

# Body Mass Index (BMI) of the Adolescent Girls in Tribal Region of Kodaikanal District

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**Abstract:** Nutritional deficiencies in adolescence period are more prevalent in India. There are 253.2 million adolescents in India, which constitutes 20.9 percent of total Indian population. **Objective:** To assess the prevalence of under-nutrition among the tribal adolescent girls Kodaikanal region. **Methods:** A community based cross sectional study was conducted among 500 Paliyan tribal girls aged 12-19 years in tribal regions, Kodaikanal. The interview schedule was used to collect socioeconomic data and other nutritional assessments. The anthropometrical profile is a vital tool to assess the health status of the individual. Body Mass Index (BMI) was calculated by using standard method. **Results:** The results of the present work results denoted that majority of the respondents were undernourished.

**Keywords:** Body Mass Index, Adolescents, Tribal population

## 1. Introduction

Tribal communities are isolated from general population and are socially and economically disadvantaged. They constitute 8.2% of the total population of India (Census 2001). A general feature of the tribal population of the country is their exclusive geographical habitat. In view of their habitat and dietary habits, they often distinguish themselves from other population groups. Geographical isolation, primitive agricultural practices, socio-cultural taboos, poor health seeking behavior, poverty etc., leads to the development of various morbidities and under nutrition. Most of them are small communities with relatively low population growth rate compared to the rest of the population. Government of India identified 72 such tribal communities as primitive tribes. Nutritional status of population largely depends on the consumption of foods in relation to their needs, which in turn is influenced by the availability of food and purchasing power.

The tribal populations are at risk of under nutrition because of their dependence on primitive agricultural practices and uncertainty of food supply. Inadequate health care facilities and ecological degradation further aggravate the situation. The study based on Body Mass Index of school age children and adolescents denotes that the overall prevalence of thinness among 14-17 year adolescents was about 23%, with 7% having severe thinness and 16% having moderate thinness. The overall prevalence of thinness was highest in the State of Karnataka (44%) followed by Maharashtra (37%), Tamil Nadu (33%), Madhya Pradesh (21%), Kerala (20%), Andhra Pradesh and Gujarat (17% each), with lowest of about 11% in the States Orissa and West Bengal. The overall prevalence of overweight was 0.7% and that of obesity was 0.1%<sup>6</sup>.

Under-nutrition during the adolescence is an important public health problem in developing countries particularly in India. Adolescence is a period of transition from childhood to adulthood with various challenges to be overcome. Adolescence after the first year of life is the second critical

period of rapid physical growth and changes in body composition, physiology and endocrine function. Adolescents form an important vulnerable, neglected sector of population, which constitutes about 21.4 percent of Indian population<sup>1</sup>. The World Health Organization (WHO) defines adolescents as young people aged 10-19 years. There are about 1.2 billion adolescents, a fifth of the world's population, and their numbers are increasing. Four out of five live in developing countries. Many boys and girls in developing countries enter adolescence undernourished, making them more vulnerable to disease<sup>2</sup>. Achievement of optimum growth during this period is of utmost importance in maintaining good health thereafter. Under-nutrition among adolescents is a serious public health problem internationally, especially in developing countries<sup>3</sup>. Poor nutrition among the adolescents resulting in short stature and low lean body mass is associated with many concurrent and future adverse health problems<sup>4</sup>. Hence the present study focus on the Body Mass Index (BMI) was assessed to elicit the health status of the study population.

## 2. Materials and Methods

The purposive sampling method was adopted, the data was collected from the respondents were selected from the age group of 12-19 years.

### Selection of area

The school going adolescent girls was selected from various tribal regions of Kodaikanal such as Kaduthadi, Poomparai, Anjuveedu, Pannaikadu and adukkam areas.

### Development of Questionnaire

The questionnaire was developed to gather socio demographic profile, and dietary pattern of the adolescent girls. All questions were designed, pretested, modified and resettled to obtain and record information easily. Any modification necessary were then made and a final recorded, pretested questionnaire was drawn up.

