

# NUTRITIONAL ASPECTS OF KURNOOL DISTRICT OF ANDHRA PRADESH WITH SPECIAL REFERENCE TO SCHEDULED CASTE POPULATION

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## **Abstract**

*Nutrition is the foremost factor of all the basic factors essential for a healthy life. The inadequacy of Nutrition in the human body can result from inadequate quantity or quality of food consumed. The qualitative deficiency generates hunger and calorie deficiency. When the food consumed is inadequate to mitigate the hunger, it essentially fails to provide all the required nutrients. In such a situation, it is not the under nutrition, but the malnutrition poses the biggest public health problem especially in the vulnerable groups of the society. Hence in the present study an attempt is made to study the existing availability of Nutrients and the levels of consumption in scheduled caste population of Kurnool district of Andhra Pradesh state, India.*

**Keywords:** *Nutrition availability, Nutritional standards, Scheduled caste population, Kurnool District.*

## **Introduction**

In many respects, dietary patterns influence the human health and thus studies of Nutrition and health are very much associated to the progressive growth of any country. To plan for the National health programmes, both curative and preventive packages and other welfare programmes, complete understanding of the ground situation regarding to the Nutritional standards & availability, disease ecology, health care delivery systems etc are very much essential. Rao et al (2014) have examined the food consumption and available nutrients in Andhra Pradesh. This study focuses on nutritional availability and standards of Scheduled Caste (officially designated group of historically disadvantaged people in India and the term is recognised in the Constitution of India) population because they are officially entitled group of historically disadvantaged people in India. This study was conducted in Kurnool District which is located in Andhra Pradesh, India. The district has a total population to the 40.53 lakhs according to 2011 census and having about 18.1% of Scheduled Caste Population to the total district population. In this background objectives of this study were to analyse the nutritional standards and nutritional availability among the Scheduled Caste population.

## **Study area**

Kurnool District is located between the northern latitudes of 14° 54' and 16° 25' and eastern longitudes of 76° 58' and 78° 25'. The geographical area of the district is 17,658 square kilometres. The normal rainfall of the district is 630 millimetres. About 49.26 percent of the total geographical area is under net sown area. Kurnool district has a total population of 40.53 lakhs according to 2011 census with 75 percent in rural areas. There are 988 females per 1000 males in the district. Kurnool district is having about 18.05 percent of Scheduled Caste population to the total district population (2011 census). In actual numbers it constitute about 7,49,890. Kurnool district has enormous deposits of limestone suitable for cement manufacture.

## Objectives

To study the required nutritional standards of people. To study the availability of nutrients in the study area. To study the nutritional standards of scheduled caste population in the study area.

## Data & Methodology

Both secondary and primary data is used for the study. Secondary data has been collected through the government records especially from District Planning Office, Kurnool District. The primary data has been collected through stratified random sampling method of 200 respondents in 10 Villages of Kurnool District. Food balance sheet method is adopted to calculate per capita nutritional availability per day in the study area. The nutritional standards of scheduled caste population has been studied by collecting the consumption pattern of common foods which are cultivated and consumed generally among the samples of scheduled caste population from which the standards of Nutrition have been calculated.

## Results & Discussions

### Per capita nutritional availability/day in Kurnool district

Here each edible food crop production has been converted in to calories. Based on these values and by taking the total population of the district, the per capita Nutritional availability has been computed in terms of Calories, Protein, Fat, Carbohydrates, Minerals, Vitamins etc. These values are further subjected to calculate per day availability.

The major nutrients such as protein, Fat, Fibre, other Carbohydrates, Calcium, Iron, Vitamin-A, Thiamine, Riboflavin, Nicotinic Acid, Vitamin- C and the amount of energy in calories available per 100 gms of edible portion of different food crops is taken from the standard tables of Food and Agricultural Organisation (FAO), Indian Council of Medical Research (ICMR) and National Institute of Nutrition (NIN). Comparing with these tables, the surplus and deficit in the respective nutrients and energy levels in Kurnool district is computed.

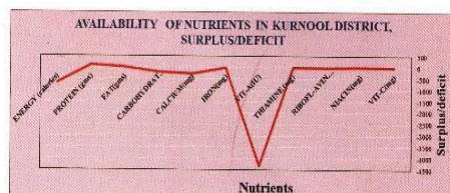


Figure 1 Availability of nutrition in the Kurnool district surplus and deficits

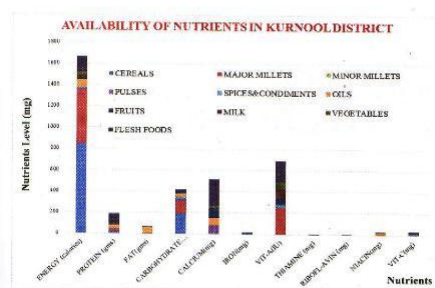


Figure 2 Availability of nutrition in the Kurnool district  
Source: field survey, 2015

## Energy availability

On the whole there is 1712 calories of energy is available per person/ day in Kurnool District. When compared to the standard value (2400 calories), there is a deficiency of 688 calories in the study region. Major share of calories are available through cereal crops (846.4 calories) followed by major millets (550.55 calories), milk (141.94 calories), oil seeds (70.70 calories), flesh foods (38.96 calories), fruits (26.80 calories), pulses (14.85 calories), vegetables (10.78 calories), Spices (9.44 calories) and minor millets (1.14 calories) in the district.

