CHAPTER IV

DIET AND NUTRITIONAL STATUS
A nutrient may be defined as, a substance that is necessary for the proper functioning of the human body. Sometimes it is referred as a material that nourishes the body. It is concerned primarily with the part, played by nutrients in body growth, development and maintenance.

Diet, which contains essential nutrients, all through various procedures i.e., Fats and Carbohydrates, are responsible for providing the body, with fuel which, when, oxidized release energy for its activities. Protein provides materials for the building and up keep of body tissue, both the skeletal structure and the soft tissue of the body. Materials that are necessary to regulate body processes or that the body can use to synthesize its own regulatory substance, provided by vitamins and minerals.

It is undoubtedly true that the eating habits basically depend upon the economic status as well as the availability of food-stuff. But it is equally true that the beliefs, custom, traditions and prejudice, influence the food habits much more than we realise. The general food belief of any community is a social product entrenched in the minds of the community and practiced almost like a faith. These beliefs, therefore significantly influence the nutritional status of these population groups. There is wide variation in the dietary patterns of the aboriginal tribes of study area i.e. Gond, Baiga, Kol and Pardhan are living under different conditions in different isolated regions. A large number of them are cultivates, providing different kinds of crops and some green leafy vegetable. Some of them cultivated tubers jamikand piharikandand keokand other collect forest products such as wild roots, fruits, honey, the rest subsite on hunting animals, fishing and some amount of cereals or wild tubers. Nutrition in a tribal society is a single process from lactation and family life continuing through a period of full economic status. Obviously, there is nothing more
important to a tribal than the food he eats and how he eats. This imposition of cultural restrictions make mans food inadequate or limited. In primitive societies the whole culture is held together by nutritional adhesive. Although some taboos in the civilised societies are retionalised, yet there are harmful taboos in primate societies like those, which deprive pregnant women of nutrition so badly needed by them.

Their cultural set up is also responsible for various deficiency diseases like Kwashiorkor in infants and children. Incidents of this disease varies in degree in accordance with cultural variations, such as the use of local plants, spacing of pregnancies and distribution of available food within the family members. As a result of frequent contact with the civil population, a danger is noticeable in adopting civilised food and social habits by the tribal groups of the region, are likely to cause deterioration in their social structure, food habits and nutrition.

The socio-cultural point of view of tribals nutritional behaviour is also important as physiological. There deep-rooted food habits have developed within various tribal sub-groups mainly due to the method of food production, food procurement, traditional processing, cooking and consumption. Obviously, there is a correlation between food, nutrition and various cultural factors. The importance of the subject, namely the socio-cultural aspect of nutritional behaviour has not been assessed in the tribal as yet. It is therefore necessary, that food habits and related matters, the quantitative aspect of consumption of available food-stuff nutrition derived from the household matters, the quantitative aspect of consumption of available food-stuff nutrition derived from the household diets as compassed to the physiological needs, are required to be included in the integrated study of culture.

NECESSITY OF FOOD

The human body is constantly doing work even though one might be asleep. The body is kept warm, the heart keeps beating, breathing and many other actions are going on our body, all these actions could be called the internal work of the body, while action such as staying, studying, taking exercise, walking etc. are called external work. Whether the work is
internal or external it consumes energy and the main purpose of food is to makeup the resultant loss. The resistant power of the body, which unable it to fight diseases entirely depends upon the energy, which the body gets from the food which one, eats. The main function of food have thus been grouped as under-

(a) To provide material (energy) for growth and repair of tissue.

(b) To provide fuel which librates muscular energy and heat.

(c) To maintain good health and provide sufficient resistant power.\(^1\)

The necessity for food varies according to age, sex, body, size, climate, activity etc. Children generally need more food due to the demands of growth and also because they are generally more active. Pregnancy, lactation and adolescent age always require additional food to cover increased physiological stress caused by the visual condition of the body. Generally food is divided into three classes-

(1) Body builders- protein.

(2) Energy producing- carbohydrate and fat and

(3) Protective food- Vitamins and minerals.

**ENERGY**

The important function of food is to provide energy, which is a prime requisite for body function and growth, when a child’s intake of food falls below the standard reference, growth slows and if low levels of intake persist, adult stature will be reduced. Similarly, if adults fail to meet their food requirements they lose weight. This may lead to reduced ability to work, to resist infection and weakened will to enjoy the normal satisfaction of life. This underlines the need for an adequate intake of food, which is the source of all energy.

Energy is measured in terms of Kilocalories. The Kilocalories (Kcal) is generally expressed as "calorie"- written with capital "C". The caloric requirement depends upon the type of occupation, climate, sex, age and

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several other considerations. In our country the daily requirements of calorie have been placed at 2425-3800 Kcal per adult man and at 1875-2925 Kcal per adult woman. Taking into account the distribution of persons in different age and sex groups and in different activities in India. The average per caputa requirement of calories would appear to be about 2687C.

PROTEIN

Proteins is important for the synthesis and repair of the vital living tissues of body i.e. the muscles, glands, nerves and other parts related to the various functions of the body are made up of protein. Between the period of infancy and maturity, it is required both for growth and repair. It is also needed after donations of blood, excessive menstruation, hemorrhage, an accident, pregnancy and lactation. Protein is composed of carbon, hydrogen, oxygen and nitrogen.

The principal food which consist of a large amount of protein are meat, eggs, fish, cheese, beans, pluses, milk, nuts and soyabeans. Kwashiorkor is the main disease caused by protein deficiency. Protein is an acid former, so that excess of its consumption leads to a condition of acidosis, a condition, which is the cause of a great variety of diseases.

CARBOHYDRATES

It is essential for supply of energy for work, play and other forms of the vital activity and to furnish fuel to maintain heat. Carbon, Hydrogen, and oxygen are the main composition of the carbohydrates,

This element of food consists mainly of starches and sugars. Starches are derived principally from cereals or grains in all form i.e. potatoes, sweet potatoes, bananas, peanuts, carrots, turnips, cassava or yam. The food sweets are syrups, candies, cane, sugar, fruits like grapes, sweet apples and ripe bananas.

An over consumption of starch has a tendency to causes constipation, digestive disorder, enlarged tonsils and cold etc. Excess sugar taken causes diabetes and torpid lever and hyper acidity.

FATS
Fats supply the fuel for the body heat and serve as a source for the expenditure of energy. Protection for the nerves, insulation of the body, carriers of fat-soluble vitamin A, D, E and K palatability and the satiety value of food is greatly increased by fats. Fats contain carbon; hydrogen and oxygen are composed of fatty acids.

The principal foods rich in fats are butter, cream, animal fat, olive oil, cod liver oil and oil of nuts. Almond, cashew nut, groundnut are rich source of fats. 3 to 4 ozs, of fats are required daily in normal diet.

Digestive disturbance, derangement of the biliary function and acidosis are caused by excessive amount of fat. Cooking oil should not be used reputedly for frying because that it turns black and produces toxins, which are not only harmful to body but may be carcinogenic. Consuming large amount of animal fats, cholesterol get deposited on the walls of the blood vessels causing other osclerosis.

