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PROBLEMS OF NUTRITIONAL DEFICIENCIES IN RURAL AREAS OF MADHYA PRADESH : A CASE STUDY OF REWA PLATEAU

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ABSTACT : In the Rewa plateau region none of the selected families reported satisfactory diet in all respects. The main sufferers from malnutrition are children. Common deficiency disorders reported are slow growth, bone deformities, teeth and eye disorders, anaemia and skin diseases. The changes in the existing cropping patterns and dietary patterns and educating the masses would help improve the nutritional levels.

Developing countries, including India, are striving utmost to raise agricultural production for meeting the ever increasing demands of their growing population. The rural areas of the country, are facing very serious problem i. e. Nutritional Deficiency, which restricts physical growth and mental development and makes them more susceptible to morbidity and mortality due to infectious diseases. Infants, pre-school children, pregnant and lactating women constitute the major group of rural population where nutritional deficiency problems are more common.

In the area of study about 80 per cent population lives in villages and here every community forms homogeneous group of mostly uniform dietary habits. The food habits of the people of the Rewa plateau have been governed by local production and prevailing customs and traditions.

Study Unit

The area under study lies between 23°58' N to 25°12' N latitude and 79°44 to 82°18' E longitude. Administratively it covers the area of Panna, Satna and Rewa districts of Madhya Pradesh. It comprises an area of 20771 km² and a population of 2897599 persons. The greatest segment of the population is ill-literate (76.25 per cent). The male literacy is about 35.68 per cent while the female literacy is only 11.96 per cent. The average arithmetic density of the region is 144.1 persons per km.² In the study unit the rural density varies from 69 to 208 persons per km.² The nutritional density varies from 234 to 353 persons per km² net sown area.

As far as nutritional deficiency is concerned the education level of women is one of the very important factors, because the work of food preparation and child care is generally performed by the women. Uneducated people are not generally aware of the scientific progress in the cure of diseases and the value of nutrients.

Agriculture is the main source of food and the majority of rural people of the area are engaged in agriculture and its related activities. The total net sown area of the region is 43.4 per cent. Food crops overwhelm the agricultural landscape and account for nearly 81.2 per cent of the total cropped area. Wheat and rice claim 56.72 per cent of the total cropped area.

Food habits of the people vary from place to place according to culture of the

inhabitants. Agricultural products of the region are one of the determining aspects for the people what they eat. As a whole the people of the region are vegetarian. Different types of cereals, pulses, vegetables and fruits are consumed to an extent depending upon their local availability.

The nutritional problems in the area under study are both quantitative and qualitative dimensions In the area under study each community forms uniform dietary habits. Easily available food stuff first becomes a part of the diet of the people. As far as nutritional availability is concerned per caput per day production of food grain standing at about 526 gm, the per caput calories availability is 2169 while the protein availability is 77.87 gm per day per caput.

Methodology

The main source of nourishment for the human body is food, which is defined as the substance which yields heat or energy. Good diet is defined as one which yields nutrients daily in proper amounts to satisfy the physical needs, such a diet is termed as '*Balanced Diet*'. The necessity for food varies according to age, sex, body, size, climate, activity etc. Food habits are also very much influenced by social customs, religious beliefs and production patterns.

To find out the nutritional deficiency of the people a diet survey was conducted in the region under study through the oral-questionnaire method. The villages were selected through systematic stratified sampling. In this way a total of 507 families in different villages were interviewed. The analysis of diet schedules has been done on the basis of data, information and techniques published by the Indian Council of Medical Research (ICMR). The diet survey was conducted in twenty - three villages.

Dietary Habits

The rural people of the region take their food three times in a day. The main item of breakfast of the people of the region is 'Basi' i. e. the previous day food which has been specially left for, contains 'Maheri' (Rice + curds) and chapati, which is generally taken with milk or vegetables.

Lunch

Dal, chapati, vegetables, rice are the main constituents which are generally taken by the people of the area.

Dinner

It is like lunch but in dinner the products of milk, curds, dalia etc. are the additional food items.

