



# FOODS AND NUTRITION NEWS

Acharya N.G. Ranga Agricultural University

Vol. 8

April, 2003

No. 2

## Tribals of Andhra Pradesh-Nutritional Status

Tribals constitute an important segment of the population of India, representing 7.6% of the total population of the country. Andhra Pradesh is the seventh largest tribal populous state in India. Tribals are distributed in three principal territorial zones, namely North Eastern zone, Central zone and Southern zone. They live in certain definite areas, with different dialects, cultural homogeneity, and unifying social organizations. Because of the secluded living of the groups, their pattern of living, food and dietary practices and their attitudes to various aspects in general, may some times be different from non-tribal population.

High altitude and tribal area zone



in Andhra Pradesh consists of the areas lying along the northern borders of the state in the districts

of Srikakulam, Vizianagaram, Visakapatnam, East and West Godavari, Adilabad and Khamman. Apart from these areas, some pockets of Nizamabad, Karimnagar, Mahaboobnagar, Nalgonda, Warangal and Kurnool districts are also inhabited by tribals. The major tribes living in those areas are Lambada, Konda Dora, Boyas, Konda Reddy, Jatapu, Gadaba etc. (Table I).

There are 33 scheduled tribes with a population of 41,99,000 as per 1991 census and they form 6.3 per cent of the total population of Andhra Pradesh. The largest concentration of tribal population is in Khammam district followed by Adilabad, Visakapatnam and Warangal districts

Table I: District wise Tribes in Andhra Pradesh

District	Tribe
Adilabad	Goude, Kolam, Naik, Thoti, Pardhan, Koya
Khammam	Koya, Lambada, Konda Reddy, Thoti
Visakhapatnam	Gadaba, Valmiki, Savara, Porja, Mali, Bagata, Goude, Kammara, Mooka Dora, Kotia, Kulia, Mannedore, Konda dora, Naik.
Warangal	Koya, Lambada, Naik, Thoti
Vizianagaram	Savara, Jatapu, Mooka Dora, Bagata, Gadaba, Goude, Kammara, Lambada, Kotia, Mali
Srikakulam	Savara, Jatapu, Bagata, Gadaba, Goude, Kammara, Lambada, Konda Dora, Khond, Mali Manne Dora, Mooka Dora, Naik, Porja, Walmiki.
East Godavari	Konda Reddy, Koya, Kammara, Lambada, Manne Dora, Mooka Dora, Naik, Porja, Valmiki.
West Godavari	Koya, Konda Reddy, Kammara, Naik.
Mahaboobnagar	Chencha, Thoti
Kurnool	Chenchu
Karimnagar	Koya, Thoti
Nizamabad	Thoti

Source: Mohan Rao, K (1993) Socio Cultural profile of tribes of Andhra Pradesh, Tribal research and training institute, Tribal welfare Department, Hyderabad, Andhra Pradesh.

**Cropping pattern**

Mixed cropping pattern is practiced in podu cultivation (shifting cultivation). The major crops grown are paddy, sorghum, bajra, ragi and other minor millets like sama, korra, arika, beans, pulses and cash crops like tobacco, turmeric, castor, niger, sesame and groundnut. Apart from common crops, the tribals also cultivate less common cereals like rajkeera seeds (*Amaranthus paniculatus*) and legumes such as dukka chikkadu (*Mucuna pruriens*) and Judumulu. Shifting cultivation is one of the ancient methods of cultivation practiced all over the tribal areas especially in the areas of forest and mountaneous tracts.

*Rajyalakshmi P. (1991)*

**Grain storage**

Tribals store the food grains both for consumption and seed purposes. Tribals use earthenware (76 percent) baskets (23 per cent) and gunny bags (1 per cent) for storing grains. Most of the tribals do not store the grain for more than six months. Sun drying is the usual pretreatment adopted before storing food grains.

*Vimala V. and Ratna Prabha C. (1991)*

**Grain milling techniques**



Tribals mostly consume millets after milling. Usually the milling is done at home by traditional methods. The majority (73%) of the families dry the grains in the open space outside the house and only about one fourth of them (27%) dry the grain in the field itself. The most common pretreatment given is boiling and drying the grain and majority of the families do it in case of paddy. The methods of boiling and dehiscing is applied

even for minor millets like samalu, korralu, oodalu, etc. Some of the families adopt only drying as a pretreatment for minor millets. Treatments like application of oil and heat (roasting the pulses) are being followed for pulse milling. Among the families consuming pulses, 62.5 per cent consume pulses as whole and only 37.5 per cent as split dhals.