**VITAMINS**

Vitamins are vital for human health for various body process. They are organic substances in food, which are required in small amounts. They don’t yield calories but act as catalyst in various body processes. So we can say vitamins are undoubtedly essential to life and builders of our body. This is to be noted that all the vitamins we need, are present in the food, which nature supplies for our use and provide. We should eat them as nature supplies and should not spoil them by removing or destroying them by wrong cooking and processing.

**Vitamin A**

Vitamin A is a fat-soluble and antiopthalmic. It is essential for normal vision. It plays role in immunological defense mechanism of the body and anti-infective by protecting body from microbes. It is essential for skeletal growth. The cod liver oil is the richest natural source of vitamin A. Other major sources are green leafy vegetables, egg yolk, butter, milk and fish. Yellow colour fruits mango, pumpkin, papaya are rich sources. Requirements are high in periods of rapid growth during pregnancy, lactation and also during illness.
Deficiency of vitamin A results in night blindness, lowered resistance to eye infections, lack of full growth sediment and stones in kidney and bladder Keratomalacia. Consumption of excess of vitamin A causes headache, fatigue, irritability, musea, vomiting and anorexia, which disappear on withdrawal of vitamin A intake. Requirement of adult man per day is 2400 ug.

**Vitamin B**

Vitamin B complex comprises many vitamins in-group and called B complex, each individual number has a separate function to perform; they are also interrelated and interdependent.

**Thiamin**

It is essential for the utilisation of carbohydrate in the body. Its deficiency causes neurological and mental disturbances. Beriberi is cause by nutritional deficiency.

The whole grain cereals are generally considered the best source, thiamin usually occurring in germ and outer layers. However if these grains are highly refined such as wheat flour is low in thiamin. Next to cereal grain, legumes are the best common source of thiamin peas, soyabean both fresh and dried are very good sources. Dried lentils, kidney and many varieties of dried beans are good sources. The best vegetable sources of thiamin are the dark green leafy vegetables. The richest natural source of thiamin is dried yeast; wheat grain is also an excellent source. Loss of thiamin in the cooking of vegetables in water, in which the water is thrown away, is significant.

**Riboflavin**

It combines with protein in the body, to form a number of important enzymes, concerned with several oxidations. Liver, milk, eggs, growing leafy vegetable, germinating cereals and pulses are rich sources.

Deficiency of Riboflavin result in (i) Burning sensation in eyes, soreness of eyes, lips and tongue, (ii) fissuring at the angles of mouth and (iii) glossiest an abnormally smooth and law condition of the tongue accompanied by a charge of its colour to purplish red.
Niacin

Niacin or nicotinic acid is rapidly converted in the body to nicotinamide, which is a component of co-enzyme, essential for the metabolism of carbohydrates, fat and protein. Liver groundnut, pulses, meat and fish are good sources of Niacin. Milling may remove most of the niacin cereal recommended daily allowances is 6.6mg/100 kcal. Pellagra is nutritional disease endemic among poor peasant fed on maize, caused by deficiency of Niacin. Pellagra has been called the disease of three D's Dermatitis, Diarrhea and Dementia.

Biotin

Biotin is thought to assist in the synthesis of hemoglobin and in the manufacture of glycogen, common form of storing energy in the liver. Deficiency results in skin haemorrhanges, edema, anemia, loss of hair and nervous disturbances.

Cynocob (B_{12})

This vitamin promotes growth. The richest food sources are kidney liver, eggs, milk and muscle meats and seaweeds. Lack of B_{12} cause megaloblastic anemia neurological lesions and infertility.

Vitamin C

Vitamin C is very essential for body resistance as well as for the proper metabolism. This vitamin is associated with the activities of the smaller blood vessels and with the protection of the body against ulceration. Amala is one of the richest source of vitamin C. Citrus fruits like Orange, Lemon, Guava, Tomato, Leafy vegetable, drume stick, germinating pluses and grains are other good source of ascorbic acid. Scurvey is main health disorder due to deficiency of this vitamin. A disease marked by weakness, anemia, spongy bleeding gums, mucoculaneous haemorrhages. Vitamin C is of great help in the quick healing of wounds. Smoking destroys vitamin C. It is mostly lost by atmospheric oxidation and cooking.
Vitamin-D

Vitamin D controls metabolism of calcium and phosphorus in bone building and teeth formation. Sunshine, milk, butter, cod liver, egg yolk are good sources of this vitamin.

Lack of vitamin D in children leads to rickets while in adults may lead to Osteomalacia. Bending and softening of the bones, deformities, and failure of calcium metabolism are other deficiency disease. An excessive intake may result in anorexia, nausea, vomiting, thirst and drowsiness. A good supply of this vitamin during pregnancy benefits the mother and helps to ensure the satisfactory future development of the child.

Vitamin E

Vitamin E also called as ant sterility vitamin. It is associated with the reproductive function; fertility and physical vigour are dependent on the supply of vitamin E. It is also helpful in cardiovascular disease.

The richest source yet found of vitamin E is the germ of the wheat kernal. It is also found in lettuce watercress, beans, and egg yolk, vegetable oils. Lack of vitamin E results in loss of reproductive powers, disturbance during pregnancy, death of the foetus or embryo.

Vitamin K

Vitamin K is a regulator of blood coagulation. This vitamin is associated with normal functions as well as with normal clotting of blood. Death rate could be reduced from haemorrhage in newborn infants by giving vitamin K either to the mother prior to the birth of the baby or to the baby immediately after birth.

Green leafy vegetable, tomatoes, cauliflower, egg yolk, soyabean oil and liver are all good sources of this vitamin.

MINERALS

Minerals plays an important role in the maintenance of good health. Iron, Calcium Iodine, Zinc, Phosphorus etc. are the basic elements of this group, which are essential for proper growth of the body.
Iron for blood and calcium for bones are important requirements, in supplement form during pregnancies. Deficiency of iodine leads to goiter while magnesium cause cancer. There seems to be a relationship between manganese and chromium, and the prevalence of heart disease. Similarly chromium is needed to maintain normal blood sugar levels. Deficiency of zinc in the system may lead to baldness, loss of appetite and sexual dysfunction. Mineral contents of an average person of seventy kg body weight and the average daily intake requirement of such a person are estimated i.e. calcium 400 mg, iron 30 mg.

**Calcium**

It is required for the formation and maintenance of bones and teeth for normal contraction of muscles, for regulating heart rhythm and for blood to clot. Calcium aids vitality and endurance regulates cholesterol level, is good for health of the nerves and good for menstrual pains. It hastens healing of wounds by blood coagulation. Calcium lowers depression, irritability, and allergies. Rickets in children is a symptom of calcium deficiency.

Milk and its products, pulses, soyabeanus, green leafy vegetables, citrus fruits, peas, beans are significant source of this minerals. An adult body normally requires 400 mg of calcium per day.

**Iron**

Iron is of great importance in human nutrition. The adult human body contains 3-4 mg. of iron of which about 60-70 per cent is present in the blood (Hb iron) as circulating iron. Iron is necessary for many functions in the body, including formation of haemoglobin, brain development and function, regulation of body temperature and muscle activity. Lack of iron directly affects the immune systems it diminishes the number of T cells and the body production of antibodies. The end result of iron deficiency is nutritional anemia.

