CHAPTER - VI

Nutritional Structure

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NUTRITIONAL STRUCTURE

For the maintenance of proper health and physique of the individual and of the community it is essential that there should be adquate supply of food. So far few countries are self-sufficient with regard to food supply. It has further been observed that people of some parts of the country do not get sufficient essential foods necessary for the maintenance of health.

We all realise that one can become weak, thin and listless by not getting enough food. We also perhaps sometimes vaguely feel that certain food are strengthening, or good for liver, or helpful for eyes. Yet it is rarely that we attribute actual ill-health or bad functioning of the body to some fault in the diet, the usual tendency is to put it down to an infection, and call it a disease. There are indeed a host of disorders that are directly caused by lack of certain nutrients in the diet. The list of the deficiency diseases caused by poor nutrient is a long one, but only a few of the ones more relevant to India, so far the nutritional deficiency diseases are concerned.

So, nutrition plays a vital role, as far as health of the people is concerned. Nurtritioin is necessary in the development of the quality of life. Nutrition is defined as the process of assimilating food and all

processes of growth, maintenance and repair of the living body which depends upon the intake of food. "Good nutrition is a basic component of health. It is of prime importance in the attainment of normal growth and development and in the maintenance of health through life". Life can not exist without food and it is for this reason that every living organism strives its utmost to obtain its food requirements. The health of a person depends upon the type and quality of food stuffs he choose to eat.

FOOD STUFFS :-

The food stuffs commonly consumed in the study region may be divided into such as Cereals, Pulses, Vegetables, Fruits, Milk, Flesh Food, Nuts and Oil Seed and Sugar. The nutrients are in different proportion in these food stuffs.

TABLE - 6.1

VARIOUS FOODSTUFFS NEEDED TO GIVE A BALANCE DIET

In Grams

Foodstuffs	Average Man.	Average Woman	Adolscent (13-15 Yrs.)	Child 5 years.
Cereals(rice, Wheat etc.	520	440	420	270
Pulses(dhals, groundnuts, coconuts,etc)	50	45	45	35
Green Leafy Vegetables (Palak,Methi etc)	40	100	50	50
Other Vegetables (Raw and cooked)	70	40	50	30
Roots & tubers (Potato,Sweet Potato,Yam,topica)	60	50	30	20
M i l k	200	150	250	250
Fats & Oils	45	25	40	25
Sugar & Jaggery	35	20	45	40

Source : NIN (ICMR), Hyderabad.

Cereals :-

The usual cereals eaten in the study region are rice, wheat, bajra, jowar and ragi. These are staple foods which contain starch, and therefore provide the bulk of calories. Cereals are the main source of energgy. These cereals also contain from six per cent to eleven per cent of protein. This protein is only of medium qruality. However, rice and ragi have the best quality of proteins. Unpolished rice, which is usually taken by the tribals in the study region contains some vitamin B. Most cereals contain no minerals. Ragi has high percentage of calcium providing nearly 350 mgs. per 100 gms. Jowar contains nearly 10 gms protein and also rich in carbohydrate and Vitamin B group.

Pulses :-

Pulses is a term which includes various dhals and grams. These are the important sources of proteins. These pulses also have iron, vitamins such as thiamine and riboflavin and contain in general about 20-25 grams of proteins per 100 grams of pulses. All proteins are made up of 23 amino acids linked together in thousands of ways. Soyabeans is the richest among pulses, it contains 40 grams protein, 20 grams fat and 4 mg. mineral in 100 grams.

Vegetables :-

Vegetables are the main sources of Vitamins and

minerals. Many of them are cheap and nourishing. Vegetables are usually divided into three groups:

Green Leafy Vegetables :-

There are various varieties of leafy vegetables such as palak, amernath, mint, cabbage, methi and drumstick leaves. These are the cheapest and rich in nutrients among the protective foods. Dark green leaves have high nutritive value. Green leafy vegetables are considered to be rich sources of Vitamin A, vitamin B, Vitamin C and Calcium.