Other Characteristics

Fruit consumption depends upon the availability and they are mostly seasonal. Special diet is given to old men, like khichari etc. Children and sick people generally get special food accordingly. Mostly, people of the region are vegetarians.

Food Stuffs Analysis

The cereal consumption in the study area is higher than other food stuffs. The average cereal intake varies from 476.0 to 677.7 gms per day per caput. The average intake of pulses of the area is 70.3 gms per head per day. The average intake of vegetables of the region under study is 72.6 gms while the average fruits intake is only 20 gms per day per caput.

Nutrientswise Diet Analysis

The villagewise intake of Different nutrients are given in Table I, and their respective rank in Table II.

Calories

As a whole the average per day intake is 2359 calories, but intake not found uniformally throughout the region. It varies form 1977 to 2732 calories per day per caput in the area under study. Calorie intake was found satisfactory only in those villages where people consumed varieties of food-stuffs. More than 56 per cent villages where survey was conducted, were found deficient and people of the area gets about 75 per cent of their calories through cereals.

Protein

It is more required during the period of growth and additional protein will also be

Table I

Nutrients Intake Per Caput Per Day In Different Villages

S.No.	Villages	Calorie	Protein gm	Calcium gm	Iron	Vitamin A I. U.	Thiamine B1 mg	Riboflavin B2 mg	Fat gm	Carbohydrate mg
1.	Chaupra	2732	54.7	428.3	29.9	2653.8	2.0	2.1	25.8	503.0
2.	Mahua khera	2603	56.1	417.1	28.9	2689.2	2.0	2.1	21.7	478.8
3.	Sahevera	2576	56.1	455.2	28.4	2728.4	1.6	2.1	22.9	471.7
4.	Deo Talab	2572	55.7	451.0	28.6	2968.3	1.8	2.1	24.1	470.2
5.	Chauthuba	2546	55.1	547.1	27.9	2442.4	1.8	2.0	21.5	472.1
6.	Budhuikala	2543	54.2	409.4	18.1	2803.2	2.0	2.0	21.3	468.1
7.	Kuwn	2483	51.0	393.7	26.5	2362.2	1.9	2.0	21.5	463.7
8.	Narayanpur	2432	55.1	418.8	27.5	2887.2	1.8	2.0	20-4	428.1
9.	Bholgarh	2413	56.5	490.5	26.7	2513.0	1.8	2.0	22.8	436.9
10.	Jamunia	2383	55.7	461.9	25.6	2454.2	1.8	2.0	23.2	432.9
11.	Jamori	2334	55.7	388.3	26.1	2262.7	1.8	1.9	21.1	436.4
12.	Sivepurwa	2314	55.0	423.1	24.1	2646.0	1.8	2.0	22.5	425.7
13.	Gugod	2287	47.0	414.8	24.0	2208.2	1.8	1.9	19.0	444.8
14.	Marha	2284	48.6	384.2	24.1	2371.4	1.7	1.8	20.1	417.5
15.	Badkhan	2284	50.0	360.9	23.8	2433.2	1.6	1.8	19.1	415.3
16.	Khamahariya	2250	49.6	406.3	24.0	2369.3	1 7	1.9	20.2	414.4
17.	Rampur	2223	49.0	420.4	23.0	2645.0	1.6	0.1	22.4	411.1
18.	Raigon	2183	48.9	378.1	23.4	2321.2	1.7	1.8	20.6	411.7
19.	Banpader Katan	2173	49.1	406.6	22.6	2637.9	1 6	1.9	21.0	406.3
20.	Maligowal	2166	45.9	350.7	23.8	2319.7	1.6	1.9	18.7	405.7
21.	Mahlal Kala	2078	48.9	380.0	23.6	2233.9	1.6	1.9	20.1	407.2
22.	Khatkhar kalan	1977	44.9	382.2	21.1	2730.7	1.5	1.9	19.3	401.1
23.	Chakdehi	2322	51.1	337.4	25.1	2522.2	1.4	1.8	16 7	386.9
Average of Region		2359	51.7	405.0	25.2	2561.8	1.7	1.9	21.6	435.0

Source : Based on Diet Survey.

