

Original Research Article

STUDY OF DIETARY HABIT, CALORIE INTAKE AND PROTEIN INTAKE AMONG ADOLESCENT BOYS IN ALIGARH

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ABSTRACT

Background: Human growth and maturation are continuous processes, and transition from childhood into adulthood is not abrupt, the period of adolescence encompasses rapid changes in physical changes and maturation, and in psychological development. **Objective:** To study the dietary habit, mean calorie intake and mean protein intake of last 24 hours in the study population.

Materials and Methods: The present cross-sectional study was conducted in the field practice areas of Rural Health Training Centre, Jawan and Urban Health Training Centre, Aligarh, of the Department of Community Medicine, Jawaharlal Nehru Medical College, Aligarh Muslim University.

Results: Majority of students (91.6%) used to take meals three times a day and only 8.4% used to had meal twice a day, out of them most of them were from rural area. mean calorie and mean protein intake being less in whole age group of 10-19 years than the reference values given by ICMR 2010. Total mean calorie of 10-19 years age group was 1995.09 in urban and 2056.07 in rural area. Total mean protein intake of 10-19 years age group was 44.56 gm/day in urban and 41.44 gm/day in rural area.

Conclusion: Overall 98.77% rural and 94.92% urban students were found to be deficit in calorie intake in 24 hours recall method and protein intake was deficit in 84.37% urban and 93.44% rural students.

Keywords: Socio-demographic factors, Dietary habit, Calorie intake, Protein intake, Adolescent boys.

INTRODUCTION

The term adolescence meaning “to emerge” or “achieve identity” is a relatively new concept, especially in developmental thinking. The origin of the term is from Latin word; ‘adolescere’ meaning, “to grow, to mature”. However, a universally accepted definition of the concept has not been established.^[1]

World Health Organisation,^[2] identifies adolescence as the period in human growth and development that occurs after childhood and before adulthood, from ages 10 to 19.

Adolescence may be divided into three developmental stages based on physical, psychological and social changes,^[3] (UNICEF, 2005)

Early adolescence- 10 to 13 years

Middle adolescence- 14 to 16 years

Late adolescence- 17 to 19 years. The period of gradual transition from childhood to adulthood that normally begins with the onset of signs of puberty, is characterized by important psychological and social changes, not only physiological change. It is difficult to define in universal terms for there are important cultural differences. Depending on societies, the transition may be quick and the very notion of adolescence does not really exist, for instance where girls marry early and do not go to school. On the other hand, the transition of adolescence may extend over several years where young people remain in school and marry late, like in developed countries and increasingly in urban areas of developing countries.^[4]

Nutrition is an important aspect of adolescence as it is a rapidly growing period of life. Adolescents are in

the process of establishing responsibility for their own health-related behaviours, including diet. It is therefore an appropriate time for health promotion programmes based on documented relationships between behaviour in this age group, obesity, cardiovascular and other chronic disease risk factors. Adolescents can and should take responsibility for their nutrition and the long-term repercussions on health.

Nutrition is only one aspect of health behaviours and the development of these in relation with chronic disease is better conceptualized in a 'chain of risk' framework.^[5]

Yet in recent years, interest has grown in the health of young people. This is so far the following reasons. Sociocultural fabric of our society is changing due to urbanization, nuclear family and telecommunication revolution. These have also eased social and sexual constraints and increased the exposure of adolescents to health threatening situations and substances. As this period is lengthening due to earlier start of puberty and later age at marriage, this period is thought to be the target group for program makers.

Hence this study was conducted to find out the impact of socio-demographic factors on nutritional status of adolescent boys.

MATERIAL AND METHODS

The present cross-sectional study was conducted in the field practice areas of Rural Health Training Centre, Jawan and Urban Health Training Centre, Aligarh, of the Department of Community Medicine, Jawaharlal Nehru Medical College, Aligarh Muslim University. The present study was carried out for a period of one year from 1st of August 2013 to 31st July 2014.

Inclusion Criteria Male students between 10 to 19 years

Exclusion Criteria Students below 10 & above 19 years

Non co-operative

Chronic absentee

Girl students

Before the starting of the study, Approval was taken from Institutional Ethical Committee. Permission was taken from school authority in each and every school. Principal of the schools was the main authority in all schools. Informed consent taken from students, who were more than 18 years. Health education & adequate counselling were provided to all the students of concerned class. Personal information received, were kept confidential.