Roots and Tubes :-

Patatoes, tapioca, onion, carrot, radish yam and several others are included in it. They are rich in Carbohydrates.

Other Vegetables :-

Other Vegetables are brinjal, beans, tamato, lady-finger, french beans etc. These vegetables supply fair amount of minerals and vitamins.

Fruits :-

Fruits are also the sources of Vitamins and Minerals. Yellow fruits like Papaya and Mango are good sources of vitamin A and sour fruits like the amla, lemon and orange etc., contain Vitamin C. Fruits are essentially for

those,who can afford the pleasure of eating them.

Milk :-

Milk is a well-known natural food. For the first few weeks of an infant's life, mother's milk is usually the only food. Cow and buffalo milk are like wise rich in nutrients. They contain less milk sugar than human milk, but more protein and much more fat.

Fats and Oils :-

Fats and Oils, consist totally of fatty materials, just as sugar is pure carbohydrate. Fats therefore give the same amout of calories in gram. These are also good

TABLE - 6.2

FOOD VALUES IN SOME COMMON FOOD STUFFS

Food stuffs	Calories	Quantities present in 100 gms of food				
		Water gm	Carbohydrate gm	Proteins. gm	Fats gm	Other nutrients Present.
1	2	3	4	5	6	7
CEREALS:						
Rice	345	14	79	7	1	-
Wheat	350	13	74	11	1	-
Jowar	350	12	73	10	2	-
Ragi	330	13	72	7	1	Calcium
PULESS & LEGUMES :						
Tuvar dhal	353	13	58	22	2	B group-Vitamins.
Urad dhal	350	11	60	24	1	"
Mung dhal	350	10	60	25	1	"
Channa (Chhole)	360	10	60	21	6	Calcium, B-group Vitamins.

Table Contd. to Next Page

Food values in some common food stuffs

1	2	3	4	5	6	7
ROOTS & TUBERS :						
Patato	100	75	23	2	-	Vitamin-C
Sweet Patato	120	69	28	1	-	"
Topica	160	60	38	1	-	"
Yam	110	70	26	1	-	"
NUTS,OILSEEDS AND OILS.						
Ground Nut	570	3	27	26	40	B-group Vitamins.
Til seed	560	5	25	18	43	Calcium, B-group Vitamins.
Coconut (Fresh)	440	36	13	5	42	-
Any oil or fat	900	-	-	-	100	-
MEAT,FISH & EGG :						
Hen's egg	170	74	-	13	13	Vitamin A and B-group vitamins.
Sardine	100	76	-	20	2	Calcium, B-group vitamins.
Mutton	120	74	-	21	4	Iron, Vitamins A & B group.
M I L K :						
Buffalo Milk	210	81	5	4	9	Calcium, Vitamins A and B group.
Cow Milk	120	87	4	3	4	"
Curds	60	89	3	3	4	"
SUGAR :	400	-	100	-	-	-

Source : 'You and Your Food' by K.T. Achaya, A NBT Publicatioin (1975), PP.14-15.

sources of vitamin B especially having thiamine, and riboflavin. Fat and oil provide about 30 per cent of dietary energy. But the use of these fats and oils are limited among the tribal people as they do not afford it.

Flesh Foods :-

This is one of the important food stuffs among the tribals' diet. The flesh food in all its forms (Mutton, Chicken Pork and beef etc) is a food which contains valuable proteins of high quality, beside vitamins like those of the B group, and mineral like iron. Fish is also protein-rich food which is rich in B group vitamins. When its bones are soft and can be eaten also furnishes calcium. Vitamin B_{12} is only found in flesh foods like meat and fish.

Beside fish and flesh foods, the egg carries nutrient like protein. In addition to protein, it contains a good deal of fat, a high content of vitamin A and B vitamins, iron, calcium, and phosphoraus in fair amounts.

Sugar and Jaggery :-

Sugar and jaggery and practically pure carbohydrates. The use of sugar in the tribal society of the study region is, however, very limited.