Table 1. Consumption of various food items by SC population

Food item	Required amount per-day/ per person:g	Consumed nutrients by the sample SC population (per day/per person) g	Remarks
Cereals	400	62.00%:>410 32.05%:270-410 02.50%:<130	Average consumption
Major millets	--	00.50%:>164 38.00%:109-164 58.00%:55-109 03.50%:<55gms	Poor consumption
Minor millets	--	05.50%:>82 35.00%:55-82 59.50%:27-55	
Pulses and grams	85	22.50%:>82 23.00%:55-82 20.50%:28-55 03.0%:<28	Poor consumption
Spices and condiments	57	02.00%:>55 94.00%:27-55 04.00%:<27	Poor Consumption
Oil and ghee	57	79.50%:27-41 19.50%:14-27 01.00%:<14	Poor Consumption
Vegetable	284	03.50%:>110 60.50%:82-110 30.50%:55-82 05.50%:<55	Poor Consumption
Fruits	85	00.50%:>55 75.50%:41-55 23.00%:27-41 01.00%:<27	Poor Consumption
Milk and milk products	284	01.50%:>164 91.50%:82-164 07.00%:<82	Poor Consumption
Flesh foods	85	10.50%:41-55 6.50%:27-41 20.00%:14-27	Poor consumption

### Protein availability

Interestingly there is surplus protein availability of 118.89 gms/person/day in Kurnool District, compared to the standard requirement of 68 gms/person/day. Bulk share of protein is available through milk and milk products (97.44 gms) followed by oil seeds (34.38 gms) especially groundnut, major millets (17.02 gms), cereals (16.58 gms), pulses (9.71 gms), flesh foods (4.63 gms), vegetables (3.59 gms), spices (2.84 gms), minor millets (0.42 gms) and fruits (0.28 gms) in the district.

### Fat availability

In Kurnool District Fats are also available in surplus (7.4 gms) with a total availability of 67 gms/person/day compared to the standard requirement of 60 gms/person/day. Oil seeds (Groundnut) contributing a lot to the availability of Fat content (51.64 gms) in the district followed by milk (5.17 gms), major millets (4.20 gms), flesh foods (2.25 gms), spices (1.86 gms), cereals (1.22 gms), pulses (0.77 gms), minor millets (0.14 gms), Fruits (0.08 gms) and vegetables (0.07 gms).

### Carbohydrates availability

A deficiency of 191.18 gms of carbohydrates availability is reported in the study area compared to the standard requirement of 605 gms/person/day. Major share of carbohydrates are supplied by cereal crops (191.11 gms) which is followed by major millets (114.38 gms), oil seeds (30.13 gms), vegetables (24.68 gms), spices (20.71 gms) pulses (18.19 gms), fruits (6.27 gms), milk (6.13 gms), minor millets (2.13 gms) and flesh foods (0.09 gms) in Kurnool District. Fibre consisting mainly of cellulose is a type of carbohydrate; hence it is also placed under carbohydrates.

### Calcium availability

Compared to the standard requirements of calcium (900 mg/person/day), there is only 632.27 mg calcium availability in Kurnool district with a deficit of 267.73 mg/person/day. Larger chunk of calcium availability is from milk and milk products (252.61 mg) followed by spices (118 mg), vegetables (87.4 mg), oil seeds (64.4 mg), pulses (62.6 mg), flesh foods (22.77 mg), cereals (12.2 mg), major millets (7.9 gms) fruits (3.29 mg) and the least in minor millets (1.1 mg).

### Iron availability

Little amount of deficit (1.15 mg) is noticed in Iron availability compared to the standard requirement (17 mg/person/day) with actual availability of 15.85 mg/person/day. Pulses and cereals supply more amounts of Iron (3.8 mg each) followed by spices (2.3 mg), oil seeds (2.1 mg), major millets (1.8 mg), vegetables (0.6 mg), minor millets (0.5 mg), flesh foods (0.39 mg), fruits (0.32 mg) and lastly milk with only 0.24 mg of Iron/person/day in Kurnool District.

### Vitamin-a availability

There is a wide gap in vitamin-A availability through important food crops grown in the district and the standard requirement (5000 IU mg). Only 687.9 IU mg is available in the study area with a deficit of 4312 IU mg/person/day (Table 4.5). This has to be considered seriously by the authorities and health planners. Of the total available vitamin- A in the district, major millets supplying more amount of vitamin- A (249.4 IU mg), followed by milk (192.45 IU mg), fruits (90.28 IU mg), flesh foods (69.27 IU mg) and vegetables (57.3 IU mg). The other food crops are insignificant in the supply of vitamin- A.

### **Thiamine availability**

Thiamin or vitamin B<sub>1</sub> availability in Kurnool district is more than sufficient with 1.81 mg/person/day against the standard requirement of 1.2 mg/person/day. So, a surplus of 0.61 mg/person/day is noticed in Thiamine availability. Unmilled cereals, pulses and nuts especially groundnuts are richest in Thiamine content.

