

Original Research Article

TO FIND THE NUTRITIONAL STATUS OF ADOLESCENT SCHOOL GIRLS OF INDORE CITY BY ANTHROPOMETRY.

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Abstract:

Background & Method: The aim of this study is to find the nutritional status of adolescent school girls of Indore City by anthropometry. After taking permission from the Principal of the school, consent form was distributed to the girls to take consent from the parents. Then, a self-formulated questionnaire was administered to those students whose parents gave consent for this study.

Result: Mean calorie intake ranges from 69% to 93% of RDA. All the girls were consuming inadequate amount of calories. Maximum 93% of RDA was seen in 16-18 years age group, and least intake, 69%, was seen in 13-15 years age group. Mean protein intake ranges from 72.3% to 82.5% of RDA. All the girls were consuming inadequate amount of proteins. Maximum 82.5% of RDA was seen in 16-18 years age group, and least intake, 72.3%, was seen in 13-15 years age group.

Conclusion: Mothers should be educated regarding importance of nutrition. All the girls were consuming inadequate amount of calories. All the girls were consuming inadequate amount of proteins. 50% of the families had 3-5 family members, 6-8 members in their family. 9% of the families had 9 - 11 members in their families and only 3 % of the families had more than 11 members in their family.

Keywords: nutritional, adolescent & anthropometry.

Study Designed: Observational Study.

1. INTRODUCTION

Nutrition is defined as a science concerned with the role of food and nutrients in the maintenance of health. The physiology of nutrition is further restricted to the interactions between food and the healthy human body, which include digestion, absorption, and intermediary metabolism of nutrients[1]. Nutritional Physiology provides the scientific basis of diets appropriate for various physiological states; how excess, deficiency or indiscretion might lead to disease; and how dietary modification might help in the prevention and treatment of certain diseases[2].

Nutrients are the constituents in food that must be supplied to the body in adequate amounts. These include Carbohydrates, Proteins, Fats, Minerals and Vitamins. Nutritional status is the condition of health of the individual as influenced by the utilization of the nutrients[3].

The science of Nutrition has been developed by using the combined knowledge of the physical and biological sciences. Its application involves the social sciences related to man's behavior - Psychology, sociology, anthropology and economics. Until World War I, the significance of nutrition was recognized by a relatively small group of scientists and physicians. Since then, a wider awareness has developed on the role of nutrients in health of individuals and the economic development of the nation[4]. A great number of important discoveries and developments in this field have enabled health care professionals to understand the nutrient needs of people and the means of supplying them. It is difficult to set in a chronological order of events that show the development of nutrition[5]. Many aspects developed simultaneously or overlapped each other. Some discoveries went unnoticed for several years because scientific attention was occupied with other developments and theories. Some progresses were stimulated by national emergencies. Others depended on technical development of the supporting sciences.

2. MATERIAL & METHOD

The study was conducted at Index Medical College Hospital & Research Centre, Indore, M.P. from May 2019 to April 2020. 215 school girls of age 11 to 18 years. The schools were selected by purposive sampling. Girls in the age 11-18 years were selected from these schools.

Inclusion Criteria- All the girls whose parents gave consent for this study were included in this study.

Tools and techniques of data collection- After taking permission from the Principal of the school, consent form was distributed to the girls to take consent from the parents. Then, a self-formulated questionnaire was administered to those students whose parents gave consent for this study.

3. RESULTS

Table No. 1: Age- wise distribution of adolescent girls

Age (in Years)	No. of adolescent girls	Percentage
11+	07	03
12+	27	13
13+	32	15
14+	28	13
15+	49	23
16+	42	20
17+	24	11
18+	06	03
Total	215	100

Above table shows the age-wise distribution of adolescent girls included in this study. Maximum number of girls i. e. 49 were of 15 years of age (23%) and minimum number of girls (13) were of 11 years of age (3%).

Table No. 2: Distribution of adolescent girls according to number of Family Members

Family size	Number of girls	Percentage
3-5	107	50
6-8	83	38
9-11	19	09
>11	06	03
Total	215	100

This table shows that 50% of the families had 3-5 family members indicating that most of the people have adopted small family norms. 38% of the families had 6-8 members in their family. 9% of the families had 9 - 11 members in their families and only 3 % of the families had more than 06 members in their family.

