life to agrarian communities further to industrial civilization plays an important role on human diet. Food choices of people are influenced by economical, social, educational and cultural factors. Garn (1966), has recently summarised the evidence pointing out that the culture is the directing force in recent human evolutionary change. The shift from hunting and gathering of food to production had a profound impact. Populations that first acquired animal husbandry or learned to till the ground were the first to expand, leads to achieve genetic predominance. Agricultural development, especially the production of cereals, roots and vegetables, brought with it the potential danger of realization of a particular grain or root of low protein content, which has led to serious protein malnutrition. The technological advances
made civilization possible to think the area of diseases which were carried by man and some by other vectors. Advances which permitted growth of large populations intensified disease selection and rapid genetic change. Genetic variations and diseases profoundly influence nutrient requirements in individuals along with other factors.

Human needs for energy are dependent primarily on basal metabolism of the body and on physical activity. These body functions are influenced, in turn, by age, sex, body size, environmental temperature, and activity of the endocrine glands, particularly the thyroid. Requirements for a number of nutrients like the Vitamins are related to calorie needs, since they participate as coenzymes in the productions of energy from protein, fat and carbohydrates. The need for other nutrients may be more closely related to body size or to the function of specific organs or organ systems of the body than the caloric intake. Certain nutrients, particularly nitrogen and minerals, are lost in significant quantities in integumental tissues, skin, hair and nails, and sweat. High environmental temperatures, especially when associated with physical activity, lead to increased sweating and loss of these nutrients. Such losses must be considered with regard to intake. There is little evidence to show that altitude has a marked
influence on nutritional needs, but studies in this area have not been extensive. There appears to be wide variation among individuals in requirement of calories and in ability to absorb nutrients from the intestine. In establishing any standard for dietary intake, nutritional individuality must receive consideration. Every individual does not need the same amount of food. Disease influences nutrient requirements, by interfering with digestion, absorption, utilization or excretion of nutrients or by increasing the rate of metabolism for the body. These factors have to be considered for nutritive requirements of body. Minimal requirements may be considered as the quality and quantity necessary to prevent abnormalities in the function, composition or structure of the organs and tissues of the body.

Knowledge of human nutritional requirement is adequately studied in order to prevent of malnutrition. However, caloric inadequacy and protein malnutrition are paramount problems in many parts of the world. In some areas it is difficult to meet even minimal nutrient requirements for all members of the population. Every attempt should be made to supply nutrients with an ultimate goal of furnishing a generous food intake. Recommended allowance of nutrients can be met by many different dietary patterns. The nutrient content of foods in the area must
be known before plans can be formulated. Agricultural and technological programs must go hand in hand with medical and public health measures. Education can play a key role. Attainment of an adequate diet for all persons throughout the world should be the ultimate aim of all organizations and persons interested in the human welfare. The cultural barrier and religious taboos should be removed and civilization must meet the challenge "that man be not merely fed but adequately fed."

THE INDICATION OF GOOD NUTRITION:

Many people assume that their nutrition is good if they are able to take food into the body with relative freedom from digestive disturbances from the food taken. They secure energy to meet, the routine tasks of the day, and if their weight and body can afford their own age. The nutritional state is indicated by the cheerfulness of one's attitude towards life as by freedom from susceptibility to colds or by the efficiency of the digestive organs. The indices of nutrition are found not merely in connection with man's food habits, but also in his physical and mental conditions and in his general attitude towards living.

The person whose intake of nutrients is good represents as well being. His weight is in good proposition to his height, age and physique. He is alert, vigorous and active. His skin is clear, smooth, soft,
slightly moist, and somewhat shining. The hair is plentiful and lustrous. The eyes are bright and clear. The mucous membranes are pink and free from inflammation. The finger nails and lips are in healthy condition and the tongue is red uncoated and moist. The fat beneath the skin is firm and plentiful so that it cannot be raised in deep thin fold between the fingers. The muscles are firm and strong, their development is good throughout the body. The chest is broad and deep with room to expand. The bones of the arms and legs are straight and well developed, with no enlargement at the joints. The teeth are clean and enameled. The breath is clear, the posture indicates vigour. The nervous system is stable and the entire body functions properly.

Weight is one of the most significant indications of nutrition. Although weight is an important factor, it should not be considered alone. Standard tables for weight indicates its relation to height and age or its relation to height, age and body build. People may be classed according to body build into five or seven classes. The tall, slender, the short- stocky or heavy and the average. The tall-slim type has less fat and lighter than the others. The trunk is relatively long and narrow. The limbs are slender and the feet and hands are thin and tapering. The short-sticky type is built on a heavy body.
The muscles are longer, the fat is firm and greater in quantity, the shoulders broad and square, with the skeleton proportionally larger than in the other types. As a whole, the body is broad and relatively short. The average type is between the slender and stocky.

