

Nutritional Profile of Tribal Adolescent Girls of Ranchi District of Jharkhand



Home Science

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ABSTRACT

The present study was conducted on 100 tribal adolescent girls belonging to two blocks of Ranchi district of Jharkhand. The study revealed that majority of households belonged to nuclear families with medium family size and farming as their primary occupation. Except cereal, the diet of adolescent girls was far below the recommended amount. The percent adequacy of only roots & tubers and green leafy vegetables were 74 and 68 percent, respectively. For rest of the food stuffs the percent adequacy was found to be between 16- 56 percent. The daily intake of fat, protein, calcium, iron and β carotene was grossly deficient in comparison to ICMR recommendations. The study further revealed that girls were having lower anthropometric measurements indicating poor physical growth pattern.

INTRODUCTION

Adolescents who constitute about 25% of the total population are future generation of the country and their nutritional needs are critical for the well-being of society and demand a special attention. The foundation of adequate growth and development is laid before birth, during childhood, and is followed during adolescence. The period represents an important physiological phase of life characterized by rapid growth and development both physical and physiological (Heald, 1969).

The high rate of malnutrition in girls not only contributes to increase morbidity and mortality associated with pregnancy and delivery, but also to increased risk of delivering low birth – weight babies. This contributes to the intergenerational cycle of malnutrition. Nutritional status during early adolescence has great influence on adolescent growth spurt and age at menarche. This is a key period for adult dietary pattern. Nutritional requirement in terms of body mass is more because of growth spurt, both linear and body cell mass, during adolescence. Thus, nutritional pattern in these years has special significance. Intake of nutrients by adolescents is likely to be influenced by the characteristics of their life styles, which may affect their food habits as well as their physiological requirements for nutrients. It is important to know the health and nutritional status of this group so that corrective measures can be implemented in time to prevent high mortality and morbidity. Moreover information on the nutritional status of adolescent girls is still insufficient particularly with respect to tribal belt of Jharkhand. Keeping this in view, a study was conducted to assess the nutritional profile of tribal adolescents in Ranchi district of Jharkhand.

MATERIALS AND METHODS

Selection of the study area: The study was conducted in the Ranchi district of Jharkhand and two tribal dominated blocks namely Kanke and Murhu were selected randomly. List of tribal dominated villages were procured from block development officer. Two tribal dominated villages from each block i.e. Rarha and Okargara from Kanke block and Charid and Bichana from Murhu block were selected randomly.

Selection of sample:

A total of 100 adolescent girls belonging to age group of 13 – 15 years were selected randomly from selected villages.

Collection of data

Diet survey was conducted during the month of May to August. The information on dietary intake was collected by 24-hour recall method followed by one day weightment method. The nutrient intake was calculated with the help of Indian Council of Medical Research Bulletin. The diet and nutrient was compared with recommended dietary intake (RDI) (NIN, 1998) and recommended dietary allowances (ICMR, 2002), respectively.

Anthropometric measurements like height, weight, triceps skin fold and mid – arm circumference were taken as per standard method of Jelliffe (1966). Mean height and weight values were compared with standards of NCHS (1987) and values of tri-

ceps skin fold and mid arm circumference were compared with standards (Vijayaraghavan K, et al, 1974)

The body mass index was calculated using the equation given by Garrow (1981)

$$\text{BMI} = \frac{\text{Weight (Kg)}}{\text{Height (m)}^2}$$

RESULTS AND DISCUSSION

Dietary intake :

The mean Food intake of girls are presented in table 1. Diet of adolescent girls were predominantly cereal based and on an average adolescent girls consumed 501 g cereal which was 167 percent of recommended dietary intake (NIN 1998). Mean intake of pulse was 9.98g, indicating a deficiency of 84 percent. Similarly lower intakes of pulse in adolescents have been reported by Rani and Sehgal (1994). The intake of green leafy vegetables, roots and tubers, other vegetables and fruits were found significantly lower than RDI. Mean intake of fats and oil was 6.21g indicating a deficiency of 75 percent. Less intake of green leafy vegetables, fruits as well as fats & oil has been reported by Rani and Sehgal (1994).

Nutrient intake:

The mean intake of nutrients by adolescent girls is presented in Table 2. The mean daily energy intake of adolescent girls was 1957 calorie, which was 95 percent of RDA. The intake of protein was 40 g and was significantly deficit when compared with RDA. Gross deficit was also noted in fat, calcium, iron and β - carotene intake by adolescent girls. These findings were in accordance with earlier study that suggest lower intake of nutrients by adolescent girls (Rani and Sehgal, 1994).