### **Riboflavin availability**

Riboflavin, Niacin and some others are referred to as B<sub>2</sub> complex. There is good evidence that poor Indian diets are often very deficient in Riboflavin and the same is reported in Kurnool District too with an availability of only 0.603 mg/person/day against the standard requirement of 1.4 mg/person/day. On the whole, there is a significant deficit of 0.797 mg/person/day in the availability of Riboflavin. Pulses (0.2 mg), milk (0.12 mg), cereals (0.1 mg), major millets (0.1 mg) and oil seeds are supplying relatively more amounts of Riboflavin.

### **Niacin availability (nicotinic acid)**

Significantly larger amounts of Niacin availability with 23.92 mg/person/day is noticed in Kurnool district against the standard requirement of 12.6 mg/person/day showing a surplus of 11.32 mg/person/day. Major share of Niacin availability is from oil seeds especially groundnuts (18 mg) followed by cereals (2.3 mg).

### **Availability of vitamin- c**

Vitamin C or Ascorbic Acid mostly found in fresh fruits, vegetables and sprouted grains. On the whole, the major food crops of Kurnool district supply only 34.56 mg/person/day compared to the standard requirement of 49 mg/person/day. There is a significant deficit of 14.44 mg in vitamin-C availability.

The analysis shows that on an average, there is a deficiency in the availability of Total Energy, Carbohydrates, Calcium, Iron, Vitamin A, Riboflavin and Vitamin C in the study area. A surplus has been observed in the nutrients of Protein, Fats, Thiamine and Niacin availability (Figure 1). The nutrition levels in Kurnool district is shown in Figure 2.

### **Consumption of food and their nutrient levels in SC population of Kurnool district**

Consumption of food and their nutrient composition in Scheduled Caste population of Kurnool district revealed a very unhealthy trend with consumed levels falling far behind the required levels of balanced diet. Except cereal consumption, the other foods are being consumed in very meagre quantities (Table-1). About 62% of sample Scheduled Caste population consuming more than 410 gms of cereals per day, per person against the required amount of 400 gms, with regard to the consumption of pulses and grams, about 22.5% of sample population taking more than 82 grams, 23% of samples consuming 55-82 gms, 20.5% between 28-55 grams and the remaining 3% is consuming below 28 gms/day/person against the required amount of 85 gms/day/person. On the whole, there is a poor consumption of pulses and grams in the Scheduled Caste population.

Regarding the consumption of Spices and Condiments, only 2% of sample size are taking more than 55 gms/day/person against the required amount of 57 gms/day/person. Most of the Scheduled Caste population (94%) are consuming 27-55 gms of Spices and Condiments in the district and the remaining 4% of samples are consuming less than 27 gms.

In the case of Oils & Ghee consumption, about 80% of population are having only 27-41 gms/day/person against the required level of 57 gms/day/person. The remaining 20% of

Scheduled Caste population are consuming less than 27 gms. It reveals very poor consumption of Oils & Ghee in the Scheduled Caste population of the district.

With regard to vegetable consumption, again it is stated as very poor in the samples. It is measured that only 3.5% of population is consuming more than 110 gms/day/person against the required amount of 284 gms/day/person. About 60.5% of Scheduled Caste population are partaking 82-110 gms of vegetables, 30.5% ingesting 55-82 gms and the remaining 5.5% of sample population taking the vegetables less than 55 gms/day/person. Very alarming situation prevailing in this regard.

The same trend continues with fruits consumption too. Of the total sample size, only 0.5% population consuming more than 55 gms/day/person against the required amount of 85 gms/day/person. About 75.5% Scheduled Caste population putting away 41-55 gms of fruits, 23% having 27-41 gms and 1% of population below 27 gms of fruits/day/person. Fruit consumption also revealed very poor levels in the sample Scheduled Caste population of the district.

Even in the consumption of milk and milk products too, very poor levels of intake is observed in the Scheduled Caste population of the district, against the required amount of 284 gms/day/person. About 1.5% of population consuming more than 164 gms of milk, 91.5% having 82-164 gms of milk and the remaining 7% of Scheduled Caste sample population ingesting less than 82 gms of milk/day/person.

Regarding to flesh foods, about 10.5% of Scheduled Caste population of the district using 41-55 gms of flesh foods in their daily diet per person, 69.5% samples consuming 27-41 gms and the remaining 20% of Scheduled Caste population partaking only 14-27 gms/day/person against the required amount of 85 gms/day/person. The analysis revealed that the food consumed is carbohydrate rich and poor in all other nutrients (Table-1). People are under malnutrition in terms of proteins, fats, calcium, iron and Vitamins.

## Conclusion

Study concludes that nutritional standards and availability among the Scheduled Caste people displayed unhealthy trend and far below the required levels for a balanced diet in Kurnool District, Andhra Pradesh, India. The welfare programmes of the government and non-government agencies should be planned and implemented in this direction to mitigate the under nutrition problem and to reach the levels for a balanced diet.

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