The important sources of iron are cereals, green leafy vegetables, legumes, nuts, oilseeds, jaggery and dried fruits.
Sodium

Needed for digestion, blood purification and for the manufacture of gland hormone, is a necessary constituent of gastric juices. Sodium occurs in milk, spinach, and coconut and is also added to food during cooking in the form of sodium chloride. The requirement of sodium chloride depends upon the climate, occupation and physical activity. The adult human body contains about 100 gm of sodium iron.

Iodine

Iodine is essential in minute amount for the normal growth and development and well being of all humans. It is required for the synthesis of the thyroid hormones, thyroxin and triiodothyronine.

The best source of iodine are sea foods (e.g. sea fish, sea salt) and cod liver oil. Small amount found in other foods e.g. milk, meat, vegetables, cereals etc. The most obvious consequence of iodine deficiency is goiter and retarded physical development and impaired mental function.

WATER

Water is the medium that dissolves food in the process of digestion and assimilation. It is the most important liquid, taken into the body to support life because it is the chief constituent of the blood and the lymph. Water is concerned in all metabolic processes and correlation of dehydration is therefore a most important aspect of any treatment. In many conditions secondary dehydrations a cause of death even, when the primary condition has been treated. All the vital functions of the body depend upon the presence of a proper amount of water. Water also helps in regulation of the body temperature. Evaporation of water by respiration and sweat is an efficient mechanism regulating body heat.

All liquids taken by man are water with or without other constituents, solid foods; particularly fruits and vegetables also contain a high proportion of water. A person’s, water requirements; very considerably according to the climate, dietary habits, activities and body build. Contaminated water, which is used for washing cloths and utensils or
animals is drown for the purpose of driving and cooking this is likely to spread water born epidemics.

**DIETRY HABITS**

Dietary habits of the people directly depend upon the nature and the quality of the foodstuffs, which is responsible for the nutritional intake of the person. It is very much influenced by the cultural and religious belief of the person. As far as tribal population of the study unit is concerned, their agricultural production is quite different and it also influences their dietary habits. Beside this, they also consumed various seasonal products, which they get easily. Occasionally they also hunts forest animals and fishes for consumption. Normally tribal people took their food three times in a day i.e. morning, noon and at night. They are as follow -

**Breakfast**

The food, which they take in morning, is known as ‘Juara’ in which they normally consumed 'Pej'. It is a liquid form of dalia, made of wheat rice or jowar. Another main item of the breakfast of the tribals of the region is ‘Basi’ i.e. the previous day food, which is specially left for next morning, after putting sufficient water in it. Sometime they also take chapatti with chatni (salt and chilies ground together). This pattern also varies from season to season. It differs in quality also from place to place. Male members generally take much because they go to the field and for other labouring work. While the females and children take light breakfast as they have to remain at home for doing housework. They also help in outside work according to the requirement.

**Lunch**

The food they take in afternoon is known as ‘Marriaya’. It is very light and a very irregular form in the region. Normally male members take their lunch at their work place. Only woman and children take their lunch at
home. School children get noon meal in the form of 'Dalia' from their schools. It is observed that chapti and vegetables are the main items of their lunch. Sometimes they also take rice and Bhaji, which is available locally and is cheap. Various types of bhaji, which they include in their food varies seasonally and are available throughout the year i.e. chakoda, lalbhaji, chanabhaji, railbhaji, teorabhaji.

**Dinner**

Night food is known 'Biyari'. It is heavier than lunch and they take it collectively. Dalia, rice, leafy vegetable, pulses and/or which is available, is the part of night meal. Rarely they purchase food item, which are generally small fry fish called 'Suksi', Chilies, Gur and coloured sweetnamkeen. Consumption of milk and its products totally depends upon the pet animals if they have. Flash food and fish also a part of dinner because hunted animals or fishes are brought in the evening and that day they take a good dinner. They consume all the flesh of the animal the same night and do not bother for the next day. It causes stomach disorder sometime. Daru or wine of mahua is an important part of the dinner of that day. The whole family generally takes it.

**Other Characteristics**

Tribal food consumption pattern is directly controlled by the local availability of the food stuff. All the seasonal fruits, which are available easily, are consumed. It is found that some local fruits are very nutritious which gives them essential nutrients such as Amala for vitamin C. Some other regional tribal fruits are Phihari, Karil, Char, Manner, Ber, Keokanda, Tandu. They are very much fond of fruits, sometimes they take it over, which causes stomach disorder.

Festivals are celebrated with special foods i.e. Gulgula, Bhajia, Puri, Bada, Dia (made of rice flore in water vapour) Thakua, Khurma, Pua, Kari, Matha basan. Fair or mela i.e. Madai Mela also gives variety in their food. But they buy cheap food. Jalebi, sweet coloured Namkeen, Laddu, Peda, Barfi, and other sweets attract them but they are kept uncovered so they become unhygienic. They afford cheap fruits which gives not quality but quantity. This occurs due to their unawareness. Murmura, Phuta,
Chana, are the other items, which they purchase from Mela or weekly hot (market).

**FOOD STUFFS AND THEIR CONSUMPTION**

Human diet is not restricted to any special category of food. Man can eat a variety of food, including vegetarian and non-vegetarian. This natural desire for variety is justified by the fact, that the needful nutrients are not available in a single food. Cereals like rich wheat, which form the staple food of making supply only with a fraction of nutritional requirements. For the supplements cereals with other foods which, provide plenty of fats, proteins and qualities of number of vitamins and minerals. This means that for better health the longer diet sheet is needed. This will become evident, if we analyse what nutrients our food contain and in what proportion. The primary work of food is to satisfy hunger. The necessity of food varies according to age sex and body size, climate and activities.

A good diet is thus defined as one, which yields nutrients daily in proper amounts such a diet is framed as balanced diet. In other words a balance diet is one, which contains different type of food stuffs in proper quantity and proportion, that the need for calories, minerals, vitamins and other nutrients is adequately met. And a small provision made for extra nutrients to with stand short duration of leanness.

Nurtients are present in most food stuffs but in different degrees. Food stuffs have been classified in many ways but the present study is concerned only with food stuffs which may be broadly divided into the following group i.e. cereals, pulses, nuts and oil seeds, vegetables, fruits, milk and milk products, oils and fruits, sugar and juggery and flesh food.

**Cereals**

Rice, wheat, jowar, maize, kodon kutaki are the main cereals, which are commonly used by the people of the region. They usually form
the major part of the diet and provide energy for doing work and material for building tissues. Rice is used as staple cereal by a majority of people of study region. The addition of green leafy vegetables with rice is the most appropriate food combination of the region. The green vegetables supply the lime, iron and vitamins, which do not contain rice. Hand proceeded rice is preferable to raw rice, as it contains vitamin B in large quantity. Maize and kodon kutaki extensively cultivated in region and are important food for tribal people. Maize consists of starch with some protein, very little fat and mineral matter. Yellow maize has vitamin content, which can be found in no other grain product. While kodon is a good source of energy, carbohydrate, vitamin B complex etc. Jowar and wheat are the other cereals consumed by the people of the region.