Posture is the position in which the body is held, whether standing, sitting, lying, playing or carrying on the regular duties of the daily job. Posture is both important physically and mentally. Good posture is the position that is best adopted for work or rest and that requires the least expenditure of energy.

The appetite gives evidence regarding the nutritional condition. Good appetite being considered a favourable indication. Food of the proper quality and quantity should be desired at regular intervals, and eaten with relish and enjoyment. A lack of desire for food or a feeling of revulsion or disgust with mere sight is not normal and indicates faulty condition in the physiological process. The desire for food is related to the amount and kind of food eaten. The continued absence of vitamins and minerals from the diet or food accompanied by a decrease in appetite and results in deficiency states of body.
Good nutrition is obtained from a balanced diet, from the daily intake of the proper kinds and amount of food. A balanced diet is vital to man's physical and mental health. It helps a person at his best and increases length of life. Lack of the proper foods or proper amounts of food in the diet can result in malnutrition. Nutritional status is the condition of health as it is related to the use of food by the body. Nutritional status is evident in very obvious way, as we can all see, such as changes in the weight and facial expression. However, an accurate measurement of nutritional status can be made only by the expert examination by a physician and can assess by clinical tests in a laboratory.

People in many countries eat food differently and remain healthy and strong. The meals that people eat depends on their customs or what they can produce in their own country. The degree of modernization of the country, their own individual prosperity often depends on their religious beliefs. Western Europeans like North Americans, prefer to eat their main course of food of animal products like meat, fish, cheese or eggs. Australians and Newzealenders are the greatest meat eaters in the world. meat and other animal products are foods for the well to do in most part of Europe. The poorer people get their nourishment chiefly from grains, from the cheapest foods
they make bread. In primitive rural society, they grind the grain into flour and cook it with water into hard cakes or stiff pudding. In mountainous areas where grains will not grow, potatoes and beans take their place in the diet. Mexicans prepare their meals by making bread from corn. Rice is also the chief food of the Orient. Beans, gourds and dried fish are other staples in India. In China a typical dinner may consist of rice with soyasauce, a little pork, salted fish, and vegetables perhaps cabbage or salted with mustard and greens. Throughout the world, people eat foods according to their environment, for example taro roots in Hawaii, whole fat among the Eskimos, magvey (Century plant) in Mexico and Central America, and sea worms on the South Sea Islands. Americans consider this food as strange, but they are pleasant for the people to eat and nourish themselves.

Traditional ways of preparing food are often very important. An Indian mother in Central America traditionally soaks corn meal over night in lime water. This supplies her children with an important mineral just like calcium in diet. The coarsely ground grains customarily used by European peasants contain much more nourishment than finely milled white flour or unpolished rice, as originally used in the Orient, is rich in their food values. When food materials prepared by modern
factory methods are substituted for the traditional types or when cooking methods change important nourishment is lost. Unless variety is introduced into the diet it cannot balance the under nourishment.

It is difficult to quote exactly on the Nutritional status of the Indian people in general and Parsis in particular because information and studies regarding Indian diet and vis-a-vis of Parsis in Iran are not available. Indian diet varies from place to place depending on the environmental and socio-cultural conditions.

The total calorie intake of an Indian is far less than that of an average person in the world. An average Indian needs about 2,357 calories per day to keep his body in a healthy condition, but he gets only 1945 calories per day. About 40% of the people get between 1780 and 2300 calories per day. About 30% of the Indian population get 2,300 calories per day and the remaining population get below 1700 calories per day. Regarding Parsis of India we can say that an average Parsi gets more number of calories compare to an average Indian. Similarly Zoroastrians in Iran get more number of calories compare to the Indian Parsis (Singhai, 1991 and Prof. Gollareddy, 1994).

The concept of a balance diet is almost totally
lacking and those who know about it, some people believe that only rich can afford it, while the fact is that a balanced diet (proteins, carbohydrate, fats, vitamins and minerals) can be achieved by people of almost all socio-economic groups. It is important for the people to know the source of essential nutrients, their nutritive value, their specific functions and the fact that their need and quantity vary with individuals' metabolic requirements arising out of age, sex, physical activity, pregnancy, lactation and physical growth and development (IGNOU, 1989). The food intake for a labourer, athlete and elderly people varies and it entirely depends on their physical activities.