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Assessment of nutrient adequacy among the adolescent of Pratapgarh district

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Abstract
The study was conducted with the objective to assess the nutrient intake of adolescent's in pratapgarh district. A total 380 respondent (190 boys and 190 girls) were selected from Saket Degree College and Krishna Prasad Hindu College of Pratapgarh district for the study. A pretested schedule was prepared for collecting the data. The nutrient intakes of the respondents were compared them with their RDA. The result revealed that the nutrient intakes were lower than the RDA. The adequacy ratio for iron and calcium were inadequate among the adolescent.

Keywords: pratapgarh, nutrient, adolescent, RDA

Introduction
Adolescence commonly defined as the time between the onset of puberty and adulthood. This maturation process involves both physical growth and emotional maturation. The adolescent period is characterized by its rapid physical and psychological changes in the individual, together with increasing demand from and influence of peers, school and wider society. During adolescence, young people are in transition period when they gradually take over the responsibility for their own eating habits. Adolescents need more calories during this period than they will ever need again in their lives. Therefore it was planned with the objective to assess the nutrient intake of adolescent's in pratapgarh district.

Materials and Method
A total 380 respondent (190 boys and 190 girls) were selected from Saket Degree College and Krishna Prasad Hindu College of Pratapgarh district for the study. A pretested schedule was prepared for collecting the data. The nutrient intakes of the respondents were compared them with their RDA suggested by ICMR, 2011 [3]. For all boys and girls the daily intake of nutrient were converted into percentage of RDA or per cent adequacy and the average of the total for boys and girls was calculated.

$$\text{Percentage of RDA met / NAR} = \frac{Average\ Nutrient\ intake}{RDA} * 100$$

Where, RDA is recommended daily (dietary) allowances.
The standard range for adequacy was shown in table 1 (WHO, 2002) [4]. Appropriate statistical technique was to analysed the data.

Table 1: Range for adequacy

Category	Range
+Adequate	100 percent and above of RDA
*Marginally adequate	75-99.9 percent of RDA
**Marginally inadequate	50-74.9 percent of RDA
***Substantially inadequate	Below 50 percent of RDA

***Source*:** WHO, 2002 [4]

Result and Discussion
The table 2 and 3 shows the average nutrients intake by the adolescent girls and boys aged 10 to 17 years with references to energy, protein, carbohydrate, calcium and iron. After comparing the average nutrients intake of respondents with ICMR, RDA (2010) it was observed that energy, protein, carbohydrate, vitamin A, calcium and iron intake was found less than the RDA but the fat intake was higher than the RDA. On applying Z-test, significant differences were found between the intake and RDA for calories, protein, fat, calcium and

iron. According to Aazam *et al.*, (2013) [1] the intake of energy and some micronutrients such as vitamin B_{12}, folate, calcium, zinc, and fiber when compared with DRI recommended values showed that energy, vitamin B_{12}, folate, calcium, and zinc intake among adolescent girls was significantly lower than the normal range ($p<0.0001$). In an-another study on Northern Greece adolescents, Hassapidou and Fotiadou (2001) [2] reported that iron, vitamin A, and folate intake were lower than recommended values.

The table 4 shows the nutrient adequacy ratio for adolescent girls. It was clear from the table that fat and carbohydrate were adequate. The iron and calcium intake was marginally inadequate among all the adolescent girls. The table 5 shows the nutrient adequacy ratio for adolescent boys. The results shows that the fat was adequate as the intake of fat was more than the RDA. The energy and calcium was marginally inadequate for 10 to 15 years whereas for 16 – 17 years it was marginally adequate. The adequacy ratio for protein was marginally adequate for all the adolescent boys. The NAR for iron was marginally inadequate for boys aged 13-15 whereas it was marginally adequate for 10-12 years and 16-17 years adolescent boys.

Table 2: Average Intake of Nutrients in the Daily Diet of adolescent girls (10-17)

Nutrient	10-12		13-15		14-17	
	OMV	RDA	OMV	RDA	OMV	RDA
Energy (kcal)	1242*	2010	1505*	2330	1751*	2440
Protein (g)	29.1*	40.4	28.1*	51.9	32.7*	55.5
Fat (g)	52.01*	35	59.8*	40	39.4*	35
Carbohydrate (g)	196.8	201	212.4	233	239.4	244
Calcium (mg)	489.5*	800	478.71*	800	493.45*	800
Iron (mg)	13.1*	27	13.98*	27	14.3*	26

*****Significant, OMV- Observed Mean Value

Table 3: Average Intake of Nutrients in the Daily Diet of adolescent boys (10-17)

Nutrient	10-12		13-15		14-17	
	OMV	RDA	OMV	RDA	OMV	RDA
Energy (kcal)	1587*	2190	1997*	2750	2437*	3020
Protein (g)	30.1*	39.9	42.01*	54.3	51.2*	61.5
Fat (g)	53.4*	35	60.7*	45	60.2*	50
Carbohydrate (g)	210.64	219	201.1	275	279.4	302
Calcium (mg)	516.6*	800	558.9*	800	713.4*	800
Iron (mg)	17.9*	21	19.27*	32	21.4*	28

Table 4: Percentage of RDA met / NAR (Nutrient Adequacy Ratio) of adolescent girls

Nutrient	Nutrient Adequacy Ratio		
	10-12	13-15	16-17
Energy (kcal)	61.79++	64.59++	74.76+++
Protein (g)	72.56++	54.14+++	58.9+++
Fat (g)	148.6+	149.8+	112.57+
Carbohydrate (g)	97.9++	91.11+	98.1+
Calcium (mg)	61.18+++	59.83+++	54.93+++
Iron (mg)	48.51++++	51.77+++	55+++

Range for adequacy: - +Adequate, ++Marginally adequate, +++Marginally inadequate, ++++Substantially inadequate (WHO, 2002) **[4]**

Table 5: Percentage of RDA met / NAR (Nutrient Adequacy Ratio) of adolescent boys

Nutrient	Nutrient Adequacy Ratio		
	10-12	13-15	16-17
Energy (kcal)	72.46+++	72.61+++	80.69++
Protein (g)	75.43++	77.36++	83.25++
Fat (g)	152.57+	134.88+	120.4+
Carbohydrate (g)	96.18++	73.12+++	92.5+
Calcium (mg)	64.45+++	69.86+++	89.17++
Iron (mg)	85.23++	60.21+++	76.42++

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