Water :-

Another very important item in diet is water. As a ready reconer, a person's daily requirement of water is equal to his calorie requirement, so if one need 2200 calories, he will require about 2200 CC of water. A person of moderate activity needs to drink about 1000-1200 CC of water a day in the form of water, tea, coffee, milk and so on.

NUTRIENTS IN FOODS :-

The food that we eat contain nourishing substance called nutrients. There are five main types of these : Carbohydrates, Proteins, Fats, Vitamins and Minerals. Different foods have different nutrients in different proportions.

Carbohydrates :-

These are the most common energy sources in the foods of people all over the world. Cereals like rice, wheat, bajra, jowar (Pearl millet) and ragi contain a lot of carbohydrates in the form of digestive starches. so do starchy foods like patato and banana. All these foods also contain other substances like indigestible starches, water and so on. Sugar and jaggery (gur), on the other hand, are simply concertrated carbohydrates that give the body nothing but energy in a very quickly digestible form. One gram of

carbohydrate provides the body with four calories of energy. Some of the vegetables also contain starch in some proportions.

Proteins :-

The next of the three major nutrients is protein, which is very important to us. Every cell in every part of our body-muscle, bone, blood, brain, skin and hair contains proteins. Just as bricks are used to erect a building, like that proteins are the building blocks of the body. When something gets worn out or used up, it is proteins which do repair and replacement jobs.

Like carbohydrates, proteins can also be used by the body as a source of energy. In fact, one gram of protein when so used also gives four calories, but to burn protein as calories in this way is wasteful. Proteins are also of different qualities. Animal proteins like meat, fish, egg and milk are of high quality. Sometimes right combination of two proteins can get better marks than either of them. In India a very important protein item is dhal and gram of various kinds. Detail requirement of proteins in different age groups are given in Table 6.3.

TABLE - 6.3

REQUIREMENTS OF PROTEINS

	Age Group	Body Weight	Protein gm/kg/day.	Required gm/day.
Men	30-40	60	1.00	60
Women	25-40	50	1.00	50
Boys	10-12	34	1.25	43
	16-18	50	0.94	47
Girls	10-12	36	1.17	42
	16-18	50	0.88	44
Children	5-9	18-20	1.40	25-88
	1-4	12	1.80	22

Source : Recommended dietary intake for Indians, ICMR, Hyderabad, 1981.

Fats and Oils :-

Fats and oils are concentrated source of energy. Fats provides twice as much energy as protein and carbohydrates. Butter, ghee, vanaspati and vegetable oils are the commonly used fats. They contain carbon, hydrogen, oxygen and are composed of fatty acids. Fats help in maintenance of body temperature.

Vitamins :-

Vitamins have acquired almost a magical association in the minds of many of us. It is true that very small quantities of vitamins do show dramatic effects in

correcting what are called deficiency diseases, as distinct from illness caused by infections. Vitamins are also very important for proper functioning of the body, since they take part in many vital body processes.

Vitamin 'A' :-

Vitamin A plays a part in the actual process by which the eyes are able to see. Lack of vitamin A therefore causes difficulty in seeing, especially in poor light. It is readily secured in foods of animal origin, liver, egg, milk, fish, curd and butter. It is not destroyed by cooking.

Vitamin 'B' Group :-

There are three important vitamins in the B complex group - thiamine, riboflavin, and nicotinic acid. Deficiency in these group affects the mouth and the tongue. Foods like eggs, pulses, nuts and leafy vegetables are good sources of the B group vitamins. a deficiency of this vitamin leads to a condition called beri-beri.

Vitamin 'C' :-

This is the 'sour' vitamin which comes to us in lime and lemon, orange, amla, sprouted grams, guava and cabbage. This vitamin protects us against such infections as catching cold and helps to make the bones and teeth strong.

Vitamin 'D' :-

It is also important in bone formation and available in butter, ghee and shark liver oil.