**Pluses**

Pulses are the main source of protein particularly where the people are vegetarian. Pulses are rich source in diet. Tur, Gram, Lentil, Urd, Teora, Lentil is the main pluses of the area, which is used commonly by them. While Tuar, Gram, Urad are the other pulses consumed by the tribal people of the study unit.

**Other**

The oil seeds rape and mustards, groundnut is cultivated in large proportion in the area. Rape and mustard oil are superior in calories, fats calcium, iron, vitamin A and thiamin in composition than other oilseeds. They mostly consume Gur.

**Vegetables**

Vegetables are in expensive source of many nutrients, which are essential for growth and maintenance of normal health. Vegetables are rich sources of calcium, iron, vitamin A and vitamin C, riboflavin and folic acid. Many types of green leaves such as palak, methi, pudina, rajgira leaves are consumed, all over the area under study as a vegetable. Rajgira and mustered leaves consumption is very high. In the rabi season tribal people save rajgira and mustard leaves and it is dried and kept for consumption for the remaining part of the year.
Teorabhaji, lalbhaji, lasera bhaji, chkoda bhaji, kareel, manner patpura, padora, are the vegetable, which collected from the jungle, generally occur in rainy season. Chana bhaji, lauki, semi, barbati, kaddu, kakadi, bhindi, kacharia, are also the vegetables, which take place in the meal of the tribes. Kathal, Potato, tomato, onion, chillies are the vegetables, which bought by market if they are cheeper. Some popular tubers of the region pihari, karonda, keokanda, jamikanda, suran are also take place in there vegetable sheet.

**Fruits**

Fruits are usually eaten in the raw state and hence are a good and dependable source of vitamins and minerals in the diet. Yellow fruit, like mango and papaya contains vitamin A. Mango is also known for its richness in minerals contents and carbohydrate. The commonly used fruit Amla is rich in vitamin C. Banana is a rich source of iron and carbohydrate. All seasonal and available forest fruits are consumed by the tribal people of the region i.e. mango, amala, ber, sita phal, char, tendu, amrud, aapita etc.

**Milk and milk products**

Milk is a product, which is found essential for the each and every age group in both sexes. New born to old aged person. It is a well-accepted and digestible diet. Consumption of milk and milk products is rare among the tribals. It is mostly depend upon the availability of cattle in the respective family. Milk is an excellent source of high-class protein, calcium vitamin A and riboflavin. Milk is an ideal food for infants and children. Tribals normally consumed goats and cows milk and its consumption depends upon their own availability.

**Flesh Food**

The tribal communities of the region are mostly non-vegetarian. Fishing and hunting is one of the major part of their food gathering. They like mostly pork beef, flesh of goat and other animals. Fishing is very common. Rohu, Katala, Jimata, Suksi are the main fishes found in the region.
ANALYSIS OF NUTRITIONAL STATUS

Nutritional status shows the general measurement of daily diet of the people. It is characterized by the dietary habits and nutritional level of the people qualitatively and quantitatively.

BALANCED DIET

A balanced diet is defined as one, which contains a variety of foods, in such quantities and proportions that is essential for body need. Amino acid, vitamins, minerals, fats, carbohydrates and other nutrients is adequately met for maintaining health, vitality and general well being and also makes a small provision for extra nutrient to withstand short duration of leanness.

The dietary pattern varies with the climatic conditions of the region, economic capacity, religion, customs, taboos and habits of the people. Based on the type of food available in Indian nutrition experts of ICMR have suggested the composition of a typical balanced diet for an Indian adults as follows-

Table-4.1
Daily Allowances of Nutrients for Indian

<table>
<thead>
<tr>
<th>Group</th>
<th>Particulars</th>
<th>Net energy Kcal/d</th>
<th>Protein g/d</th>
<th>Calcium mg/d</th>
<th>Iron mg/d</th>
<th>Vitamin A ug/d</th>
<th>Thiamin mg/d</th>
<th>Riboflavin mg/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man</td>
<td>Sedentary work</td>
<td>2425</td>
<td>60</td>
<td>400</td>
<td>28</td>
<td>3000</td>
<td>1.2</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>Moderate work</td>
<td>2875</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.4</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>Heavy work</td>
<td>3800</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.4</td>
<td>1.6</td>
</tr>
<tr>
<td>Woman</td>
<td>Sedentary work</td>
<td>1875</td>
<td>50</td>
<td>400</td>
<td>30</td>
<td>3000</td>
<td>0.9</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>Moderate work</td>
<td>2225</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.1</td>
<td>1.3</td>
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<tr>
<td></td>
<td>Heavy work</td>
<td>2925</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.2</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Source: Nutrient requirements and recommended dietary allowances for Indians, ICMR (NIN) Hyderabad. (1998)
As for as geographers are concerned, the diet of the different groups as a whole is important, rather than the diet of the individual. Generally each community forms a uniform habit. It varies from one cultural group to another. Generally vegetarian diet is directly influenced by the local religious concept and traditions. Availability of food stuffs also directly influenced the dietary habits of the people. Beside this, economic structure of the respective place also determine the dietary practices of the region, because purchasing power plays an important role to decide the food stuff for eating. Firstly, easily available food stuffs become a part of the diet of any region.

In the study unit the vegetarian and non-vegetarian diet has been accepted by the tribal people. Religious concept, economic status and availability of food stuffs etc. are the main factor which determines the dietary pattern in the study unit. The dietary pattern of the study area is also varies from season to season because availability of cereals, fruits and vegetables are quite different from one season to another.

**DIET SURVEY - METHODS AND TECHNIQUES**

The main aim of the diet survey aims to collect the information regarding dietary pattern and food habits. The aim of this survey is to provide information on the kinds of food consumed and the frequency. There are four methods of diet survey by which scientists usually conduct diet survey in our country.

(i) Weighment of raw foods.

(ii) Oral questionnaires method.

(iii) Weighment of cooked foods and

(iv) Checking of stock by inventory.

The scholar used oral questionnaires method, which took lesser time and enables him to cover a large area in comparison to other known
method of the diet survey. The aims of such survey, is to find out the following-

(i) The level of nutrition in the study area.

(ii) Foods that people eat.

(iii) How for existing diets is satisfactory.

(iv) Factors responsible for the poor diet.

To improve the nutritional conditions of a population it is essential to know the amount and type of food consumed by different people. The diet of the people differs from place to place and difficulties are also erected by the customs and prejudices, which determine the food consumption pattern of the people.

**Selection of villages**

For the study of nutritional status of the tribal people, a diet survey was decided to cover .05 per cent of the total number of villages. These villages were listed alphabetically having tribal proportion more than 50 per cent. Thus 16 villages were selected by stratified systematic random sampling method, from 8 blocks. Then 182 families were selected and interviewed by author himself. During the field work (survey), information on the nutritional aspects and food habits of the tribal people, were collected with the help of well framed schedule (appendix.....) covering following aspects (i) Number of member of the family (ii) Occupation (iii) Monthly expenditure (iv) Dietry habits (v) Total food consumption of the family, pervious day.