Table II

Nutrientswise Rank Intake Per Caput Per Day

S. No.	Villages	Calorie	Protein	Fat	Carbo-hydrate	Calcium	Vit A	Vit B_1	Vit B_2	Iron	Accumulated Rank
1.	Chaupra	1	6	1	1	6	7	1	1	1	25
2.	Mahua	2	2	8	2	9	6	1	1	2	33
3.	Sahevera Kothor	3	2	4	4	4	5	4	1	4	31
4.	Doe Talab	4	3	2	5	5	1	4	1	4	28
5.	Chaurhaba	5	4	9	3	1	14	2	2	3	39
6.	Budhuikala	6	7	10	6	13	3	1	2	20	68
7.	Kuwn	7	10	8	7	14	18	2	3	6	75
8.	Narayanpur	8	4	16	12	10	2	2	2	6	62
9.	Bholgarh	9	1	5	9	2	12	2	2	7	50
10.	Jamunia	10	3	3	11	3	13	2	2	10	58
11.	Jamori	11	9	3	11	10	9	21	2	16	93
12,	Sivepurwa	12	5	6	13	7	8	2	2	12	66
13.	Gugod	13	14	18	8	11	23	2	3	13	106
14.	Morha	14	14	13	14	17	16	3	3	12	107
15.	Badkn	15	10	17	15	22	15	4	3	14	115
16.	Khamahriya	16	13	14	16	14	17	3	3	13	109
17.	Raimpur	17	14	7	11	8	9	4	5	17	99
18.	Raigaon	18	12	13	17	20	19	3	4	16	122
19	Bumpader Koten	19	15	12	19	15	10	4	3	18	115
20.	Maligowal	20	17	19	20	21	20	4	3	14	138
21.	Mahadaldal Kala	21	16	15	18	19	22	4	3	15	133
22.	Khathar Kalan	22	18	16	21	18	4	5	3	19	126
23	Chakdaw	23	8	20	22	23	11	6	24	11	114

required in different physiological conditions like childhood, lacatation and pregnancy. In Rewa plateau, protein intake varies from 45 9 to 56.5 gms per day per caput, while the average intake is 51.7 gms. It varies from village to village and from families to families depending upon their income and availability of food stuffs. During diet survey, protein deficiency signs have also been observed among childern. The pulses are the dominant supplers of protein in the area. Details are given in the respective tables.

Iron

The intake of iron varies from place to place i. e. from 18.1 mg to 29.9 mg per day per caput. Deficiency in diet is reported due to the lesser consumption of iron rich food stuff by people. The average intake of iron in the area under study is 25.1 mg per day per caput.

Calcium

The intake of calcium in the study unit varies from 337.4 mg to 547.1 mg per day per caput.

Vitamin A

Deficiency of vitamin A reported throughout the region is due to the fact that the region's diet basically depends on cereals. The average intake of vitamin A is 2561.8 I. U. and it varies from 2208 2 to 2968.3 I. U. in the entire region which is quite low, against recommended allowances. This is due to inadequate consumption of leafy vegetables, fruits and the ignorance regarding the nutrients as well as defective cooking methods.

Riboflavin

The average intake of Riboflavin in the area is 1.9 mg per day per caput. Pulses and vegetables are the other sources of this vitamins as far as study region is concerned.

Thiamine

Rural diet of the region basically depends on cereals which are the main source of thiamine, so this vitamin is found more or less adequate in the diet of the people of the study unit. The average intake is 1.7 mg per day per cent while it varies from 1.4 mg to 2.00 mg from village to village.

Health Hazards due to Nutritional Deficiency

Undernutrition and Malnutrition

One out of two Indians suffers either from undernutrition or malnutrition or both (Sukhatme, 1967). Malnutrition mainly occurs due to lack of vitamins and minerals in the diet while generally speaking undernutrition occurs from where diet is found deficient in calories.

In the area under study none of the selected families reported satisfactory diet in all respects. Deficient diet in respect of calories, proteins, minerals and vitamins will not give proper resistance power to the body which creats the favourable environment for the occurrence of various diseases and poor health.