Minerals :-

The last nutrients we must consider are minerals or salts. Salt like sodium chloride is necessary among other things to regulate blood pressure. Teeth and bones contain calcium, the 'white' mineral. Iron, the 'red' mineral, is required to make the red blood cells and also to build muscless. It is found in green leafy vegetables, ragi, bajra, meat and egg etc.

NUTRIENTS REQUIRED ;-

The various foods have different nutrients in different proportions. Energy provided by food is used for routine work. This energy is measured in terms of calories. The amount of calories required by a person vary with sex, age and activity. The detail amount of calories required by different persons is given in Table - 6.4

TABLE - 6.4

RECOMMENDED DIETARY INTAKES OF NUTRIENTS

Group	Particulars	Calories K.Cal	Protein gm	Calcium gm	Iron mg	Vitamin A ug.	Thia-mine mg.	Riboflavin mg.
Men	Setendary Work	2400	55	0.5	24	3000	2.0	1.4
	Moderate Work	2800	55	0.5	24	3000	1.4	1.7
	Heavy work	3900	₤₤	0.5	24	3000	2.0	2.3
Women	Sedentary Work	1900	45	0.5	32	3000	1.0	1.1
	Moderate Work	2200	45	0.5	32	3000	1.1	1.8
	Heavy Work	3000	45	0.5	32	3000	1.5	1.8
	Pregnant	2200 3500	59	1.0	40	3000	1.2	1.3
	Lactating	2450	70	1.0	40	4600	1.3	1.4
Children		1220	22	0.5	20-25	1000	0.6	0.7
Infants		118/Kg.	21 KG.	0.5	1Mg/Kg.	1200	0.5	0.7/Kg.

Source : National Institute of Nutrition (ICMR), Hyderabad.

TABLE - 6.5

RECOMMENDED BALANCE DIET FOR AN INDIAN

Food Item	Adult Man			Adult Woman			Children	
	Sedentary Work	Moderate Work	Heavy Work	Sedentary Work	Moderate Work	Heavy Work	1-3 years	4-6 Years
Cereals	460	520	670	410	440	575	175	270
Pulses	40	50	60	40	45	50	35	35
Leafy Vegetables	40	40	40	100	100	50	40	50
Other vegetables	60	70	80	40	40	100	20	30
Roots & Tubers	50	60	80	50	50	60	10	20
M i l k	150	200	250	100	150	200	300	250
Oil & Fat	40	45	65	20	25	40	15	25
Sugar & Jaggery	30	35	55	20	20	40	30	40

Source : NIN (ICMR), Hyderabad.

The composition of a balanced diet for an Indian as suggested by the National Advisory Committee of the Indian Council of Medical Research is given in Table 6.5.

The Table 6.5 reeveals that the recommended balance diet differs from sex to sex, age to age and also varies for different working groups. The deviation of the intake from this recommended diets causes malnutrition.

NUTRITIONAL STRUCTURE OF NORTHERN ORISSA :-

Before going to study the dificiency diseases of the study region, it is essential to study the pattern and structure of the nutrition or diet in the region. It will help to study the nutritional health disorders in proper way. To detect the nutritional level of the people of the northern Orissa, the diet/nutrition survey had been conducted in the study region through oral questionnaire method. As the urban areas are very limited in the study region in comparison to rural areas and in the present study block-level analysis of the diease pattern had been done, rural and urban areas had not been treated separately.

To collect the dietary informations a detail schedule had been prepared which also had scope to collect informations about the various diseases in the family. Two villages from each block had been selected by the help of

random number table. In this way total 112 villages had been selected. In each village ten families had been interviewed to collect the informations about their fooding pattern. In each village as much as attempts had been taken to include families from different communities. After the collection of informations, diet calculation of each family had been carried out on the basis of various guidelines and recommended allowances proposed by Indian Council of Medical Research (ICMR).

Sample :-

In 112 Villages total 1120 families had been interviewed. Community wise families interviewed have been given in table 6.6.

