



## DIETARY ASSESSMENT OF TRIBAL ADOLESCENT GIRLS OF GOND MADIA COMMUNITY FROM GADCHIROLI DISTRICT OF Maharashtra

**Yogita Sanap<sup>1</sup>, Prerna Dhumal<sup>1</sup> and Kalpana Jadaho<sup>2</sup>**

<sup>1</sup>Krishi Vigyan Kendra, Panjabrao Deshmukh Agriculture University, Gadchiroli, (MS) India

<sup>2</sup>Dept of Home Science, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur (MS) India  
yogi.active@gmail.com

### Abstract:

Dietary habits and food preferences which affect energy consumption and nutrient intake are generally developed over a period of time and particularly during adolescence. Nutritional status during adolescence plays an important role in human life cycle. The aim of this study was assessment of dietary intake among adolescent girls. By using purposive sampling method 278 adolescent girls of age group 13-15 years were selected from Korchhi and Bhamragad blocks of Gadchiroli district. 24 h recall method was used to assess nutrient intake. Nutrient intake was compared with recommended dietary allowances (RDA), Calorie intake of adolescent girls belonging to age group 13, 14 and 15 years was 1301.6±95.2 Kcal/d, 1299.6±95.4 Kcal/d and 1299.5±92.0 Kcal/d, respectively. Carbohydrate consumption of adolescent girls belonging to age group 13, 14 and 15 years was 193.3±19.9 g/d, 193.6±19.9 g/d and 193.2±19.5 g/d, respectively. Protein consumption of girls belonging to age group 13, 14 and 15 years was 40.9±4.8 g/d, 40.1±4.9 g/d and 40.5±4.8g/d, respectively. Adolescent girl belonging to age group 13 year, 14 year and 15 year was significantly (P<0.05) less than recommended daily allowance of Fat. Calcium intake of girls belonging to age group 13, 14 and 15 years was 332.2±50.0 mg/d, 329.2±49.4 mg/d and 332.8±49.5 mg/d respectively, average iron intake of girls belonging to age group 13, 14 and 15 years was 14.1±1.0 mg/d, 14.5±1.0 mg/d and 14.1±2.3 mg/d respectively. Findings of our study showed that nutrient deficit is a major problem among adolescent girls.

**Keywords:** Nutritional status, dietary intake, adolescent girls.

### Introduction

India is the second most populous country in the world with total population of over 1081 million. Adolescents form a large section of population, about 22.5 percent, that is, about 225 million. Adolescent has been defined by World Health Organization as the period of life spanning between 10-19 years. They are no longer children, but not yet adults.

Gonds (derived from Telgu word 'Konda' meaning hills) are a tribal people who largely inhabit in various regions of central India including Madhya Pradesh. Kodo and Kutki (minor millets) constitute staple diet of the Gonds. Rice is a ceremonial food which the Gond people consume during festival time. They also eat meat.

Nutritional status during adolescence plays an important role in human lifecycle. The global economic development and urbanization has resulted a great changes in the weight status of adolescent worldwide. Considering the fact that improving the health status of adolescent girls, as future mothers, will ensure the health of future generation, We hope the results of this study can be used for designing relevant intervention programs that will address the needs of this age group of the community.

### Objectives of Study

- 1.To study the meal pattern and food habits of adolescent girls of Madia Gond community of Gadchiroli district.
- 2.To record the dietary information of Gond Madia adolescent girls by 72 hrs recall with the help of questionnaire cum interview schedule.
- 3.To compute nutritive value of diet and compare it with RDA to check nutrient deficiency if any.

### Methodology

Adolescence a period of transition between childhood and adulthood is a significant period of human growth which occurs with unique changes during this phase of life.

### Selection & size of Sample

The study was conducted on 278 madia adolescent girls of age 13-15 years from Gadchiroli district, Maharashtra, India.

### Collection of Data:

The information required for the study was collected by using interview cum questionnaire schedule.

**Dietary assessment:-** Dietary assessment is a blanket term for any method used in diet surveys. In dietary assessment food habits and 3 days meal plan was recorded. Daily intake of all macronutrients was calculated along with

some micronutrients and they were compared with RDA.