In the rural areas of the Rewa plateau, malnutrition is widely spread and it may be due to faulty selection of foods, low purchasing power, ignorance and availability of poor food stuffs. On the basis of extensive field study it is found that the main sufferers from malnutrition are children (infants and preschool children). Malnutrition during childhood is very serious because human brain reaches 90 per cent of normal structural development in the first four years of age only. A big majority of the infants are suffering from different malnutritional disorders.

The intake of vitamin A, is reported quite deficient in the study area. The average intake of the region is only 2561 I. U. and it is responsible for below normal growth as well as for various eye disorders. Calcium, protein and iron are the other nutrients which are found quite deficient in the diet of the people in the area under study.

Deficiency Diseases

Complete or partial absence of nutrients generally leads to deficiency diseases. Common deficiency disorders which are reported in the area under study are on the basis of information collected through the

Table–III

Actual Intake of Nutrients

S. No.	Nutrients	Standard Requirement	Actual Intake
1.	Calorie	2400	2359
2.	Protein	68.00 gm	51.70
3.	Fat	60.00 gm	21.16
4.	Calcium	900.90 gm	405.00
5.	Carbohydrate	605.00 gm	435.00
6.	Vitamin A	5000.00 I. U.	2551.80
7.	Vitamin B_1	1.5	1.7
8.	Riboflavin B_2	2.5	1.9

private and / or Government doctors of the rural areas of study unit.

1. Slow growth – Due to protein deficiency.
2. Bone Deformities and various Teeth Disorders – Mainly due to calcium deficiency.
3. Anaemia – Due to Iron deficiency
4. Various Eye disorders and skin diseases. – Vitamin A deficiency

Besides various disorders which are due to vitamin B Gr. are also widely reported in the area under study: Kwashiorkar, poor growth, night blindness, eye disorder, angular stomatities, gum bleeding, bone deformaties, rickets, anaemia etc. are the common deficiency disorders and they have very close relationship with the prevailing dietary habits.

Snggestion to Improve the Nutritional Level

In view of the existing dietary pattern it is quite essential to take immediate steps to improve the nutritional level. The geographers main contribution will be in suggesting suitable change in crop patterns in order to provide adequate nutrition.

Such crops as are rich from nutrition point of view should be introduced. They should also be high yielding varieties of these crops. A judicious combination of groundnut pulses etc. could however, be suggested for instance, in controlling protein malnutrition. Introduction of scientifically tested varieties of crops is another measure e. g. the use of low leucine strains of jowar to prevent pellgra. One other crop which could be suggested is Soyabean, a valuable source of protein. Increased use of vegetables and fruits is another suggestion to avoid vitamin A deficiency.

However, alongwith the increase in the total food production a change in cropping pattern in favour of high nutritive value crops is also essential. Diet structure clearly shows the vitamin A deficiency in the entire area, so it is also desirable to increase the production of vegetables and fruits.

Further in suggesting possible improvements in nutritional level, the geographer must remember the triangular conflict, man, land and cattle (Mukerjee, 1938). The most important source of proteins for vegetarians is milk. So it is desirable to rise the average production of milk per cow or she buffalo. The low production is mainly due to the poor breeds. It could possibly be suggested that a certain amount of land should be set aside for growing

green fodders and be used as grass land farming.

Poultry farming and pig and goat rearing may also be encouraged specially among the non-vegetarians.

Finally, it must be remembered that improvement in nutritional levels cannot be brought about merely after a geographical enquiry. Any improvement suggested must be in relation to existing dietary pattern. Further, education of the public is also needed proper and wide publicity of different aspects of nutrition should also be made among the public.

Besides other factors, ill-literacy also plays a vital role in nutritional level. Due to ignorance most of the nutrients are destroyed during cooking itself as well as many food stuffs containig rich nutrients are generally not used by the people, due to lack of knowledge. So it is desirable to start nutrition oriented education programme in the entire area under study to educate the persons particularly in the field of nutrition. The Public Health Department may inform and teach the rural people 'how not to fall victim of diseases' apart from treating the diseases.

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