Selection of the study population sample frame

The study population was selected from rural and urban schools within 5 km of Urban and Rural Health Training Centres of the Department of Community Medicine, Jawaharlal Nehru Medical College, A.M.U, Aligarh. Primary, junior high schools, high schools and senior secondary schools were taken for the study.

Sample Size

$n = Z^2 p (100 - p) / l^2$

For confidence interval= 95%, Z= 1.96

$n = (1.96)^2 p (100 - p) / l^2$, q= 100- p

As calculated from the formula- $4pq/l^2$

p= Prevalence

q= (1-Prevalence)

l= Precision

Prevalence = 68% (of anaemia in adolescents) (Verma et al, 2013) 6

Precision= 9%

Sample size = 233 (students)

Because of non-response / non-cooperation from the student, the sample size was increased by 10% making the sample size = 256

Thus total 512 students (256 from rural and 256 from urban) were taken for the study.

The male students from class 5th to class 12th were selected for the study with the permission of the principal of the school. The total number of students varied in individual schools depending upon the level of the education imparted in those schools. From each school, a list of male students was prepared for each class attendance register. The total population of the male students, for all the schools was 2533, out of which 512 students (256 rural and 256 urban) were selected for the study. In 512 study population, only 500 students cooperated in study. From each class, the required number of students were obtained by using proportionate probability sampling (P.P.S). These students were then randomly selected from each class.

Statistical Analysis

The data obtained were tested statistically by percentages and Chi-square test.

RESULTS

Age: Median age was 53 years. Mean age was 54
The present study aimed to study the dietary habit, mean calorie intake and mean protein intake of last 24 hours in the study population. was carried out from 1st of August 2013 to 31st July 2014. The study material comprised of school adolescent boys aged 10-19 years. The total population of male student in the selected schools was 2533. 512 (20.21%) students were selected for the study, out of them, 500 students (study population) participated in the study.

The age of the study population ranged from 10-19 years. Majority of the population 212 (42.4%) belonged to 14-16 years age group (mid adolescence) followed by 174 (34.8%) in the 10 to 13 years (early adolescence) and the least population of 114 (22.8%) were in the 17 to 19 years age group (late adolescence).

In urban areas of our study population, mid adolescent population was maximum (55.85%) and early adolescent population was the minimum (18.36%) and in rural areas, maximum population was of early adolescents (52.05%) and minimum

was of late adolescents (19.67%). In rural areas less student population in late adolescent group was probably due to school drop-out.

In the study, 52.8% of total study population were Hindus and rest 47.2 % were Muslims. Majority of rural children were Hindus (85.66%) and the majority of urban children (78.52%) were from Muslim community. The reason being the place of schools in the rural field practice area (RHTC) is a predominantly Hindu locality and that of urban area (UHCTC) is a predominantly Muslim locality.

In urban area, 34.38% fathers were involved in Clerical/Shop/Farmer profession and 58.61% fathers were involved in the same professions in rural area. In urban and rural, 30.08% and 4.09% fathers were professionals respectively. In urban area, 20.70%

were skilled workers, 9.77% were semiskilled workers and 2.73% were unskilled workers, while in rural, 13.52% were skilled, 5.75% semiskilled and 18.03% were unskilled workers. None was unemployed or retired in rural area.

Mean calorie and mean protein intake being less in whole age group of 10-19 years than the reference values given by ICMR 2010. Total mean calorie of 10-19 years age group was 1995.09 in urban and 2056.07 in rural area. Total mean protein intake of 10-19 years age group was 44.56 gm/day in urban and 41.44 gm/day in rural area.

98.77% rural students and 94.92% urban students were found to be deficit in calorie intake in 24 hours recall method and protein intake was deficit in 84.37% urban students and 93.44% rural students.

