

IMPACT OF SOCIO-DEMOGRAPHIC FACTORS ON NUTRITIONAL STATUS OF ADOLESCENT BOYS

Mohammad Atif¹, M Athar Ansari², Anees Ahmad²

¹Assistant Professor, Department of Community Medicine, MRA Medical College Ambedkar Nagar, U.P, India

²Professor, Department of Community Medicine, J N Medical College and Hospital, A.M.U, Aligarh UP India

Received : 02/01/2023
Received in revised form : 01/02/2023
Accepted : 21/02/2023

Keywords:
Socio-demographic factors, Nutritional status, Adolescent boys.

Corresponding Author:
Dr. Mohammad Atif
Email:atif6980@gmail.com

DOI: 10.47009/jamp.2023.5.2.54

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (2); 257-261



Abstract

Background: Health of adolescents is strongly affected by social factors at personal, family, community, and national levels. Since health and health behaviours correspond strongly from adolescence into adult life, the way that these social determinants affect adolescent health are crucial to the health of the whole population and the economic development of nations. The objective is to find out the impact of socio-demographic factors on nutritional status of adolescent boys. **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. **Result:** Majority of the population that is 212 (42.4%) belonged to 14-16 years age group. 52.8% of total study population were Hindus and rest 47.2 % were Muslims. In the 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 the study overall 50.8% students were non-vegetarian and 49.2% were vegetarian. In urban area, 80.47% were non-vegetarian and in rural areas, 80.33% were vegetarian. The mean calorie and mean protein intake being less in whole age group of 10- 19 years than the reference values given by ICMR 2010. **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.

INTRODUCTION

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. It is characterized by low prevalence of most infectious and chronic illnesses, but high risks of associated with substance abuse pregnancy, sexually transmitted diseases, accidental and intentional injuries.^[1]

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.^[2]

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.^[3]

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.

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. 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) 4

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

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.

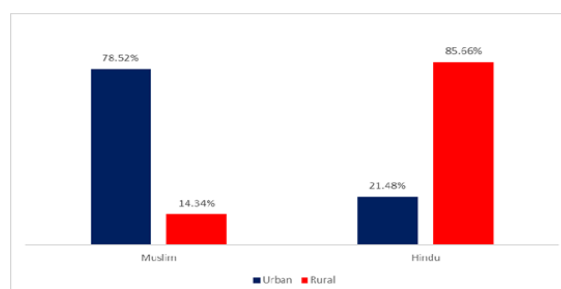


Figure 1: (a) - Distribution of school children according to their religion

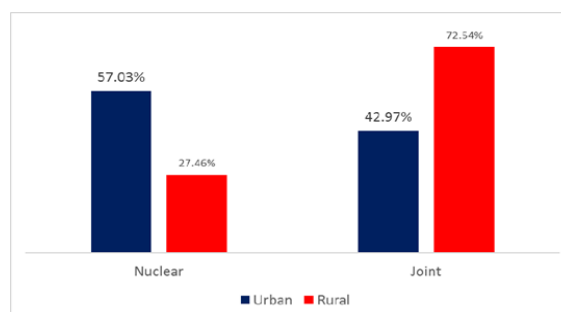


Figure 1: (b) - Distribution of school children according to their family type

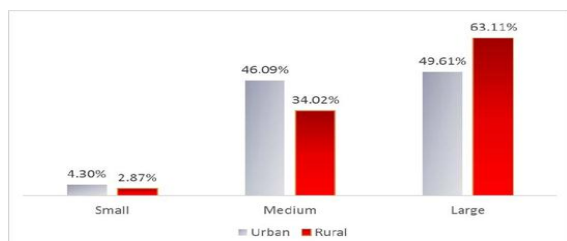


Figure 1: (c) - Distribution of school children according to family size

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, 49.61 % of families were large (>7 members) and 46.09 % medium size (4-7 members). In rural area, 63.11 % of families were large. In urban and rural, small families (<4) were 4.3% and 2.87% respectively.

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.

Table 1: Distribution of study population according to their father's occupation.

Father's profession	Urban		Rural		Total	
	No.	%	No.	%	No.	%
Unemployed/retired	6	2.34	0	0	6	1.2
Unskilled worker	7	2.73	44	18.03	51	10.2
Semiskilled worker	25	9.77	14	5.75	39	7.8
Skilled worker	53	20.70	33	13.52	86	17.2
Clerical/shop/farm	88	34.38	143	58.61	231	46.2
Professional	77	30.08	10	4.09	87	17.4
Total	256	100.0	244	100.0	500	100.0

Table 2: The distribution of dietary habits in the study population

Articulars	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 3: 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

In the study overall 50.8% students were non-vegetarian and those of 49.2% were vegetarian. In urban area, 80.47% were non-vegetarian and in rural areas, 80.33% were vegetarian. This difference was due to study population. In urban area, majority of population was Muslims and in rural area, majority of population was Hindus. 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. 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 4: Distribution of BMI for age of the study population according to place of residence