*Vimala V., Kameshwari S. H. and Ratna Prabha C. (1991)*

**Tribal Foods and Their Nutritive Value**

Tribals consume cereals, millets, legumes, wild tubers, miscellaneous foods and some processed food products purchased from shandies. The traditional varieties grown in the tribal areas show little variation with regard to protein and vitamins as compared to other Indian foods. The uncommon legume, Judumulu (*Vigna sp*) grown by the tribals has 22 g per cent protein and the wild grown legume, *Mucuna pruriens*, has a high protein content of 27 g per cent and also high energy value. To make the wild legume edible, tribals follow a special processing method of continuous boiling and

**Table 2. Proximate composition (per 100 gm edible portion) of some wild tubers consumed by the tribals of Andhra Pradesh**

Tubers	Moisture (g)	Protein (g)	Fat (g)	Minerals (g)	Fibre (g)	Carbo-hydrates (g)	Energy (Kcal)
Arkatega ( <i>Dioscoreos oppositifolia</i> )	73	1.8	1.1	2.4	0.9	21	100
Chedu dumpa ( <i>D. bulbifera</i> )	67	3.4	1.1	0.9	0.5	27	13
Pandimukkataga ( <i>D. Pentaphylla</i> )	79	2.8	0.67	3.2	2.0	15	72
Pulidumpa ( <i>D. hispida</i> )	74	5.2	4.3	2.0	0.8	19	134

draining for about 7 hours till the boiled water changes from black to milky white. Among the four tubers commonly consumed by the tribals, *D. hispida* showed high protein and fat contents (Table 2). Mineral content is high

in *D. Pentaphylla*.

Tribals consume different miscellaneous foods (Table 3), among them, caryota palm pith has more carbohydrates. Caryota palm pith powder is used for the preparation of gruel either singly or mixed into ragi flour.



**Table 3. Proximate composition (per 100 g edible portion) of miscellaneous foods consumed by the tribals of Andhra Pradesh**

Tubers	Moisture (g)	Protein (g)	Fat (g)	Minerals (g)	Fibre (g)	Carbohydrates (g)	Energy (Kcal)
Bamboo shoots processed and dried (Bambusa arundizalea)	11.6	29.6	0.4	8.5	6.9	43	294
Mushroom (dried) (Agaricus sp)	10.5	27.6	2.9	9.5	9.2	71	298
Caryota palm pith (Zillugin pindi) (Caryota vrens)	10.1	1.8	0.4	2.0	5.5	80	332
Rajkeera seeds (Amaranthus paniculatus)	3.2	16.8	7.2	2.7	1.0	69	407
Black gram crisps (Phaseolus mungo)	17.2	18.3	0.4	2.0	0.1	62	325
Pindi vadialu (Made of gingelly seed cake) (Sesame indicum)	40.8	14.3	7.3	10.2	2.8	25	222

*Consumption pattern of fruits and vegetables.*

Food habits of tribals of Bhadravari, (Vizianagram district) are governed by season. The green leafy vegetables usually used by tribals include common leafy vegetables like gogu, amaranth, ponnaganti, drum stick leaves and also uncommon green leafy vegetables like 'Chitti koor', 'Bodandum' 'Tummika Koor', 'Gurum Koor' 'Bamboo tender shoots' etc. which are collected from nearby forests. Some of the green leafy vegetables like Bodandum Koor and Chitti Kora are available during summer season also. The most commonly used vegetables are country beans, brinjal, tomato, cucumber, ladies fingers, pumpkin

and gourds.

The consumption of roots and tubers is also very high among the tribals in lean season when the vegetables are not available. Tribals collect a number of roots and tubers like tega (Arikatega Dioscorea oppositifolia) palleru tega, pulidumpa (C. D. hispida), wild yam pandinaukha dumpa (CD. Pentaphylle), satre kanda etc which are not consumed by non-tribals. During the preparation of some of these roots the cooking water is changed several times to remove the toxic anti nutritional factors and then eaten as such, slightly seasoned with salt.

A wide variety of fruits are



Pounded mango kernels are used in lean season. Pulp of the Jack fruit is eaten both raw and cooked in gruel or curry form and seeds are roasted.

The tribals of Khammam eat insects and worms along with their food. They commonly eat Boor-door, field rat meat, red ants, snails, venis ants etc. Boor-door (winged white ants) have a high content of energy i.e., 598 kcals and are next only to fats and edible oils in energy content.

Habitual drinking of intoxicants is common among all tribals. Liquor distilled from Mahua (Bassica Latifolia) flowers and toddy drawn from caryota palm (caryota urens) or palmyrah (Bolassus fatelleges) or country date palm (phenix acaulis) are the favourite intoxicants consumed by all the tribals living in areas where they grow. Besides, all the tribal groups ferment cereal beers from rice, ragi and sama and relish them. Both chenchus and Godavari region tribals hunt small animals for food. The tribals deem it a sin to milk their milch animals. Oil plays an insignificant role in their culinary practice.

P. Rajyalakshmi & P. Geervani (1986)

eaten, but their consumption is seasonal and rare. Flowers of muhua (Slucuna proteins) are also eaten as such or they are made into alcoholic beverages.

