International Journal of Academic Research and Development
ISSN: 2455-4197
Impact Factor: RJIF 5.22
www.academicsjournal.com
Volume 2; Issue 6; November 2017; Page No. 1250-1252

A comparative study: Mean daily food intake of adolescent girls of Rohtak City, Haryana

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Abstract
Adolescence are threshold of adulthood. Inadequate diet and unfavourable environmental condition in developing nations like India may adversely affect the growth and nutrition of adolescents. Malnutrition both under nutrition and over nutrition refers to an impairment of health, resulting from a deficiency or from an excess or imbalance of nutrients. The present study was conducted in Rohtak district of Haryana to assess the nutritional status of adolescent girls of 16-18 years. A total of 300 adolescent girls were selected from two different colleges in the study area to find out the difference of mean daily food intake of adolescent girls of govt. and private college. It was found that mean intake of fruits, vegetables, cereals, pulses, milk and milk products, sugar and jaggery and fats and oils was lower than RDA given by ICMR(2010) of both the colleges.

Keywords: adolescent girls, food intake, nutritional status

Introduction
Adolescence can be defined biologically, as the physical transition marked by the onset of puberty and the termination of physical growth; cognitively, as changes in the ability to think abstractly and multi-dimensionally or socially, as a period of preparation for adult roles. It is transitional stage of human lifecycle where they face different kind of physiological change. Various studies on nutritional status assessment of adolescent girls have been carried out and have shown that mean intake of fruits, vegetables, cereals, pulses, milk and milk products was lower than RDA (2010) in majority of girls as they were figure conscious and influenced by peers, advertisements etc. (Latesh and Garg, 2015) [2]. Technology has also become a contributing factor as adolescents engage in "Screen time" which consists of television, movies, games, internet and more. Sitting in this type of medium does nothing but promote unhealthy foods as children are bombarded with fast food commercials.

Review of Literature
Singla and Dhillon (2013) [4] assessed the meal pattern and food intake for 60 adolescent girls aged 16-18 years of working mothers and reported that majority of subjects were in the habit of skipping at least one meal daily as they were not following healthy eating patterns and dietary habits. The daily intake of cereals, pulses and roots and tubers was marginally inadequate so there is a great need to impart nutritional counselling for longer duration to improve the nutritional status of adolescent girls by including high fibre foods like whole grain cereals, whole pulses, fruits and vegetables in their diet.
Nutritional survey of 100 adolescent girls of Haryana was conducted and it was found that mean intake of fruits, vegetables, cereals, pulses, milk and milk products and sugar and jaggery was lower than RDA given by ICMR (2010) [1]. Eating fast foods, skipping meal and low intake of fruits and vegetables were the common dietary habits recorded during this study and this would lead to poor intake of nutrients. The result showed prevalence of malnutrition and anemia in adolescent girls. (Latesh and Garg, 2015) [2].
Sharma (2015) [3] carried out a study on eating pattern, nutritional status and anaemia-related knowledge in rural adolescent girls of Panipat (Haryana) of 300 adolescent girls aged 13-18 years and reported that habitual eating pattern indicated poor consumption of pulses, milk, leafy vegetables and fruits. Food intake data revealed mean intakes of protein, calcium, iron; vitamin C and vitamin A were significantly lower than RDA. Anthropometric data indicated that about 22% of the participants were underweight, 72% were normal and only 6% were overweight.

Material and Methods
The present study was conducted on adolescent girls in the age group of 16-18 years. Total 300 adolescent girls i.e.150 from govt college and 150 from private college were selected proportionately for the study from the Rohtak district, Haryana. Comparison of mean daily intake of food consumption of govt. and private college girls were assessed by 24 hr recall method.

Result and Discussion
Data regarding comparison of mean daily food intake of adolescent girls and comparison b/w govt. and private college have been presented in Table-1 and 2. Out of 300 respondents surveyed, 50 per cent were from Govt. College and 50 percent were from Private College.

Table 1: Mean Daily Food Intake of Adolescent Girls (16-18 years) (n=300)

Food Stuffs (g)	Recommended Dietary Intake (g)	Mean daily food intake	z-value	Overall intake %age of RDI
Cereals	330	237.46±28.49	-56.42**	71.95
Pulses	75	30.02±3.57	-214.19**	40.02
Milk & Milk products	500	256.56±29.13	-144.90**	51.31
Roots & Tubers	200	57.51±30.45	-80.96**	28.75
Green Leafy Vegetables	100	58.54±6.54	-109.10**	58.54
Other Vegetables	200	78.58±11.79	-178.55**	39.29
Fruits	100	75.21±9.46	-45.07**	75.21
Sugars & Jaggery	25	17.45±1.48	-83.88**	69.80
Fats & Oils	35	16.04±2.11	-158.00**	45.82

Values are mean ± SD
RDI- Recommended Dietary Intake (ICMR 2010) [1]
Z-value shows comparison of nutrients intake with RDI
** Significant at 5% level

Cereals
The mean daily cereals intake of the adolescent girls of both (govt. and private college) was 237.46 g which was 71.95 per cent of RDI (Table 1). The mean daily cereals intake of govt. and private college girls were 229.70 g and 245.21 g, respectively (Table 2). It was found that the intake of cereals by private college girls significantly (P≤0.05) higher than govt. college girls.