TABLE - 6.6

DISTRIBUTION OF FAMILIES BY COMMUNITY

Sl.No.	Community	No.of family	Percentage
1.	Brahmin	32	2.86
2.	Vaish	85	7.59
3.	Professional Caste	61	5.45
4.	Scheduled Caste	80	7.14
5.	Scheduled Tribe	694	61.96
6.	Muslim	5	0.45
7.	Others	163	14.55
	Total	1120	100.00

Source : Field - Data.

Table 6.6 reveals that more than half of the families interviewed were scheduled tribe families i.e. 61.96 per cent of the total families. It is because the entire northern Orissa, especially the rural sectors are dominated by tribals. Other 38.04 per cent families include brahmin, Vaish, Scheduled Caste, muslims and others.

TABLE - 6.7

PERCENTAGE DISTRIBUTION OF HOUSEHOLD MEMBERS BY AGE AND SEX

Age Group (In Years)	Sex		Total
	Male	Female	
0- 1	0.8	0.3	1.1
1- 3	4.3	4.1	8.4
4- 6	5.6	5.4	11.0
7- 9	4.0	5.3	9.3
10-12	5.6	5.4	11.0
13-15	3.6	3.2	6.8
16-18	2.8	2.6	5.4
19-29	6.9	7.4	14.3
30 and Above	16.3	14.4	32.7
Total	49.9	50.1	100.0

Source : Field - Data.

Table 6.7 reveals that almost equal number of males and females had been taken into consideration. It includes the people of all ages i.e from milk-fed babies and School-going Children to adult men and women including pregnant and lactating women.

DAILY INTAKE OF NUTRIENTS :-

The components of foods which fulfil all the basic functions are known as proteins, fats, Carbohydrates, minerals and vitamins and are collectively known as nutrients[2]. These nutrients are present in different food stuffs in different proportions. These nutrients are responsible for good health, but in a definite proportion. When any deviation from the balanced nutrients occur, it causes malnutrition.

The basic aim of the diet survey in the study region had been to calculate the daily intake of nutrients and to study the deviation from the recommended allowances. The average daily intake of nutrients in the study region is given in table 6.8

Table 6.8 reveals that in all most all cases at the block-level there were deviations from the recommended daily intake of nutrients. The Calorie consumptioin in the study region had varied from 1622 to 2508, whereas the recommended Calorie per day is 2400 in general. The higest position in Calorie consumption had been occupied by Anandpur, when the lowest position had been occupied by Lahunipada. Only fourteen blocks out of the fifty six had recorded more than 2000 Calorie consumptions per day. The people of the study region usually get calorie from the different varieties of Cereals like rice, maize, jowar, bajra etc. according to season and availability.

TABLE 6.8

BLOCK-WISE DAILY INTAKE OF NUTREIENTS

Sl. No.	Block	Calories in No.	Protein in gm.	Iron in mg.	Fats in gm	Carbohydrate in gm	Calcium mg	Vit.A in mcg	Vit.C in mg	Thiamine in mg	Ribo-flavin in mg	Niacin in mg.
	1	2	3	4	5	6	7	8	9	10	11	12
1.	Sundaryarh	2048	39.86	24.34	11.52	405	410	521	67	1.62	1.20	15
2.	Balisankar	1876	37.55	17.44	10.88	392	301	502	54	1.21	0.81	11
3.	Subdeya	1956	36.08	18.86	9.08	388	382	482	62	1.42	0.35	10
4.	Tangrapalli	1872	36.21	17.00	8.06	401	351	496	42	0.84	0.42	9
5.	Hemgiri	1856	36.82	17.55	9.00	350	358	482	39	0.66	0.49	8
6.	Lephripada	1938	37.00	20.00	8.88	368	408	497	44	1.42	0.56	9
7.	Rajyangpur	1694	39.24	21.86	9.13	408	208	528	41	0.65	0.46	7
8.	Baryaon	1724	38.66	19.96	8.91	381	210	580	37	0.64	0.41	7
9.	Kusra	1684	37.63	20.23	8.11	364	312	496	42	0.62	0.44	8
10.	Kusnarmunda	1651	37.51	21.84	8.06	398	318	472	43	0.58	0.55	9
11.	Nuagaon	1636	35.54	14.21	9.51	388	222	498	39	0.66	0.38	6
12.	Latnikata	1708	36.10	15.11	8.00	392	324	505	48	1.08	0.41	7
13.	Bisra	1880	36.21	24.86	8.16	359	240	480	50	1.21	0.61	8
14.	Bonei	1921	37.82	26.81	10.51	406	356	508	61	1.66	0.54	8
15.	Lahunipada	1622	37.41	19.01	9.45	398	310	496	46	0.84	1.30	10
16.	Gurundia	1651	36.00	15.41	8.00	405	208	485	38	0.63	0.32	8
17.	Koira	1606	35.99	15.82	8.23	399	202	460	41	0.75	0.49	8
18.	Baripada	2149	44.32	24.28	9.66	406	560	560	64	1.31	0.47	11
19.	Samakhunta	2085	41.58	23.56	10.52	405	392	530	52	1.28	0.42	9
20.	Betnati	2165	40.76	14.96	8.78	398	388	472	51	1.35	0.37	8