Availability was found to be the deciding factor of consumption of vegetables and fruits.

V. Vimala & C. Ratnaprabha (1986)

### Nutrition and Health Status

One of the major factors determining nutritional status of any community is the food consumption, which is influenced by a wide range of factors like agro climatic differences foods grown and their availability, food habits, prevailing customs and socio-economic factors. Several studies conducted on various tribal population of India revealed that their diets are quantitatively and qualitatively deficient.

Food and nutrient intake of tribals inhabiting Bhadraviri in Vizianagaram district is given in Tables (4 & 5). Except millets, cereals and other vegetables, the intake of all other foods in the dietaries of the tribals were found to be considerably lower than the recommended allowances. The calorie intake of adult man was more than the RDA due to higher intake of cereals and millets.

The levels of vitamin A, B complex and vitamin C were also found to be deficient. The intake of calcium and iron was higher than RDA, the intake of thiamine was sufficient and meeting the RDA, but the intake of Riboflavin and Niacin was falling short due to the absence of milk and milk products and poor intake of eggs and fleshy foods in their diets. Owing to the poor intake of green leafy vegetables and fruits, the level of  $\beta$ -carotene and vitamin C were found to be deficient *G. Sarojini & A. Sarala Kumari (1984)*

A study was undertaken to see the food and nutrient intake of tribals (large, medium, small farmer and landless) inhabiting High Altitude and tribal area zones at Chintapalli tribal block. Cereal and millet adequacies were observed in the diets of all categories of tribal households (+ 18 to + 38% RDA). Pulse intake was deficient by 43 to 75 per cent. The intake of other vegetables was adequate in all the

**Table 4: Mean Food Intake of Adults (Bhadraviri Tribal Block)**

Foods	Man		Woman	
	Intake (g)	% RDA met	Intake (g)	% RDA met
Millets & cereals	871	168	572	130
Pulses	46	92	25	56
Green leafy vegetables	18	45	14	14
Other vegetables	221	316	137	342
Roots & tubers	50	67	32	64
Milk & Milk products	13	7	9	6
Oils & Fat	13	29	9	36
Sugar & Jaggery	8	23	5	25

**Table 5: Mean Nutrient intake of adults (Bhadraviri tribal block)**

Foods	Man		Woman	
	Intake (g)	% RDA met	Intake (g)	% RDA met
Calories (kcal)	3448	125	2259	103
Proteins (g)	78	142	50	111
Calcium (g)	0.8	178	0.5	111
$\beta$ -carotene ( $^{\circ}$ g)	301	40	183	24
B <sub>1</sub> (mg)	1.8	129	1.2	109
B <sub>2</sub> (mg)	1.4	82	1.2	92
Niacin (mg)	18	95	13	87
Vitamin C (mg)	11	28	7	18



*Adequacy of food & nutrient intake of tribals and non tribals of Mareduvilli Block*

A survey of intake of nutrients may give an indication of adequacy of the diet for promoting optimal nutrition of individuals or groups. The diet survey revealed that all the food constituents except cereals were lower than the recommended allowances in both tribals and non-tribals. All the nutrients were found to be deficient both in tribals and non-tribals. However comparing between tribals and Non-tribals, non-tribals were having a better intake.

*D. Anuradha Rao & K. Chittemma Rao (1982)*

categories (+23to+253% RDA). Consumption of all other foods were much below the recommended dietary allowances. Fruits were not consumed regularly.

The intake of energy and protein was adequate in the dietaries of these tribals due to higher consumption of cereals and millets. The intake of vitamin and minerals was grossly deficient.

*G. Sarojini, Anurag Chaturvedi & N. Lakshmi Devi. (1989)*

### Nutritional Status of pregnant and lactating tribal women

A study was carried out in the tribal area of Vizianagaram district, Andhra Pradesh, to assess the nutritional status of pregnant and lactating women and the infant care and feeding practices followed by the tribal women. Diet survey revealed that the diets of pregnant women and lactating women were

inadequate in respect of several nutrients. Poverty and lack of availability of foods are the main causes for poor intake, even though the tribal women are aware of importance of good food. Clinical examination revealed that anaemia was the major problem among the women. Taboos, traditions and superstitions were found to still prevail among the tribal women. The infants were most commonly fed with the family food *Ambali*. The expenditure on the infants was found to be negligible. Even though morbidity was high among the infants, medical facilities were not availed properly by most of the tribals due to superstitions, ignorance, and the traditional habits of using herbal medicines. Poor personal hygiene, and environmental insanitation were the main causes for morbidity among the infants.

*Sujatha Subba Rani, & G. Sarojini (1984)*

#### *Anthropometry*

Anthropometric data is a very useful indicator of nutritional status of population groups. Height and weight are more widely used parameters for assessing the nutritional status of adults. For children below six years, along with these two parameters, arm, chest and head circumferences are also measured.

