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Study of Nutritional Status in Relation to Physical Activity of College Going Adolescent Girls

KEYWORDS: Adolescents girls, BMI, Physical activity, nutrient intake.

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ABSTRACT *Present study was undertaken to analyze relation of daily physical activity and nutritional status of the college going adolescent girls. The sample was comprised of 300 adolescent girls in the age group of 17-19 years selected perusing their graduation courses.The girls were divided into three categories of activity viz. sedentary, moderate and vigoursly active based on energy cost of physical activities. Majority of the girls were doing either sedentary or moderate activity.The mean nutrient intake of protein, energy and fat was found deficient when compared with ICMR guidelines. Summary of one way ANOVA of final scores of BMI among vigorously active, moderately active and sedentary adolescent girls indicated f value for group being 7.893 is significant with df= 2/297. It indicates that the mean scores of BMI of vigorously active, moderately active and sedentary adolescent girls differ significantly pointing out towards association of physical activity and BMI.*

Introduction
Adolescence is a crucial period when major physical, psychological, and behavioral changes take place (Mala V, 2007). The adolescence period is an important stage in everybody's life as it prepares a child for its adulthood life. However, the age from 13 to 19 is considered more crucial as far as the growth, mental maturity and development of reproductive system including health and nutritional status of individuals is concerned (T.Rajaretnam, 2012).Inadequate diet and unfavorable environmental condition in developing nations like India may adversely affect the growth and nutrition of adolescents. Malnutrition, both under nutrition and over nutrition, refersto an impairment of health, resulting from a deficiency or from an excess or imbalance of nutrients (A. Mukhopadhyay, 2005). It is of public health significance among adolescents across the world the nutritional status of adolescent girls, the future mothers, contributes significantly to the nutritional status of the community. Recently more attention has been paid on physical activity due to the emerging obesity epidemic. Research suggests that helping girls develop active lifestyles as adolescents facilitates them continuing that active lifestyle into adulthood. Inactive adolescents are very likely to become inactive adults (Gordon-Larsen, Adair, Nelson, & Popkin, 2004; Pate, Heath, Doda, & Trost, 1996), and being inactive as an adult is related to substantial risk of serious health conditions, including coronary heart disease, stroke, high blood pressure, and type 2 diabetes. A focus on the health and nutrition of the adolescent girls warrants particular attention, since these young people are the future generation of the country. As health and well-being are also measured by a person's capacity to perform work and resist disease the present study was undertaken to analyze relation of daily physical activity and nutritional status of the college going adolescent girls.

Materials and Methods
This cross-sectional study was carried out in Urai a town in district Jalaun U.P. As the study was focused on adolescents the sample was comprised of 300 adolescent girls in the age group of 17-19 years selected perusing their graduation courses from, Dayanand vaidik degree college Oraiand KailashiDevi girls degree college district (Jalaun) UP were randomly selected to carry out the study.After taking permission from the college authority, the class teachers of class were explained the purpose of the study and rapport was built up with the girl students and verbal consent was obtained from them. Briefing was done to the students regarding the questionnaire provided to them. A general questionnaire was used for background data. The girls were divided into three categories of activity viz. sedentary, moderate and vigoursly active based on energycost of physical activities (ICMR, 2011).

Anthropometric data were obtained to describe nutritional status.To calculate BMI values, anthropometric measures of participants including height and weight were taken. Height & Weight were measured using standard techniques.The body weight was recorded when the display of the body weight became stabilized.For measuring standing height, vertical anthropometric rod with a movable head board was used. The height was recorded to the nearest centimeter using standard procedure.BMI (body mass index) of the girls was calculated with the help of formula weight in kg/height in meters$^{2.}$

RESULTS AND DISCUSSION
The entire numbers of adolescents have been divided into three categories as per their energy expenditure in terms of physical activity as sedentary, mediocre and high (vigorously active). The analysis has compared three groups of different basis differently so as to study the main and interaction effects of the variable.

Assessment of Body Mass Index (BMI), from the height and weight measurements of individuals, is a generally accepted measure of nutritional status.Based on the BMI, adolescent girls were classified as abnormally thin if their BMI was less than 18.5; overweight or obese if their BMI was 25 or more; and normal if their BMI was 18.5 or higher but less than 25. BMI less than 18.5 is usually classified as having chronic energy deficiency. The study highlighted that out of total 300 girls none of the girls were either overweight or obese (Table.2). In a study overall prevalence of thinness was found to be 17.0% and 11.4% (BMI <5th percentile according to NCHS-CDC reference) among urban and rural school going adolescent girls respectively. Overall prevalence of overweight was found to be 5.4% and 3.9% (BMI >85th percentile according to NCHS-CDC reference) among urban and rural school going adolescent girls, respectively. (Beena Sachan, 2012)

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Table no.1 Mean nutrient intakeof the adolescent girls

	RDA	Age in year			
		17-18	% difference	18-19	%difference
Energy Kcal	2440	1383	43.3↓	1465.2	39.5↓
Protein(gm.)	55.5	48.4	12.7↓	53.3	3.9↓
Fat(gm.)	35	19.4	44.5↓	19.7	43.7↓

The mean nutrient intake of protein, energy and fat was found deficient when compared with ICMR guidelines.