#### **Pilot Study**

A pilot study was conducted to estimate the reliability and validity of the research instrument.

#### **Statistical Analysis of Data and Significance Level**

The descriptive statistics, such as mean, standard deviation, frequency, percentage, minimum and maximum, etc. were determined from the collected data. The comparative assessment was done using single group 't' test.

### **Results And Discussion**

Poor nutritional status during adolescence is an important determinant of health outcomes, especially for the females. The inadequate nutrition leads to underdevelopment such as short stature in adolescents. In adolescent girls, short stature that persists into adulthood is associated with increased risk of adverse reproductive outcomes. Hence, in this study the dietary intake of the adolescent girls belonging to Madia-Gond tribe of Gadchiroli District of Maharashtra has been determined.

#### **Food Habits And Meal Pattern**

In human societies, eating is a patterned activity. Social constraints usually determine how many meals are to be ingested daily, and when meals are or are not appropriate. There is no clear, consistent evidence linking daily number of eating occasions and body structure. Hence, it was important to know the meal pattern and food habits of an individual which were determined and the results are as follows.

Table No. 1.1 shows information pertaining to food habits and meal pattern of adolescent girls. It was apparent from the information that all i.e. 100% girls were non-vegetarian along with that 100% adolescent girls follow BLSD meal pattern i.e. breakfast, Lunch, snacks and Dinner.

#### **Calorie (K. Cal.)**

In view of the importance of consumption of calories in day to day life, the data was collected from the adolescent girls of the study region and the results are presented as follows.

**Table 1.2** shows assessment of average calorie intake per day by madia adolescent girls belonging to different age groups. It was observed from the data that average calorie intake of adolescent girls belonging to age group 13, 14 and 15 years was 1301.6±95.2 Kcal/d, 1299.6±95.4 Kcal/d and 1299.5±92.0 Kcal/d, respectively. It was significantly ( $P < 0.05$ ) less than that recommended.

#### **Carbohydrate Consumption**

Carbohydrates provide the body with fuel to burn for energy. In the backdrop of importance of the carbohydrate consumption, the data was collected from the adolescent girls belonging to Madia-Gond community of Gadchiroli and the results are presented in following Table.

**Table 1.3** show assessment of mean daily carbohydrate consumption by Madia Gond adolescent girls belonging to different age groups. On the basis of the data it is evident that average carbohydrate consumption of adolescent girls belonging to age group 13, 14 and 15 years was 193.3±19.9 g/d, 193.6±19.9 g/d and 193.2±19.5 g/d, respectively. Results of assessment between actual daily carbohydrate consumption and Standard value which is calculated by difference (of carbohydrate) showed that daily carbohydrate consumption by adolescent girl was significantly ( $P < 0.05$ ) less than standard.

Growth, health and efficiency of population are determined by adequate food supply in furnishing all the essential nutrients in required quantities. Adolescence is a period of rapid growth (Nutritional Research Council, 1970) and hence the Recommended Dietary Allowances (RDA) for several nutrients are greater in the age group of adolescence than in the other age groups (National Research Council, 1974). Adolescence is the most active period of life because of the double demands of activity and growth and therefore, the food needs are considered to be extremely important and high.

**Protein:** Proteins are the building blocks of life and every cell in the human body contains protein. In view of importance of the protein in diet and growth and development in general, the data pertaining to protein consumption was collected from the adolescent girls belonging to Gond-Madia community.

**Table 1.3** shows assessment of average protein consumption (per day) by adolescent girls belonging to different age groups. On the basis of the data it was evident that average protein consumption of girls belonging to age group 13, 14 and 15 years was 40.9±4.8 g/d, 40.1±4.9 g/d and 40.5±4.8g/d, respectively. Results of assessment of daily protein consumption of adolescent girls of different age groups and RDA of protein showed (in protein consumption) that intake of protein was significantly ( $P < 0.05$ ) less than the RDA of Protein.