#### *Nutritional Anthropometry, Diet and Morbidity pattern of Tribal School children in Kurnool*

Four hundred and ninety one tribal school children from Ashram Schools (residential) and single teacher schools (nonresidential) of Kurnool district, Andhra Pradesh, were studied for their anthropometry, morbidity, food and nutrient intake. The health and nutritional status of the children was not satisfactory when compared with the Indian Council of Medical Research (ICMR) standards. The mean body weights and the mean standing

heights of Ashram School children corresponded well in the age group of 5 – 12 years, and were found to be lower than the necessary standards in the age group of 13–15 years. It was also observed that the mean body weights and mean standing heights of single teacher school children were below the ICMR standards.

*K. Sreedevi & P. Rajyalakshmi (1995)*

#### *Assessment of Nutritional Status of the Tribals of Maredumilli Block by Anthropometry*

A Study on assessment of nutritional status of the tribals of Maredumilli block revealed that the tribals had thinner arms than the non tribals in all the age groups except in the age group of 13–19 years. They were comparable to Indian figures except in the age group of 1-5 years. Both by weight for age and arm circumference for age, higher percent of tribal children were observed to be subjected to protein calorie malnutrition.

Tribals had lower triceps skin fold thickness than the non-tribal children and also less than Indian standards. But both tribal and non-tribal children had similar chest circumferences which were lower than the Indian standards. Higher percent of tribal pre-school children had grade-II and grade-III malnutrition by this index, but by the index weight / height X chest circumference, higher percent of non-tribals were malnourished than tribals. Similar findings were obtained by chest / head circumference ratio and mid arm / head circumference ratio.

*V. Vijayalakshmi & K. Chittemma Rao (1982)*

### **Nutritional Deficiencies**

#### *Prevalence of Nutritional Deficiencies in Children of Bhadravari Tribal Block*

Pre school children and School children belonging to tribal families of Bhadravari area were studied for the prevalence of Nutritional deficiencies. In all age groups, majority of the children were suffering from PEM and anaemia, vitamin A and B-complex deficiency signs were also found in some children.

Children in Ashram schools of the same tribal block were also suffering with number of nutritional deficiency disorders like night blindness, anaemia, angular stomatitis, xerosis of skin etc.

*G. Sarojini & Ch. Ratna Kumari (1984)*

#### *Prevalence of Anaemia in Tribals and Non-tribals of Maredumilli Block*

Prevalence of anaemia was studied in tribals and non-tribals of Maredumilli block. The mean haemoglobin levels of tribals were found to be significantly lower than those of non-tribals. The average haemoglobin levels of females and male children below 14 years in both groups were also found to be at lower levels. The mean haemoglobin level of tribal female children between 15-19 years was remarkably lower than that of the male children in the same group. Prevalence of anaemia was observed to be more in women and children. Haematological estimations revealed that high percentage of tribals (69.3%) and non-tribals (51.2%) were suffering from iron deficiency anaemias namely simple microcytic and microcytic hypochromic anaemia. Normocytic anaemia was more in non-tribals (44.2%).

*A. Sarala Kumari & K. Chittemma Rao (1982)*

of Karimnagar District. Information on socio economic background, food expenditure pattern, anthropometric measurements, clinical signs and symptoms, morbidity and pattern of food and nutrient intake was collected.

The results of anthropometric measurements revealed that though the heights of adolescent girls of

both the factories were nearer to NCHS standards, weights of adolescent girls were not on par with NCHS standards. Among various nutritional deficiencies symptoms, anaemia was more prevalent among women and adolescent girls than riboflavin deficiency. Personal hygiene of the respondents was poor. Most of the

respondents had dull / pale hair, brownish teeth and scaly or rough skin. A positive correlation was observed between haemoglobin levels and nutritional status among the adolescent girls. Thus, it can be inferred from results that beedi making had a strong negative impact on health and nutritional status of adolescent girls and women.

K. Manasa & K. Aruna (2002)

## World Food Day Celebrations

World Food Day was celebrated on 16th October 2003 by the Department of Foods and Nutrition, College of Home Science, Hyderabad by organizing various activities to enhance nutrition knowledge and awareness of college and school students.

A poster competition was held at College of Home Science on the theme of World Food Day - 'International Alliance in the fight against hunger' for B.H.Sc., M.Sc. (Foods and Nutrition) and M.Sc. (Food Science & Technology) students.

The Zilla Parishad High School at Sivarampalli with a strength of twelve hundred students was selected and a meeting was arranged to explain about World Food Day, its theme, food and nutrition security and the role of children in transferring the knowledge to their parents. An exhibition on adolescent nutrition was put up which attracted a lot of interest from the students. A quiz competition was organized for the students and prizes were awarded.