Table 1: The distribution of dietary habits in the study population

Particulars	Urban		Rural		Total	
	No.	%	No.	%	No.	%
Nature of Diet						
Vegetarian	50	19.53	196	80.33	246	49.2
Non-vegetarian	206	80.47	48	19.67	254	50.8
Frequency of meals						
Twice a day	4	1.60	38	15.57	42	8.4
Three times a day	252	98.40	206	84.43	458	91.6
Four times a day	00		00		00	
Total	256	100.00	244	100.00	500	100.0

Table 2: Distribution of mean calorie intake in the study population

Age (yrs)	Mean calorie		ICMR 2010
	Urban	Rural	
10-12	1410.77	1282.83	2190
13-15	1819.20	1814.04	2750
16-17	2068.29	1876.32	3020
18	2324.47	2850.17	-
19	2352.71	2457.00	-
Total	1995.09	2056.07	

Table 3: Distribution of mean protein intake in the study population

Age (yrs)	Mean protein (gm/day)		ICMR 2010 (gm/day)
	Urban	Rural	
10	32.15	34.87	36.3
11	27.29	33.79	39.6
12	35.29	47.30	43.7
13	39.12	36.37	49.8
14	46.16	42.12	54.7
15	44.89	44.48	58.2
16	49.09	47.00	60.8
17	50.20	43.19	62.2
18	52.67	46.25	-
19	51.07	40.00	-
Total	44.56	41.44	

Table 4: Distribution of calorie deficit/surplus in the study population

Place	Calorie				Total	
	Deficit		Surplus		No.	%
	No.	%	No.	%		
Urban	243	94.92	13	5.08	256	51.2
Rural	241	98.77	3	1.23	244	48.8
Total	484	96.80	16	3.20	500	100.0

Table 5: Distribution of protein deficit/surplus in the study population

Place	Protein				Total	
	Deficit		Surplus		No.	%
	No.	%	No.	%		
Urban	216	84.37	40	15.63	256	51.2
Rural	228	93.44	16	6.56	244	48.8
Total	444	88.80	56	11.20	500	100.0

DISCUSSION

In a study done in Aligarh by Ahmad et al (2011),^[7] showed that in rural area, majority of the population (59%) belonged to 10-13 years age group as compared to (26.5%) of urban area of same age group.

Due to modernization and urbanization, socio-economic demands of younger population are changing, hence the joint family system is struggling for its existence in urban settings and the nuclear family system is taking over the joint one. In rural area, majority of families were joint (72.54 %). In a study done by Ahmad et al (2009),^[7] in Aligarh reported that in study population, 68.5% population had family size of more than 5. This finding was similar to our study where 52.2% were large families and 40.2% were medium size families.

Kotecha et al (2013),^[8] studied school adolescents in Baroda, India and found that nearly 60% of adolescents had their breakfast daily while the remaining did not take three meals daily and missed taking breakfast daily.

Shi et al (2005),^[9] did a study in China and found that urban residence was positively associated with intake of high-energy foods, such as foods of animal origin, Western style foods and dairy products. In all, 76% of the students had three meals a day regularly, but 8.1% urban students vs 3.4% rural students had breakfast only 1–3 times per week or less often.

Yadav et al (1998),^[10] did a study to assess the diet and nutritional status in adolescent population in Bihar. 24 hours recall method was used to assess the dietary intake. The calorie deficiency was 29 percent and the magnitude of protein deficiency was about 21 percent. Calorie and protein deficiencies in this study were lesser than present study may be because of 24-hour recall method which is less accurate than 7 days recall method.

In another study, Datta (2012),^[11] found that adolescents from government schools were found to be less likely to consume vegetables and fruits.

Venkaiah et al (2002),^[12] studied rural adolescents and found that about 70% of adolescents consumed more than 70% of RDA for energy. The intakes of micronutrients such as vitamin A and riboflavin were woefully inadequate. The proportion, however, was slightly higher among the girls (75%) than in boys (66%). The proportion of adolescents consuming less than 50% of RDA of energy was higher in males (9.3%) than in girls (5.3%). Matthews et al (2011),^[13] did a study on 6-19 years old children and adolescents and found that frequency of consumption of grains, nuts, vegetables and LNDF (low nutrient dense food)

were inversely related to the risk of being overweight and dairy increased the risk.

CONCLUSION

Majority of adolescents were deficient in calorie and protein intake. Total mean calorie of 10-19 years age group was 1995.09 in urban and 2056.07 in rural area. Total mean protein intake of 10-19 years age group was 44.56 gm/day in urban and 41.44 gm/day in rural area. Overall 98.77% rural and 94.92% urban students were found to be deficit in calorie intake in 24 hours recall method and protein intake was deficit in 84.37% urban and 93.44% rural students.

Adolescent is a vulnerable age group as in this transition period of life an individual is neither a child nor an adult so they should be mainstreamed as a separate group and should be given priority by the policy makers.

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