Sarupriya and Mathew (1988) observed that the intake of proteins by the adolescents from the village Gogunda of Rajasthan was much higher than that of RDA for that of same age, thus, our results are contradictory to those reported earlier. Thus, in the present study, there appears to be the food consumption pattern, which is a determinant of the protein consumption amongst the adolescent girls belonging to Madia Gond tribe of Gadchiroli District.

#### Fats:

Fat is a concentrated source of energy and provides essential building blocks for the cells in the body. **Table 1.3** shows assessment of daily fat consumption by Madia Gond adolescent girls belonging to different age groups. It was apparent from the information that average fat consumption of Madia Gond adolescent girls belonging to age group 13 year, 14 year and 15 year was  $39.4 \pm 0.8$  g/d,  $39.3 \pm 0.8$  g/d, and  $39.3 \pm 0.8$ g/d, respectively. Results of assessment of daily fat consumption of Madia Gond adolescent girls of different age groups and Recommended daily allowance of fat indicated that daily fat consumption by Madia Gond adolescent girl belonging to age group 13 year, 14 year and 15 year was significantly ( $P < 0.05$ ) less than recommended daily allowance of Fat.

The results obtained in this study are congruent to those reported earlier by Sarupriya and Mathew (1988), who studied the nutritional status of tribal adolescents of 16 to 18 years of age of Gogunda village of Rajasthan. They also indicated deficiencies of one or more nutrients like calcium, iron, vitamin A, riboflavin and niacin along with Hb in more than 88.07 per cent of the adolescents.

**Calcium:** **Table 1.3** shows comparative assessment of daily Ca intake by adolescent girls belonging to Madia Gond tribe. The study results show that average Ca intake of girls belonging to age group 13, 14 and 15 years was  $332.2 \pm 50.0$  mg/d,  $329.2 \pm 49.4$  mg/d and  $332.8 \pm 49.5$  mg/d respectively before undergoing nutritional education training. There is a need to further educate these girls so as to expect desired Ca intake.

Many past studies have confirmed that Ca is a mineral that the human body needs to build and maintain strong bones and teeth and also normal physiological functions of the body. McKenna et al., (1997) have reported that Ca intake up to the threshold amount increases bone mass during growth. However, our results show that there is remarkable deficiency in the Ca intake by the adolescent girls belonging to Madia-Gond tribe, which shows their vulnerability towards inappropriate growth physical growth. Hence, the results suggest that increasing the Ca will have positive effect on the overall growth and development of these adolescent females.

**Iron:** **Table 1.3** shows daily iron intake by adolescent girls of Madia Gond tribe. The results indicated that average iron intake of girls belonging to age group 13, 14 and 15 years was  $14.1 \pm 1.0$  mg/d,  $14.5 \pm 1.0$  mg/d and  $14.1 \pm 2.3$  mg/d respectively. However, there is still need to carry on the awareness intervention so as to expect consumption of correct quantity of Iron by these girls.

Saibaba et al., (2002) on the basis of their study focusing on the nutritional status of adolescent girls reported that methods focusing on Information, Education and Communication should be practiced to improve their nutritional knowledge.

**Table 1.1:** Distribution of the adolescent girls with respect to their food habits and meal pattern

| Meal Pattern      | Yes |            | No  |            |
|-------------------|-----|------------|-----|------------|
|                   | No. | Percentage | No. | Percentage |
| BLSD              | 500 | 100        | –   | –          |
| BLD               | –   | –          | –   | –          |
| LBD               | –   | –          | –   | –          |
| LD                | –   | –          | –   | –          |
| <b>Food Habit</b> |     |            |     |            |
| Vegetarian        | –   | –          | –   | –          |
| Non- Vegetarian   | 500 | 100        | –   | –          |

**Table 1.2:** Assessment of daily calorie (kcal) intake by Madia Gond adolescent girls belonging to different age groups

| Age Group (Yrs.) | N  | Mean   | SD    | S.V. | % Deficit | Min.   | Max.   | MD     | 't'   | P     |
|------------------|----|--------|-------|------|-----------|--------|--------|--------|-------|-------|
| 13               | 96 | 1301.6 | ±95.2 | 2330 | 44.1      | 1193.7 | 1421.3 | 1028.3 | 105.8 | <0.05 |
| 14               | 95 | 1299.6 | ±95.4 | 2330 | 44.2      | 1193.7 | 1421.3 | 1030.3 | 105.2 | <0.05 |
| 15               | 87 | 1299.5 | ±92.0 | 2330 | 44.2      | 1193.7 | 1421.3 | 1030.4 | 104.4 | <0.05 |