Frequency distribution of adolescent girls according to nutrient intake is presented in Table 3. It is evident that only 46 and 2 percent of adolescents girls were found secured in terms of energy and calcium intake, respectively, whereas cent percent adolescent girls were insecure with regard to protein, fat, iron and β - carotene intake.

Anthropometric Profile:

Anthropometric profiles of adolescent girls are given in Table 4. Mean height was 147.21 cm, which was 93 percent of the reference value. Mean weight of girls was 38.98 kg, which was significantly lower than reference values. The perusal of mean mid arm circumference data revealed that there were non significant variations in mid arm circumference of observed and reference values, whereas Triceps skin fold and body mass index were significantly lower than the standard values.

CONCLUSION

Hence, it may be concluded that dietary and nutrient intakes of tribal adolescent girls were inadequate. Except cereal, the intakes of other foods were far below the recommended amount. The percent adequacy of only roots and tuber and green leafy vegetables was 74 and 68 percent, respectively. For rest of the

foodstuffs, the percent adequacy was found to be between 16 – 56 percent. Gap between mean intake of all nutrients particularly micronutrients were far below the R.D.A. Cent percent adolescent girls were found insecure with regard to protein, fat, iron and β – carotene . The study indicated that girls were having lower anthropometric measurements and thus poor physical growth pattern. To improve the food security status of adolescent girls and their family, dissemination of low cost sustainable agricultural technologies along with nutrition education need to be given importance.

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TABLE 1: Mean food intake of adolescent girls

Food	Observed intake (g/day)	RDI	Percent of RDI	P*
Cereal	501.50 $\pm$ 65.84	100	167	$p \leq 0.01$
Pulse	9.98 $\pm$ 6.70	60	16	$p \leq 0.01$
CLV	67.72 $\pm$ 2689	100	68	$p \leq 0.01$
Root and Tubers	74.65 $\pm$ 31.12	100	74	$p \leq 0.01$
Other Vegetable	55.72 $\pm$ 34.08	100	56	$p \leq 0.01$
Fats & oil	6.21 $\pm$ 3.27	25	25	$p \leq 0.01$
Fruit	18.43 $\pm$ 12.56	100	18	$p \leq 0.01$

Values are Mean $\pm$ SD

NS- Non significant

RDI- Recommended dietary intake (NIN, 1988)

P'- level of significance of 'T' test for comparison of intake with RDI

TABLE 2: Mean nutrient intake of adolescent girls

Nutrient	Intake (n=100)	RDA	Percent of RDA	P*
Energy (K. Cal)	1957.00 $\pm$ 268.68	2060	95	N.S.
Protein (g)	40.63 $\pm$ 6.21	65	65	$p \leq 0.01$
Calcium (mg)	202.51 $\pm$ 114.93	600	34	$p \leq 0.01$
Iron(mg)	14.815 $\pm$ 14	28	53	$p \leq 0.01$
Fat(g)	8.672 $\pm$ 92	22	39	$p \leq 0.01$
B – Carotene (μ g)	973.83 $\pm$ 10.86	2400	40	$p \leq 0.01$

Values are Mean $\pm$ SD

NS- Non significant

RDA- Recommended dietary allowances of ICMR (1989)

P'- level of significance of 'T' test for comparison of intake with RDA

TABLE 3: Percentage distribution of adolescent girls (n=100) according to nutrient intake.

Nutrition	Secure	Insecure
Protein	-----	100
Fat	-----	100
Calcium	2	98
Iron	-----	100
Energy	46	54
B – Carotene	-----	100

TABLE 4: Anthropometric measurements of adolescent girls

Anthropometric Measurement	Observed Value	Reference Value	Percent of reference value	P
Height (cm)	147.21 $\pm$ 6.38	157.9 ^a	93	$p \leq 0.01$
Weight (kg)	38.98 $\pm$ 7.06	47.97 ^a	81	$p \leq 0.01$
Mid – arm				
Circumference (cm)	21.10 $\pm$ 2.60	21.22 ^d	99	$p \leq 0.01$
Triceps Skin fold(cm)	6.05 $\pm$ 3.17	12.55 ^d	48	$p \leq 0.01$
BMI	17.09 $\pm$ 2.54	18.60 ^a	96	$p \leq 0.01$

Source a = NCHS

b = Agarwal et al (2001)

c = Vijayeraghaven et al (1974)

Values are Mean $\pm$ SD

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