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BLOCK-WISE DAILY INTAKE OF NUTREIENTS

Sl.No.	1	2	3	4	5	6	7	8	9	10	11	12
21	Barasahi	2312	44.96	22.95	11.54	389	450	505	48	1.41	0.39	10
22.	Bangriposi	2202	45.82	20.58	10.55	401	421	408	55	1.32	0.38	7
23.	Saraskana	2185	44.66	20.11	9.88	391	396	432	42	1.01	0.41	11
24.	Morada	1942	42.39	15.56	7.65	388	388	498	41	1.22	0.45	10
25.	Suliapada	1748	39.88	22.33	8.96	385	356	520	46	1.15	0.32	9
26.	Rasgovindpur	1636	40.05	22.59	7.81	394	340	525	50	1.09	0.36	6
27.	Khunta	1658	40.68	21.44	8.90	402	361	415	49	1.23	0.34	7
28.	Gopabandhu Nagar	1721	41.58	22.22	8.54	395	362	422	45	1.35	0.38	8
29.	Udala	1850	42.44	12.59	8.78	399	380	451	34	1.09	0.40	8
30.	Kaptipada	1692	41.56	11.09	9.91	405	391	501	41	1.65	0.39	10
31.	Kulina	1648	41.99	10.88	8.82	404	375	445	44	1.42	0.41	9
32.	Rairangpur	2105	44.66	24.56	8.24	401	541	520	52	1.45	0.48	11
33.	Bahalda	2005	43.86	13.32	7.98	389	496	432	48	1.32	0.38	9
34.	Tiring	1948	42.21	11.23	9.44	347	415	422	46	1.05	0.32	8
35.	Jamda	1758	42.68	20.88	8.88	345	344	410	46	1.15	0.33	10
36.	Kusuni	1857	43.68	21.56	7.68	388	299	412	53	1.19	0.39	8
37.	Bisoi	1707	43.33	21.38	8.01	392	321	432	54	1.24	0.41	8
38.	Bijatola	1951	41.88	21.88	8.54	387	335	425	58	1.11	0.38	9
39.	Karanjia	1867	44.56	22.56	10.23	375	388	456	49	1.51	0.36	7
40.	Jashipur	1757	43.23	13.54	9.56	368	342	423	46	1.23	0.35	6

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BLOCK-WISE DAILY INTAKE OF NUTREIENTS