**SD**-Standard Deviation; **S.V.**- Standard Value; **Min**-Minimum; **Max.**-Maximum; **MD**-Mean Difference, **'t'**- 't' Value; **P**- P Value

**Table 1.3** Assessment of mean daily nutrient consumption by Madia Gond adolescent girls belonging to 13-15 age group.

| Age Group (Yrs.) | Nutrients (Gm/Mgm/G/dl) | N  | Mean  | SD    | S.V.  | % Deficit | Min.  | Max.  | MD    | 't'   | P     |
|------------------|-------------------------|----|-------|-------|-------|-----------|-------|-------|-------|-------|-------|
| 13               | CHO (gm)                | 96 | 193.3 | ±19.9 | 440.5 | 56.1      | 174.1 | 217.3 | 247.1 | 121.7 | <0.05 |
|                  | Protein (gm)            | 96 | 40.9  | ±4.8  | 51.9  | 21.1      | 33.0  | 45.5  | 10.8  | 22    | <0.05 |
|                  | Fat (gm)                | 96 | 39.4  | ±0.8  | 40    | 1.4       | 38.6  | 40.6  | 0.5   | 6.5   | <0.05 |
|                  | Calcium (mg)            | 96 | 332.2 | ±50.0 | 800   | 58.4      | 287.4 | 403.4 | 467.7 | 91.3  | <0.05 |
|                  | Iron (mg)               | 96 | 14.1  | ±1.0  | 27    | 47.5      | 16.9  | 22.5  | 12.8  | 32.7  | <0.05 |
| 14               | CHO (gm)                | 95 | 193.6 | ±19.9 | 440.5 | 56.0      | 174.1 | 217.7 | 246.8 | 120.9 | <0.05 |
|                  | Protein (gm)            | 95 | 40.1  | ±4.9  | 51.9  | 22.6      | 33.0  | 45.5  | 11.7  | 22.9  | <0.05 |
|                  | Fat (gm)                | 95 | 39.3  | ±0.8  | 40    | 1.5       | 38.6  | 40.6  | 0.6   | 7.3   | <0.05 |
|                  | Calcium (mg)            | 95 | 329.2 | ±49.4 | 800   | 58.8      | 287.4 | 460.5 | 470.7 | 92.7  | <0.05 |
|                  | Iron (mg)               | 95 | 14.5  | ±1.0  | 27    | 46.3      | 16.0  | 21.8  | 12.5  | 33.2  | <0.05 |
| 15               | CHO (gm)                | 87 | 193.2 | ±19.5 | 440.5 | 56.1      | 174.1 | 217.3 | 247.2 | 118.1 | <0.05 |
|                  | Protein (gm)            | 87 | 40.5  | ±4.8  | 51.9  | 21.8      | 33.0  | 45.1  | 11.3  | 21.7  | <0.05 |
|                  | Fat (gm)                | 87 | 39.3  | ±0.8  | 40    | 1.5       | 38.6  | 40.6  | 0.6   | 7.1   | <0.05 |
|                  | Calcium (mg)            | 87 | 332.8 | ±49.5 | 800   | 58.3      | 287.4 | 403.4 | 467.1 | 87.9  | <0.05 |
|                  | Iron (mg)               | 87 | 14.1  | ±2.3  | 27    | 47.6      | 8.8   | 17.9  | 12.8  | 31.4  | <0.05 |

**SD**-Standard Deviation; **S.V.**- Standard Value ( by difference), **Min**-Minimum; **Max.**-Maximum; **MD**-Mean Difference, **'t'**- 't' Value; **P**- P Value

### Conclusion:

From the above results we can strongly conclude that nutrient deficiencies are observed in the diets of adolescent gond-madia girls.

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