### Anthropometric Assessment

The anthropometric data were collected based on standard methods. Ages of the respondents were recorded from the registration book of school. Measurements of weight and height were obtained from all subjects. The subjects were weighed wearing minimal cloths and bare footed. Three weight measurements were obtained using a bathroom weighing scale and the average was calculated and recorded to the nearest 0.1 kg. The height was measured with a wooden measuring board without shoes and the average was calculated and recorded to the nearest 0.1 cm. Body Mass Index (BMI) as the best method of measuring the nutritional status of adolescent girls. Body Mass Index (BMI) was calculated using the formula:

$$\text{Body Mass Index} = \text{Weight (kg)} / \text{Height (m}^2\text{)}$$

### Socio-Demographic Data

Information on demographic and socioeconomic variables was obtained by a structured standard questionnaire. The socio economic data such as age, educational status, monthly income, type of family, housing facilities and parents educational status were gathered from structured questionnaire.

## 3. Results and Discussion

### Socio-economic profile of the selected respondents:

**Table 1:** Socio demographic Profile of the Respondents

Variables	Percent (N=500)
<b>Age</b>	
12-14 years	50
14-16 years	30
16-18 years	20
<b>Family monthly income</b>	
Rs.1601-4809	10
Rs.4810-8009	50
Rs.8010-12019	25
Rs.1220-16019	10
Rs.16020-32049	05
<b>Type of family</b>	
Nuclear family	55
Joint family	25
Extended nuclear family	20
<b>Size of family</b>	
Small size (2-4members)	45
Medium size (5-7members)	50
Large size (above 8 members)	5
<b>Type of house</b>	
Concrete	65
Hut	15
Asbestos	20
<b>Housing facilities</b>	
Toilet	45
Television	39
Radio	42
Mobile phone	73
News paper	10
Electricity	89
Water	60
Liquid Petroleum Gas (LPG)	25

It is apparent from the table that, out of 500 adolescent's girls 50 percent belonged to the age group of 12-14 years, 30 percent belonged to 14-16 years of age group and 20 percent belonged to the age group 16-18 years.

The results shows that the majority(50 percent) of adolescents girls were from families having an income of Rs.4810-8009, 10 percent were from families earning an income ranges between Rs.1601-4809and 25 percent were from family income between Rs.8010-12019 per month.05 percent were from family income between Rs.16020-32049.From the table it is found that among the respondents 55 percent were from nuclear families, 25 percent were from extended nuclear families and 20 percent were from joint families.

The data from table reveals that, 50 percent were from medium sized families comprising of 5-7 members, 45 percent were from small families comprising of 2-4 members and 5 percent were from large sized families comprising of more than 7 members.

The data reveals that, 20 percent were residing in asbestos houses, 65percent were residing in concrete houses, and 15 percent were residing in hut.

The data's regarding housing facilities shows that majority 89 percent having electricity in their house, 25 percent of the respondents were using Liquid Petroleum Gas (LPG) for cooking and only 10 percent were obtained newspaper daily.

### Anthropometrical status of the selected respondents:

The anthropometrical measurements such as height, weight, mid arm circumference and waist hip ratio were measured from the respondent. It is effective indicator of health status. The heights, weight of the respondent were measured and body mass index (BMI) was calculated the data obtained are presented in the table 2

**Table 2:** Mean height and weight of the respondents

Variables	Values
Mean height	142.91cm
Mean weight	36.73kg

The above title shows that, the respondents mean height is 142.91cm and the mean weight is 36.73kg.

### Body mass index (BMI) of the respondents:

The body mass index (BMI) was calculated from height and weight of the respondents using standard formula. Hence the dada were presented in table 3

**Table 3:** Body Mass Index

Body mass index(BMI)	Percent(N=500)
Under weight	52
Normal weight	38
Over weight	10
Obesity	-

The present table reveals the 50 percent of the respondents were under nourished. 38 percent were had a normal Body Mass Index (BMI), only 10 percent were overweight and none of them were obese.

#### 4. Conclusion

The results of the Body Mass Index (BMI) show that the majority of the study populations were under nourished. The tribal populations from Kodaikanal region were still under developed condition. Their socio economic profile of the adolescent girls was very poor. The health status might be increased by better living condition. The lower income status of the respondents might be a factor for under nourishment.

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