Sl.No.	1	2	3	4	5	6	7	8	9	10	11	12
41.	Raruan	1858	41.23	15.22	8.78	372	266	412	47	1.33	0.41	5
42.	Sukruli	1696	40.05	12.91	8.71	365	349	423	45	1.00	0.39	8
43.	Thakurmunda	1701	40.39	22.81	8.76	359	309	403	42	0.93	0.32	7
44.	Joda	2426	50.01	22.47	10.52	409	341	408	45	1.09	0.41	9
45.	Hatadihi	2321	48.66	12.99	9.58	384	304	421	43	1.48	0.38	11
46.	Anandapur	2508	49.84	18.58	8.66	422	352	428	47	1.43	0.62	8
47.	Ghasipura	2466	55.52	23.39	10.54	392	310	409	52	1.57	0.47	12
48.	Harichandnpur	2029	43.18	18.25	9.99	384	330	410	64	1.32	0.51	7
49.	Telkoi	1956	46.85	22.80	10.52	376	328	482	39	1.21	0.32	6
50.	Ghatgoan	1828	45.44	17.52	8.62	381	356	464	38	1.15	0.35	8
51.	Patna	1656	41.99	15.88	7.84	365	332	435	40	1.08	0.30	8
52.	Saharpada	1768	42.35	18.64	8.81	342	340	432	35	1.22	0.33	7
53.	Banspal	1797	43.44	16.55	7.71	382	329	428	36	1.51	0.40	6
54.	Champua	1828	46.86	24.39	8.88	376	401	446	39	1.32	0.39	10
55.	Keonjhar	1966	50.55	21.56	9.10	401	504	501	37	1.65	0.38	11
56.	Jhumpura	1654	46.84	18.88	9.56	392	396	496	37	1.21	0.35	9

Source : Computed on the basis of collected field - data.

The proteins consumption had varied from 55.52 grams in Ghasipura to 35.54 grams in Nuagaon block. The recommended protein consumption per day is 55.0 gram in general. Protein consumption per day is more than 50 grams only in three blocks out of the fifty six. The people of the study regioin usually get proteins from different pulses and also from egg and meat etc.

In case of fats, the consumption had been highest in Barasahi, having daily intake of 11.54 grams. Similarly Saraskana had occupied lowest position having consumption of 7.65 grams per day. Joda block occupied highest position in carbohydrate consumption having 409 grams per day where as Saharpada occupied lowest position having 342 grams consumption per day.

In case of minerals, iron consumption had been highest in Bonei block having 26.81 mg. per day and lowest in Kaptipada having 11.09 mg. It is reveal that the iron consumption was less than the recommended daily iron consumption in most part of the study region. In calcium consumption, the Baripada block had occupied the highest position having 560 mg daily, where as the Koira block occupied the lowest position having 202 mg. daily. The recommended daily calcium consumption is 450 mg in general. In the study region, in most of the blocks the daily calcium consumption was lower than the recommended amount.

In whole study region the daily vitamins intake had been lower than the recommended daily intake of the vitamins. The Bargaon block occupied first position in Vitamin A consumption, where as Thakurmunda occupied the lowest position. The daily consumptioin of vitamin A was 580 mcg. and 403 mcg in the Bargaon and the Thakurmunda blocks respectively. The recommended allowance of vitamin A in general is 750 mcg.

Thiamine consumption had been highest in Bonei block having 1.66 mg and lowest in Kuanarmunda having 0.58 mg. The recommended allowance of thiamine is 1.4 mg. In many blocks, from the table 6.8 it is reveal that, thiamine consumption was low. The consumption of riboflavin was also lower the recommended allowance of whole region. It had been highest in Lahunipada having 1.3 mg whereas the recommended allowance is 1.7 mg. In patna, it had been as low as 0.30 mg. In case of Niacin the daily consumption had been highest in Sundargarh block having 15 mg. and lowest in Raruan block having 5 mg.

Vitamin C consumption had been highest in Sundargarh block having 67 mg. and lowest in Udala having 34 mg while the recommended allowance is 40 mg. daily. In comparison to other vitamins, vitamin C consumptioin was satisfactory in the study region.

The average diet of the study region was deficient and consumption found very less as far as protectives are concerned like milk, fruits and leafy vegetables. On the basis of diet calculation, it had been observed that no family gets balanced diet in the study region. Malnutrition is every where in the study region, from a poor tribal family to a well-to-do family. The malnutrition of the study region is responsible for many deficiency diseases in the study region.

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