Pulses
The data presented in Table 1 indicates that daily mean intake of pulses among adolescent girls (16-18 years) was 30.02 g which was only 40.02 per cent of RDI. The mean daily pulses intakes of govt. and private college girls were 29.25 g and 30.80 g, respectively (Table 2). It was found that intake of pulses was significantly (P≤0.05) higher by govt. college girls than private college girls.

Milk and milk products
The mean daily intake of milk and milk products of adolescent girls was 256.56 g which was 51.31 per cent of the RDI (Table 1). Further, results revealed that consumption of milk and milk products was higher in girls of private college (264.65g) as compared to girls of govt. college (248.47 g) and the differences were significant (P≤0.05) (Table 2).

Roots and Tubers
The intake of roots and tubers by adolescent girls was 57.51 g/day which was significantly (P≤0.05) lower than the RDI (Table 1). It was observed that intake of roots and tubers were significantly (P≤0.05) lower in girls of govt. college (54.44 g) than in girls of private college (60.58 g) (Table 2).

Green Leafy Vegetables
Table 1 showed the mean daily intake of green leafy vegetables of adolescent girls and it was 58.54 g (58.54% of RDI) and it was significantly (P≤0.05) lower than the RDI. The consumption of green leafy vegetables was significantly (P≤0.05) lower in girls of govt. college (57.42) as compared to girls of private college (59.65) as showed in Table 2.

Other Vegetables
The daily mean intake of other vegetables of adolescent girls was 78.58 g (39.29 % of RDI) (Table 1). The intake of other vegetables was significantly (P≤0.05) lower than RDI. It was found in Table 2 that daily mean intake of other vegetables by girls of govt. college was significantly (P≤0.05) lower than private college girls.

Fruits
Data in Table 1 revealed that the mean daily intake of fruits of adolescent girls were 75.21g. The fruits intake was significantly (P≤0.05) lower than RDI. The mean intake of fruits was found to be significantly higher in private college girls (78.40 g) than the govt. college girls (72.01 g) (Table 2).

Sugar and Jaggery
The data in Table 1 revealed that the daily mean intake of sugar and jaggery of adolescent girls (16-18 years) was 17.45 g which was 69.80 per cent of the RDI. The results highlighted significantly (P≤0.05) higher consumption of sugar and jaggery among girls of private college (71.92% of RDI) than girls of govt. college (67.68% RDI) (Table 2).

Fats and Oils
Daily mean intake of fats and oils of the adolescent girls was 16.04 g which was 45.82 per cent of RDI (Table 1). The intake was significantly (P≤0.05) lower than RDI. The consumption of fats and oils was significantly (P≤0.05) higher in girls of private college (48.11%) than girls of govt. college (43.54%) as showed in Table 2.

Table 2: Comparison between mean daily food intake of Govt. and Private College (n=300)

Foodstuffs (g)	Recommended Dietary Intake (RDI)	Mean daily food intake			
		Govt. College (n=150)	'Z'^{a} value	Private College (n=150)	'Z'^{b} value
Cereals	330	229.70±27.78 (69.60)	-44.18**	245.21±27.12 (74.30)	-38.36**
Pulses	75	29.25±3.66 (39.00)	-152.50**	30.80±3.30 (41.06)	-163.70**
Milk and Milk products	500	248.47±30.87 (49.69)	-99.81**	264.65±24.84 (52.93)	-115.93**
Roots and Tubers	200	54.44±4.13 (27.22)	-428.11**	60.58±42.70 (30.29)	-39.94**
Green Leafy Vegetables	100	57.42±7.08 (57.42)	-73.41**	59.65±5.76 (59.65)	-85.85**
Other Vegetables	200	74.81±11.41 (37.40)	-134.61**	82.35±10.95 (41.17)	-132.19**
Fruits	100	72.01±8.68 (72.01)	-39.42**	78.40±9.13 (78.40)	-28.80**
Sugar & Jaggery	25	16.92±1.48 (67.68)	-67.87**	17.98±1.26 (71.92)	-70.20**
Fats & Oils	35	15.24±2.23 (43.54)	-109.77**	16.84±1.61 (48.11)	-139.69**

Values are mean ±SD
**Significant at 5% level
Figures in parentheses indicate percent RDA
'Z'^{a} values showing comparison of mean food intake and RDI of govt. college girls
'Z'^{b} value showing comparison of mean food intake and RDI of private college girls

Latesh and Garg (2015) [2] reported similar results of poor eating habit and revealed that mean intake of fruits, vegetables, cereals, pulses, milk and milk products, sugar and jaggery and fats and oils was lower than RDA (Sharma 2015) [3].

Conclusion

The dietary practices of adolescents have been described as not the best, mainly as a result of their busy schedule, peer pressure and the independent nature of their behaviour. Diet plays an important role in growth and development of adolescents, during which the development of healthy eating habits is of supreme importance. Food is essential for growth as well as development. The study indicated that the poor mean food intake of adolescents. There is an urgent need for improving overall nutritional status of adolescents through nutrition education, community awareness and supplementation programmes, it will help in improving the health of future mothers and their offsprings.

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