**Diet calculation**

The analysis of diet of the people has been done with the help of various reports of ICMR. The average diet of each member was resolved into different nutrients like calories, proteins, vitamins, minerals etc. The daily per head consumption of food stuff was calculated in three part-

1. Per day family consumption of different food items.
2. Family converted into adult unit according to the following scale, which is suggested for practical nutrition work in India by nutrition experts-

(i) Adult male (Sedentary worker) 1.0
(ii) Adult male (Moderate worker) 1.2
(iii) Adult male (Heavy worker) 1.6
(iv) Adult female (Sedentary worker) 0.8
(v) Adult female (Moderate worker) 0.9
(vi) Adult female (Heavy worker) 1.2
(vii) Adolescents 12-21 years- 1.0
(viii) Children 9-12 years- 0.8
(ix) Children 5-7 years- 0.7
(x) Children 5-7 years- 0.6
(xi) Children 3-5 years- 0.5
(xii) Children 1-3 years- 0.4

Source- Gopalan C. & others (1980 Nutritive value of Indian foods, NIN, Hyderabad (ICMR), Pp. 10

(3) And then adult unit has been calculated.

COMMUNITY WISE - NUTRITIONAL INTAKE

Nutrition is mainly concerned with defining the nutritional requirements for the promotion, protection and maintenance of health in all groups of the population. Such availability of food stuff is one of the important factor on which food habits of the people depend. Because, locally available food stuff are cheap and people are also habitual to use these foods. Nutritional intake directly controlled by the local available foods. Local food stuffs directly related with the surrounding environmental
conditions i.e. rivers, soil, climatic condition etc. Nutritional intake varies community to community according to their socio-cultural set up. In various communities religious views also control their dietary habit.

**Calorie**

Calorie requirement of a person depends upon the age, metabolic rate, climatic condition and the type of work, he does. Average caloric intake, which found in the study region, is 2298.45 kcal. Which is 14.87 per cent deficit from the recommended allowance i.e. 2700 Kcal. Energy consumption in different communities of the study unit varies from 2404.87 to 2097.96 Kcal. Baiga community of the region has been reported to have the highest consumption of calorie amounting 2404 Kcal. while Pardhan has been reported the lowest consumption of calorie i.e. 2097 Kcal. However, per cent deficit in calorie intake have been observed moderate i.e. 12.82 and 17.43 in Gonds and Kol communities respectively. Thus it is clear that Baiga is in better position among other tribes of the region, mainly due to consumption of food grains i.e. wheat, rice are considered as calorie rich food.

**Protein**

Protein is extremely important for body development. Consumption of protein in the various communities of the study region is quite good, but even then protein deficiency diseases exist. Such disease are seen largely in infants and in woman of the study region but however, overall it is found that the people of the study area are use pulses, fish and flash food, commonly, which contain a good amount of protein.

Among the tribal people of the region protein intake varies 44 mg to 38 mg in Kol and Pardhan communities respectively. According to the Table average protein consumption in the study unit have been found 42.5 mg. The higher deficit of intake has been observed in Pardhan community i.e. 30.14 per cent, whereas it is noticed low in Kol i.e. 19.0 per cent. Among the Gond and Baiga Protein intake have been noticed satisfactory i.e. 44.46 mg and 42.8 mg. respectively. Thus it is clear from above discussion that Gond and Kol are in better position because they use milk, flash food and eggs in their ruteen diet.
## Table 4: Upper Narmada Basin Community wise Intake

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Community</th>
<th>Calorie Kcal. 2700</th>
<th>Portion 55 g/d</th>
<th>Calcium 400 mg/d</th>
<th>Iron 30 mg/d</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Actual</td>
<td>Dep.</td>
<td>%</td>
<td>Actual</td>
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<tr>
<td>2</td>
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<td>44.55</td>
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<table>
<thead>
<tr>
<th>S.No.</th>
<th>Community</th>
<th>Vitamin A (Carotene) μgm/d</th>
<th>Thiamin 1.5 mg/d</th>
<th>Riboflavin 1.5 mg/d</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
<td>Actual</td>
<td>Dep.</td>
<td>%</td>
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</tr>
<tr>
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<td>-11.64</td>
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<td></td>
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</tr>
</tbody>
</table>
Calcium

It is required for the formation and maintenance of bones and teeth, for normal construction of muscles, for regulating heat rhythms and for blood to clot. Rickets in children as well as teeth decay are symptoms of calcium deficiency. Some of the diseases have been observed in the tribal people of the region during the field work, specially in Baigas, who avoids to take calcium rich food i.e. milk and milk products, leafy vegetables and citrus fruits.

Average calcium intake is found 323.67 mg in the study region which is 19.08 per cent deficit from the recommended allowance i.e. 400 mg. The per cent deficits have been noticed high (21.41 per cent) in Baiga and low (14.43 per cent) in Gonds. Calcium intake departure varies 57.75 mg to 61.95 mg per day. Between the Kol and Pardhan, the actual intake is 315.44 and 338.05 mg, respectively. Deficiency has been observed in these communities, due to lack of awareness and less availability of calcium rich food.

Iron

It is required for the formation of hemoglobin red blood cells and for the transport of oxygen from the heart to the body cells and tissues.

Among the tribal people of the Upper Narmada Basin, variation in iron intake is 24.49mg and 22.87mg in Gond and Pardhan communities, respectively, which is 18.36 and 23.76 in per cent deficit respectively. While for the Kol and Baigas the actual intake have been observed 23.95 mg and 22.93 mg, respectively in the study region. Average Iron intake of the region is 23.72 mg, which is 20.93 per cent deficit from the recommended value of 30 mg. Green leafy vegetables are the rich source of the iron is the study unit and people grow various type of vegetable within their backyard called "bari". Deficiency disease of Iron reported more in Pardhan community especially in women due to lack of awareness.

Vitamin A (Carotene)

Vitamin A promotes good eyesight, healthy skin, good teeth, general growth and rituality and builds resistance. Deficiency disease has been
observed during the fieldwork in the study unit i.e. night blindness, related
growth and lack of appetite. People of the region not knows less about the
main sources of the vitamin a or carotene.

Average carotene intake was found 1997.04 ug in the study
region, which was 16.79 per cent deficit from the required value i.e. 2400
ug. Vitamin A (carotene) intake varies 2120.63 to 1977.38 ug. in Pardhan
and Baiga respectively. The per cent deficit have been noticed high (21.11)
in Baiga and low (11.64) in Pardhan. However per cent deficit in carotene
intake have been observed moderate 14.17 and 17.6 for Kol and Gond
communities respectively.

**Thiamin**

It is essential for normal functioning of the nervous system, heat and
muscles, aids digestion and promotes carbohydrate utilization. Deficiency
resulted in various disorders viz. nervous irritation, mental depression, loss
of weight and tickling sensation in the soles of feet.

Among the tribals of the study unit thaimin intake have been
noticed satisfactory i.e. 1.47 mg. In this variation , B complex parts 1.53
to 1.12 among the Gond and Kol communities of the study region. It is 2
per cent surplus and 25.33 in per cent departure. While departure per cent
two other communities found 1.29 and 1.46 in Pardhan and Baiga,
respectively.