Table no.2 BMI status of adolescent girls

BMI STATUS	17-18		18-19		Total	
	NO	%	NO	%	NO	%
<18.5 under weight	110	33%	45	13.5%	155	46.5%
18.5-25 normal weight	80	24%	50	15.0%	130	39.0%
25-30 over weight	10	3%	5	1.5%	15	4.5%
Obesity BMI of30 or greater	-	-	-	-	-	-
Total	200	60%	100	30%	300	100%

Table no: 3 Table showing the Descriptive Statistics like Mean, Standard deviation of BMI of all groups of activity

S.no.	No.of adolescent girls	Level of Physical Activity	Mean	Std .Deviation
1	155	Sedentary	17.8708	2.73014
2	130	Moderate	19.0119	2.00309
3	15	High	18.5467	2.28594
4	300	Total	18.3991	2.47464

Table No: 4 Summary of one way ANOVA of final scores of BMI among vigorously active, moderately active and sedentary adolescent girls.

Source of variance	Type III Sum of Squares	df	Mean Square	F	Remark
Physical Activity	92.413	2	46.207	7.893	P<0.05
Error	1738.618	297	5.854		
Total	103388.727	300			
Corrected total	1831.031	299			

From the table no: 4, it is evident that the f value for group being 7.893 is significant with df= 2/297. It indicates that the mean scores of BMI of vigorously active, moderately active and sedentary adolescent girls differ significantly. Almost half of the students surveyed with BMI<18.5 kg/m2 were sometimes dissatisfied with their body image. More than half (54.8) with BMI 18.5 -25 kg/m2 were sometimes dissatisfied with their appearance while 1 of 10 respondents had feeling often. Nearly 20% declared that they often wanted to be slimmer .With statistically significant differences, the surveyed students with BMI <18 Kg m2 stated that they were unaware of calorie value of foods in comparison to student with BMI of 18-25 kg/m2 (x2=63.7, df=24, p=0.000).This means that the activity plays a vital role in deciding the basal metabolic rate of the adolescent girls.

To find out which group hand the higher levels of BMI a post hoc test is administered and higher levels were found in moderately active and vigorously active adolescent girls. If at all the number of samples of vigorously active girls would have been a little high then the means of highly active subjects would have also been higher. But the fact remains the same as young girls of now flinch themselves from intense activity. The findings of a study revealed that 54.7 percent of the subjects were non-vegetarians and 68.7 percent of them were consuming less than 3 meals per day. Skipping of meals was followed by 84 percent of the adolescents. Anorexia nervosa and bulimia nervosa were found to be present among the underweight adolescents with attributes like weight conscious behavior, eating to escape from worries, habit of induced vomiting predominated their inclination towards the maintenance of body weight. Physical activity patterns showed that 53.3 percent neglected walking and 76 percent did not have the habit of cycling (Anupriya.M, 2013)

Table No: (5) Summary of Post Hoc Test for Activity for the variable- BMI through Duncan test.

Physical Activity	N	Subset
	1	1
Sedentary	155	17.8708
High	15	18.5467
Mediocre	130	19.0119
Sig.		.055

The output indicates that significant differences do exist between the various groups, and the Duncan's table reveals that mediocre girls in terms of activity possesses higher BMI than the other groups.

Conclusion

The study found that majority of the adolescents were doing sedentary and moderate activity with a very few undergoing vigorous activity. The girls had various reasons for doing so. They need to be made aware regarding how and what activities are beneficial for health. Nearly 54.8% girls had BMI below normal with a deficient nutrient intake. This indicates that adolescents need nutrition education and health awareness programs at school or college level.

REFERENCE 1.T. rajaretnam and Jyoti s. hallad Nutritional Status Of Adolescents In Northern Karnataka, India the Journal Of Family Welfare Vol. 58, No.1, June – 2012 | | 2.Mala V, Kumar D, Dwiwedi S, Dabral SB. Psychological behavioral pattern of unmarried adolescent girls in urban area of Allahabad, Uttar Pradesh. Indian J Community Med 2007; 32:79 | 3. A.Mukhopadhyay, M. Bhadra, and K. Bose, "Anthropometric assessment of nutritional status of adolescents of Kolkata, West Bengal," Journal of Human Ecology, vol. 18, no. 3, pp. 213–216, 2005. | 4. Gordon-Larsen, P., Adair, L.S., Nelson, M.C., Popkin, B.M. (2004). Five-year obesity incidence in the transition period between adolescence and adulthood: the National Longitudinal Study of Adolescent Health. American Journal of Clinical Nutrition, 80(3), 569-575. | 5.Pate, R.R., Heath, G.W., Doda, M., & Trost, S.G. (1996). Associations between physical activity and other health behaviors in a representative sample of U.S. adolescents . American Journal of Public Health, 86, 1577-1581. | 6. Beena Sachan1, Mohammad Zafar Idris1, Savita Jain1, Reema Kumari1, Ashutosh SinghNutritional status of school going adolescent girls in Lucknow DistrictYear : Journal of Medical Nutrition and Nutraceuticles 2012 | Volume : 1 | Issue : 2 | Page : 101-105 | 7.Anupriya.M Varalakshmi Rajam.SMeal Patterns and Eating Disorder Profile Of | Underweight Adolescent Girls InChennai INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH & DEVELOPMENT March, 2013 Vol 2 Issue 3 p697-704 | 8.. Dietary guidelines for Indians – A manual National Institute of Nutrition second | Addition -2011. |