Place	BMI for age											
	Normal		Moderate thinness (-2 to -3 SD)		Severe thinness (<-3SD)		Overweight		Obesity		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Urban	194	75.78	37	14.45	5	1.95	18	7.03	2	0.78	256	51.2

Rural	150	61.45	66	27.05	25	10.25	3	1.23	0	0	244	48.8
Total	344	68.8	103	20.60	30	6.00	21	4.20	2	0.40	500	100.0

BMI for age according to place of residence. It is apparent from the table that thinness (27.05%) and severe thinness (10.25%) were more prevalent in rural area. On the other hand overweight (7.03%) and obesity (0.78%) were more prevalent in urban areas. This distribution of BMI for age with place of residence was found to be statistically significant. (Chi square- 39.575, df- 4, p=0.00)

Table 5: Distribution of BMI for age of the study population according to dietary habit

Description	BMI for age											
	Normal		Moderate thinness (- 2 to -3 SD)		Severe thinness (<-3SD)		Overweight		Obesity		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Vegetarian	158	64.23	67	27.24	18	7.31	3	1.22	0	0	246	49.2
Nonvegetarian	186	73.23	36	14.17	12	4.72	18	7.08	2	0.70	254	50.8
Total	344	68.80	103	20.6	30	6.00	21	4.20	2	0.40	500	100.0

It is seen that thinness (27.24%) and severe thinness (7.31%) being more in vegetarians and overweight (7.08%) was more in nonvegetarian. This distribution of BMI for age diet was found to be statistically significant. (Chi square=25.402, df= 4, p=.000).

DISCUSSION

In a study done in Aligarh by Ahmad et al,^[5] (2011) 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.

In a study done by Ahmad et al,^[5] (2009) in Aligarh on adolescent school boys, it was reported that, Hindus were 56.4% and Muslims were 43.6% which was similar to the present study.

India has been traditional joint family systems for centuries. In urban area, majority of families were nuclear (57.03%). This clearly shows that 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,^[5] (2009) 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,^[6] (2013) 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,^[7] (2005) 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 vs3.4% rural students had breakfast only 1–3 times per week or less often.

Yadav et al,^[8] (1998) 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,^[9] (2012) found that adolescents from government schools were found to be less likely to consume vegetables and fruits.

Venkaiah et al,^[10] (2002) 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,^[11] (2011) 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

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. The policies adopted by Government of India for betterment of adolescent's health should be implemented at all level. Future health planning should take in account the special needs and problems of the adolescents that are much different from the other age groups like infancy or geriatric age group.

REFERENCES

1. World Health Organization. Health needs of adolescents. Report of a WHO Expert Committee, Geneva, 1977 (WHO Technical Report Series No.- 609).
2. Paxman JM, Zuckerman RJ. Laws and policies affecting adolescent health. *Molecular Nutrition and Food Research* 1988;32:48.
3. Kuh D, Power C, Blane D, Bartley M. Social pathways between childhood and adult health. In: Kuh D, Ben-Shlomo Y (eds). *A life course approach to chronic disease epidemiology*. Oxford: Oxford University Press, 1997:169-98.
4. Verma R, Kharb M, Yadav SP, Chaudhary V, Ruchi, Ajay. Prevalence of anaemia among adolescents under IBSY in rural block of a dist. Of Northern India. *IJSSIR* 2013;2.
5. Ahmad A, Khaliq N, Azmi SA, Khan Z. Pattern of sexual development and anthropometry in adolescent males. *Delhi Psychiatry Journal* 2011;14:2.
6. Kotecha PV, Patel SV, Baxi RK, Mazumdar VS, Shobha M, Mehta KG et al. Dietary pattern of school going adolescents in urban Baroda, India. *J Health Popul Nutr* 2013;31:490-6.
7. Shi Z, Lien N, Kumar BN, Ottesen GH. Socio-demographic differences in food habits and preferences of school adolescents in Jiangsu Province, China. *European Journal of Clinical Nutrition* 2005;59:1439-48.
8. Yadav RJ, Singh P. Nutritional assessment and the dietary intake among adolescents in tribal area of Bihar. *IJCM* 1998;23:142-8.
9. Datta S. An assessment of the factors affecting food choices and their corresponding association with overweight and obesity among school going children in urban Guwahati in the age of 13-18 years. Working paper No. 9, 2012.
10. Venkaiah K, Damayanti K, Nayak MU, Vijayaraghavan K. Diet and nutritional status of rural adolescents in India. *Eur J Clin Nutr* 2002;56:1119-25.
11. Matthews VL, Wien M, Sabate J. The risk of child and adolescent overweight is related to types of food consumed. *Nutr J* 2011;10:71.