**Riboflavin**

Riboflavin promotes general health and growth, good skin and
healthy eyes, assists cell to use oxygen for the release of energy from food.
The average consumption of the riboflavin in the study area is 1.26 mg,
which is 16 per cent deficit in comparison of recommended allowance,
which is 1.5 mg per day. Among the tribal people of the unit riboflavin
intake varies from 1.2 mg to 0.95 mg in Gond and Baiga communities.
Thus the per cent deficit have been noticed high 36.6 in Baiga and low 20
in Gond. While the moderation intake has been observed in Kol (0.51) and
Pardhan (0.42).
Deficiency disorders in the tribal communities have been noticed during the field survey. Burning of the eyes, itching and cracking of the corners of lips are very general disorders especially among Baigas. It is due to lack consumption of riboflavin rich foods.

**NUTRITIONAL RANK- COMMUNITY WISE**

To determine the consumption of various nutrients by different communities in the study area, nutrient wise rank (Calorie, protein etc) was calculated which varies from community to community. The community having the lowest accumulated rank indicates, that the concerned community is in the first position as for as the nutrient wise rank of intake in concerned, similarly, the community having the highest accumulated rank stands in the last position. In other words, lower the rank, higher the nutrient intake and conversely, higher the accumulated rank, lower the nutrient intake.

In the Baiga community of the study region as evident from the Table intake of calorie is 2404.87 Kcal, against the recommended amount of calorie 2700 Kcal stands at the first position. While in Pardhan intake of calories is 2097.96 Kcal. as against the recommended amount of calorie, stands in the last position. Nutrient wise rank of intake in the concerned unit helps in analysing the pattern of nutrients in a particular community. As mentioned above Baiga community stands in first position as for as calorie intake the community is concerned, while Pardhan community stands in the last position. For protein intake Kol is in first position (44.55) whereas Pardhan again stands in the last position (38.42). This difference is due to the lack of awareness about foods among the Pardhans. Calcium is largely consumed by Gond community, followed by Pardhan (338.05), Kol (315.44) and Baiga. Consumption of calcium rich food i.e. milk and milk product, leafy vegetables and cereals in their food, therefore Gond are at the first position.
As far as intake of iron is concerned, Gond community comes in first position, whereas Pardhan in at the last place. It is because of having low level of cereals and high level of flash and fish consumption in Gond. They occupy the first position, whereas the diet of Pardhan is predominantly based on cereals, which permits only a low level of absorption of their food, which has the range of 2-5 per cent.

| Table -4.3 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Community | Calorie | Protein | Carotene | Calcium | Iron | Thiamin | Riboflavin | Total Rank | Accumulated Rank |
| 1 | Gond | 2 | 2 | 3 | 1 | 1 | 1 | 11 | 1 |
| 2 | Baiga | 1 | 3 | 4 | 4 | 3 | 2 | 4 | 21 | 4 |
| 3 | Kol | 3 | 1 | 2 | 3 | 2 | 4 | 3 | 18 | 2 |
| 4 | Pardhan | 4 | 4 | 1 | 2 | 4 | 3 | 2 | 20 | 3 |

Source- Based on field survey.

*Lower rank shows higher intake.

Vitamin A or carotene rich food largely consumed by Pardhan. Baiga of the area consumes insufficient amount of carotene rich food in their diet and comes in last position. As far as the consumption of vitamin B2 i.e. thiamin is concerned, it is largely consumed by the Gond community, where as the Kol community comes in the last position.

Riboflavin is largely consumed by Gond community. Gond takes eggs, liver, green vegetables etc. in their food. Baiga of the area comes in last position because Baigas of study area use rice in volume in their diet, which is not a good source of riboflavin.

It is clear from the study that tribal population is poor and their poverty is one of the main causes of their deficient diet. They mostly depend upon the products, which they produce. They take the food because of necessity of the body and not because of the health or nutrition point of view. They take normally rice, pulse, locally available vegetable and other cheap foods in their diet. However, they use to take special foods on the festivals.
NUTRIENT WISE INTAKE AMONG SELECTED VILLAGES

On the basis of the field survey the author calculated village wise intake of different nutrients as evident from Table- it has been found to the desirable amount of particular nutrient. After calculating the village wise intake of nutrients, among the entire sixteen village, Ghutias has been found to be showing the highest intake of nutrients followed by Lalpur and Keolari, while Junwani village listed at lower rank.

Calorie

One of the vital functions of the food is to provide energy. This energy depends upon the environment, type of occupation, sex, temperature etc. It is measured in terms of calorie. The calorie comes from the foods, rich in nutrients. It helps in respiratory and circulatory systems of the body. In addition, it also helps in maintaining the body temperature. Among the villages of region calorie intake varies from 2688.75 to 1946.86 Kcal. Lalpur village of the region occupies the first position followed by Indrana and Keolari, while the intake of calorie is lowest in Oghatkhapari. As evident from the Table the per cent departure of the calorie intake is noticed 0.41 to 27.89. It is observed during the fieldwork that the consumption of calorie rich food is better in Lalpur, Indrana and Keolari village comparatively other selected villages. On the other hand tribal people of Oghat khapari village are poor to buy the calorie rich grains, vegetable, flash food, milk and its product and other food items. They mostly consume kodon kutaki, maize and locally grown vegetable continue, which do not gives sufficient quantity.

Protein

Protein helps in building and repairing of tissues and flesh building substance. Protein constitutes about three fourth of the animal body or moisture free basis. It is essential for life processes. Protein helps in replacing the daily loss of body protein. It provides amino acid for the formation of tissues. Protein, during growth provides amino acids for the
CALORIE INTAKE: VILLAGE WISE

PROTEIN INTAKE: VILLAGE WISE
formation of enzymes, hormones, growth of foetus in pregnancy and finally help in production of milk proteins allowing lactation. Ghutas village dominates the rest of the villages in protein consumption being 62.66 gm. in average intake, while Irdra occupies the last place with 34.46 gm. Percentage of the protein intake varies 13.92 surpluses to 37.34 deficiencies. It is clear from the Table that the protein intake is moderate and varies from 49.83 to 34.46 mg in the study unit. While the average consumption of protein in the study region is 42.85 gm

**Calcium**

An adult body normally contains about 400 mg. of calcium. It helps in the development of bones and teeth. The deficiency of calcium causes poor development and defective formation of bones, bending of vertebral column etc. Among various sources of calcium, milk is the richest source. Irdra village of the study region consumes the maximum amount of calcium 406.79 mg amongst all the sixteen selected villages. It is 1.69 per cent surplus with recommended allowance. Sijhora occupies the least rank with 254.97mg. calcium intake. The people of the Irdra village are consuming more calcium rich food than other villages of the study region. Deficiency diseases have been reported during field work in the study region among Sijhora, Ghutas and Amahinota. Because lack of consumption of milk, its products and calcium rich fruits.

**Iron**

A greater part of the iron in the body is present as hemoglobin. Free inorganic iron occurs in the body, only in very small amount. Iron is largely consumed by the people of Keolari village, which is 35.37 mg per day. The residents of Keolari village having good purchasing power and taking both type of food in their diet, dominant all the villages because iron has both animal and plant origin. On the other hand, the resident of Lalpur due to their low income have taking poor food, which are deficit in iron rich source. Therefore they are suffering of iron deficiency disease. Specially women of the village are suffering from an anemia.
### Table 4 Upper Narmada Basin Village wise Intake

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Village</th>
<th>Calorie 2700 Actual</th>
<th>Departure †</th>
<th>%</th>
<th>Protein – 55 g/d Actual</th>
<th>Departure †</th>
<th>%</th>
<th>Calcium– 400 mg/d Actual</th>
<th>Departure †</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ghutias</td>
<td>2289.99</td>
<td>-410.10</td>
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<td>62.66</td>
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<td>-8.57</td>
<td>+15.58</td>
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<td>-106.88</td>
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<td>-15.34</td>
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<td>Riboflavin 1.5 mg/d</td>
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<td>.98</td>
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<td>-34.66</td>
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<td>Oghat Khapri</td>
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<td>-463.38</td>
<td>-19.3</td>
<td>25.39</td>
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<td>.89</td>
<td>-0.61</td>
<td>-40.66</td>
</tr>
<tr>
<td>12</td>
<td>Padmi</td>
<td>2282.33</td>
<td>-117.67</td>
<td>-4.9</td>
<td>21.30</td>
<td>-8.7</td>
<td>-29.0</td>
<td>1.59</td>
<td>-0.09</td>
<td>+6</td>
</tr>
<tr>
<td>13</td>
<td>Indrana</td>
<td>1685.62</td>
<td>-714.38</td>
<td>-29.76</td>
<td>20.35</td>
<td>-9.65</td>
<td>-32.16</td>
<td>.94</td>
<td>-0.56</td>
<td>-37.33</td>
</tr>
<tr>
<td>14</td>
<td>Gosalpur</td>
<td>2643.2</td>
<td>+243.2</td>
<td>+10.13</td>
<td>20.94</td>
<td>-9.06</td>
<td>-30.2</td>
<td>.96</td>
<td>-0.54</td>
<td>-36.0</td>
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<tr>
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<td>Belkhadu</td>
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<td>-617.93</td>
<td>-25.74</td>
<td>24.80</td>
<td>-5.2</td>
<td>-17.33</td>
<td>1.88</td>
<td>+0.38</td>
<td>-25.33</td>
</tr>
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<td>16</td>
<td>Amahinota</td>
<td>2159.8</td>
<td>-240.2</td>
<td>-10.0</td>
<td>26.23</td>
<td>-3.77</td>
<td>-12.56</td>
<td>1.02</td>
<td>-0.48</td>
<td>-32</td>
</tr>
<tr>
<td></td>
<td>Study region Average</td>
<td>1997.04</td>
<td>402.96</td>
<td>-16.79</td>
<td>23.72</td>
<td>-6.28</td>
<td>-20.93</td>
<td>1.47</td>
<td>-0.03</td>
<td>-2</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1.26</td>
<td>-0.24</td>
<td>-16</td>
</tr>
</tbody>
</table>
Vitamin A (Carotene)

Animal rich foods are good source of carotene, which is a part of vitamin A. Milk, eggs, fish and some fruits are the richest source of vitamin A. Gosalpur village of the study area occupies the first position in the intake of carotene. As evident from Table - it has been found that the lowest intake of carotene is noted in Keolari, which is 1645.31 ug per day, while the average intake of the carotene of the study unit is 1997.04 ug. The per cent deficit have been noticed high (31.86) in Keolari and low (4.21) in Anjania. During the field survey it is observed that the tribal people of the region are not consume carotene rich food sufficiently or as necessary for the body per day required. It is all due to lack of awareness of the nutrient related knowledge.

Thiamin

Thiamin is essential for metabolism of carbohydrates. Since carbohydrates supply more than 70 per cent of energy in the diets of low-income group, one may correlate the thiamin requirement to calorie intake. Thiamin which has its dietary sources from whole cereals, pulses, oil seeds and nuts, meat, fish, eggs etc. are largely consumed by the people of Keolari village, which is 2.05 mg. Junwani is the last place with 0.85mg. This is because of poverty and low income of the people. Deficiency i.e. Beriberi caused due to this vitamin. Various patient of this disease are reported in the study region, during the field work are residing in the Junwani, Oghatkhapari and Indranavillage.

Riboflavin

Riboflavin (vitamin B2) is a member of the vitamins B group. It has a fundamental role in cellular oxidation. It is a co-factor in a number of enzymes involved with energy metabolism. Its richest natural sources are milk, eggs, liver kidney and green leafy vegetables. Cereals (whether whole are milled) and pulses are relatively poor sources. Obviously Lalpur village occupies the first place in the intake of vitamin B2 (Riboflavin), which is 2.86 where as Anjania is at last rank with 62 total rank score. The moderate actual intake of this vitamin is 1.53 to 0.65 mg among the tribal villages of the study unit. Deficiency of riboflavin is widely spread in our
country, where rice is the staple food. Riboflavin deficiency almost always occurs in association with deficiencies of other B complex vitamins. The whole study region consumed rice as a staple food and deficiency disease of this vitamin are commonly as observed during the field survey.

**RANK OF NUTRIENTS INTAKE IN SELECTED VILLAGE**

On the basis of intake of different nutrients, (Table ) the intake rank of the sixteen villages of the study unit has been calculated. It helps in dividing the villages according to nutritional intake and thus one can infer the circumstances. Ghutas village occupies the first position, while Lalpur, Keolari and Anjania comes in second, third and fourth and Sijhora obtain last position respectively. The formula reveals that higher the rank, lower will be the rank of intake and conversely lower the rank higher the rank of intake.

Caloric intake was found maximum by the people of Lalpur village, followed by Indrana, Keolari and Junwani villages respectively. Due to the high consumption of caloric rich food, which are required for circulatory and respiratory system to be performed normally.

Protein, which helps in building and repairs of tissues, good source being plants as well as animals, is consumed by the people of Ghutas in a wide scale, while Indrana village is the last rank. This is because of the fact that the people of the Ghutas has both types of food in their meals therefore, protein deficiency is rarely seen in the people of Ghutas.

Over all it is found that the Ghutas village dominates among the rest of the villages of the study region, followed by Lalpur. The last have good and satisfactory purchasing power, their level of awareness for various nutrients is better than other. It is also because they are in touch of urban areas. As far as Sijhora village of the region is concerned it is situated in remote area and moreover the people living there, depend either upon labour, agriculture or on the agricultural crops they produce. It is because
of this reason that there is wide variation in intake of nutrients between Ghutas and Sijhora village of the study unit.

**NUTRITIONAL LEVEL OF STUDY AREA**

The people of study unit i.e. Upper Narmada basin are basically depend upon agriculture, fishing and hunting for their food. They are directly dependent on locally available products, so the dietary habit of the tribal people are very much related to the local food.

Malnutrition and undernutrition both are disorder have been found in the study unit. An attempt has been made in Table 4.5 to show the per head, per day consumption of various nutrients, together with their actual position from the standard requirements. The actual intake of caloric, which is most essential for the human body, is only 2298.45 Kcal as against the standard requirement of 2700 Kcal. It means that the diet of tribal people is quite deficit, in respect to their caloric intake. In the tribal diet, deficiency reported 401.55 calories, 76.33 mg of calcium, 6.28 iron, 402.96 ug in carotene and 0.03mg, 0.24 mg in riboflavin and thiamine respectively.

The actual intake of carotene is quite deficient. This is essential for the growth and development of the body and for the orderly progress of the nutritional process in all ages.

The supply of protein in the area 22.09 per cent reported deficit, due to the tribal people of the region being fully dependent on the cereals. Besides this protein deficiency is also reported in the children and women of the study area. As a matter of fact the daily requirement of protein for an adult 1.0 gm, per kg body weight and in children because of their active growth it is higher and may require 2.0 to 3.5 gms per kg body weight. The protein supply for adult is quite upto the mark, but for the children the supply is not satisfactory. They require high amount of protein per head per day. Therefore the protein deficiency is reported in the study area among the children.
### Table - 4. S

**Standard Requirement and Actual Intake (per head per day)**

<table>
<thead>
<tr>
<th>Nutrients</th>
<th>Standard requirement</th>
<th>Actual intake</th>
<th>- Deficiency + Surplus</th>
<th>- Deficiency + Surplus in percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caloric</td>
<td>2700[^1]</td>
<td>2298.45</td>
<td>-401.55</td>
<td>-14.87</td>
</tr>
<tr>
<td>Protein (gm)</td>
<td>55</td>
<td>42.85</td>
<td>-12.15</td>
<td>-22.09</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>400</td>
<td>323.67</td>
<td>-76.33</td>
<td>-19.08</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>30</td>
<td>23.72</td>
<td>-6.28</td>
<td>-20.93</td>
</tr>
<tr>
<td>Carotene (ug)</td>
<td>2400</td>
<td>1997.04</td>
<td>-402.96</td>
<td>-16.79</td>
</tr>
<tr>
<td>Thiamine (mg)</td>
<td>1.5</td>
<td>1.47</td>
<td>-0.03</td>
<td>-2</td>
</tr>
<tr>
<td>Riboflavin (mg)</td>
<td>1.5</td>
<td>1.26</td>
<td>-0.24</td>
<td>-16</td>
</tr>
</tbody>
</table>

*Source: Based on various ICMR reports and the diet survey*

On the basis of the diet survey, the total food stuffs available for the consumption of the people of the study area is to be taken into account to assess the nutritional level. As cereals are almost the only item of diet of the people of the basin, when availability of flesh and fishes found easy and cheap. Than they commonly use it. The calorie and proteins are obtained from cereals only. However the diet survey carried out by the author in the selected villages of the region shows that the diet of a considerable proportion of the population is inadequate. So the average diet of the region is under nourished as well as malnourished.
Table- 4.6

Nutrients wise Rank of Intake in selected village.

<table>
<thead>
<tr>
<th></th>
<th>Village</th>
<th>Calorie</th>
<th>Protein</th>
<th>Carotene</th>
<th>Calcium</th>
<th>Iron</th>
<th>Thiamin</th>
<th>Riboflavin</th>
<th>Total Rank</th>
<th>Accumulated Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ghutas</td>
<td>10</td>
<td>1</td>
<td>7</td>
<td>15</td>
<td>2</td>
<td>7</td>
<td>10</td>
<td>42</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Sijhora</td>
<td>7</td>
<td>9</td>
<td>13</td>
<td>16</td>
<td>13</td>
<td>9</td>
<td>3</td>
<td>70</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>Bhanpur</td>
<td>6</td>
<td>5</td>
<td>15</td>
<td>11</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>54</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Junwani</td>
<td>4</td>
<td>11</td>
<td>4</td>
<td>7</td>
<td>15</td>
<td>16</td>
<td>12</td>
<td>69</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>Keolari</td>
<td>3</td>
<td>8</td>
<td>16</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td>49</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Anjania</td>
<td>11</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>8</td>
<td>3</td>
<td>15</td>
<td>51</td>
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<tr>
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<td>Lalpur</td>
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<td>3</td>
<td>8</td>
<td>10</td>
<td>16</td>
<td>5</td>
<td>1</td>
<td>44</td>
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<td>8</td>
<td>Dhurkuta</td>
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<td>11</td>
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<td>10</td>
<td>10</td>
<td>6</td>
<td>66</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Baklehata</td>
<td>12</td>
<td>15</td>
<td>5</td>
<td>12</td>
<td>7</td>
<td>8</td>
<td>2</td>
<td>61</td>
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<td>Gatakheeda</td>
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<td>9</td>
<td>2</td>
<td>9</td>
<td>12</td>
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<td>59</td>
<td>8</td>
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<td>15</td>
<td>4</td>
<td>56</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>Padmi</td>
<td>9</td>
<td>13</td>
<td>3</td>
<td>14</td>
<td>11</td>
<td>6</td>
<td>11</td>
<td>67</td>
<td>12</td>
</tr>
<tr>
<td>13</td>
<td>Indrana</td>
<td>2</td>
<td>16</td>
<td>14</td>
<td>1</td>
<td>14</td>
<td>14</td>
<td>5</td>
<td>66</td>
<td>12</td>
</tr>
<tr>
<td>14</td>
<td>Gosalpur</td>
<td>8</td>
<td>12</td>
<td>1</td>
<td>8</td>
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<td>13</td>
<td>2</td>
<td>56</td>
<td>6</td>
</tr>
<tr>
<td>15</td>
<td>Belkhadu</td>
<td>15</td>
<td>10</td>
<td>12</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>9</td>
<td>57</td>
<td>7</td>
</tr>
<tr>
<td>16</td>
<td>Amahinota</td>
<td>13</td>
<td>2</td>
<td>6</td>
<td>13</td>
<td>3</td>
<td>11</td>
<td>13</td>
<td>61</td>
<td>9</td>
</tr>
</tbody>
</table>

Source- Diet survey and other sources.

ANALYSIS OF NUTRITIONAL CONSUMPTION

One, out of every two Indians, suffers either from under nutrition and/or malnutrition or both.¹ Malnutrition mainly occurs due to lack of vitamins and minerals in the diet, while generally speaking under nutrition occurs where the diet is found deficient in calories.

The diet of selected families of study area is not satisfactory in all respects, as for as intake of various nutrients are concerned, deficient diet in respect of calories, proteins, minerals and vitamins will not give proper resistance power to the body. Thus creating favourable environment for the

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occurrence of disease incidence and ill health conditions, lack of stamina is responsible for low production, which leads to poverty. We can say that the diet is a barometer by which physical and mental activities of the people will be measured.

In the study area as clear from the table that malnutrition is widely spread and it is due to inadequate intake of nutrients and may be due to faulty selections of food, low purchasing power, ignorance and availability of poor food stuffs. On the basis of diet survey conducted by scholar it is observed that main sufferers from malnutrition are children. It is also observed in large families.

The above information shows that the people suffers from both undernutrition and malnutrition particularly, malnutrition and its adverse effects can be clearly seen in many families of the region and it is responsible for hampering physical and mental growth of the children and adults. It is also serves as the basic reason for serious illness of the people and also main cause of poverty.

Calcium, iron, vitamin A and Vitamin B group are found quite deficient in the diet of the region, which may be responsible for the various ill health conditions reported in the study unit.