Table No. 3: Distribution of adolescent girls according to Daily Calorie Intake

Age (in years)	Number of Girls	Mean Calorie Intake (cal/day)	RDA	%RDA
11- 12	33	16970	1947	86
13-15	110	1412.86	2033	69
16-18	72	1528.41	2039	93
Total	215			

Above table shows that mean calorie intake ranges from 69% to 93% of RDA. All the girls were consuming inadequate amount of calories. Maximum 93% of RDA was seen in 16-18 years age group, and least intake, 69%, was seen in 13-15 years age group .

Table No. 4: Distribution of adolescent girls according to Daily Protein Intake

Age (in years)	Number of Girls	Mean Protein Intake (gms/day)	RDA (gms)	%RDA
11- 12	33	41	57	73.7
13-15	110	43	65	72.3
16-18	72	54	63	82.5
Total	215			

Above table shows that mean protein intake ranges from 72.3% to 82.5% of RDA. All the girls were consuming inadequate amount of proteins. Maximum 82.5% of RDA was seen in 16-18 years age group, and least intake, 72.3%, was seen in 13-15 years age group.

4. DISCUSSION

Nutrition challenges continue throughout the life cycle, particularly for girls and women. It is thus imperative to prevent malnutrition at every stage of the life cycle [6&7]. Investing in nutrition throughout the life cycle will have both short term and long-term benefits of economic and social significance, including large savings in health care costs, increased educability and intellectual capacity, and increased adult productivity. So far, most of the interventions have either focused on children aged 0-5 years or on pregnant women, and, to some extent on lactating women [8]. However, not much attention has been paid to adolescents by nutrition-related programmes in developing countries. WHO defines adolescence as the segment of life between the ages of 10-19 years.

In the present study, iron intake was found to be very low 40 -70 % which is comparable to the iron intake by the adolescent girls in rural areas reported by Venkaiah et al. (2002) [4] and in 6 blocks of Delhi reported by Malhotra et al. (2007) [6] which were 35 -80% and 54 to 71 % respectively.

Only a minor increment was seen with age. The diets were cereal based as well as vegetarian, thus the bioavailability of iron was probably quite low. It is a well-known fact that during adolescence, the iron requirements increase due to the changes in body mass, expanded blood volume and increased respiratory enzymes; onset of menstruation one year after the peak growth further increases these requirements. But in the absence of adequate dietary intake of iron, the girls become highly prone to anemia [9&10].

5. CONCLUSION

Mothers should be educated regarding importance of nutrition. All the girls were consuming inadequate amount of calories. All the girls were consuming inadequate amount of proteins. 50% of the families had 3-5 family members, 6-8 members in their family. 9% of the families had 9 - 11 members in their families and only 3 % of the families had more than 11 members in their family.

6. REFERENCES

- [1] Agarwal D.K. et al. Physical and sexual growth pattern of affluent Indian children from 5 to 18 years of age. *Indian Pediatr.* 1992 Oct;29(10):1203-82.
- [2] Banerjee et al. Body Mass Index in Bengali Adolescents. *Indian Pediatrics* 2005; 42:262-267.
- [3] Bijlani R.L. *Textbook of Medical Physiology*. 3rd Edition. 2004.

- [4] K Venkaiah, K Damayanti, M U Nayak and K Vijayaraghavan . Diet and nutritional status of rural adolescents in India European Journal of Clinical Nutrition (2002) 56, 1119-1125.
- [5] Mohan B. et al. .Prevalence of sustained hypertension and obesity in urban and rural school going children in Ludhiana. Indian Heart Journal 2004 Jul-Aug. 56(4): 310-4
- [6] Malhotra A, Passi SJ. Diet quality and nutritional status of rural adolescent girl beneficiaries of ICDS in north India. Asia Pac J Clin Nutr. 2007;16 Suppl 1:8-16.
- [7] Ashish Mukhopadhyay et al. Anthropometric Assessment of Nutritional Status of Adolescents of Kolkata, West Bengal. J. Hum. Ecol., 18(3): 213-216 (2005).
- [8] Rao S. et al. Height velocity, body fat and menarcheal age of Indian girls. Indian Pediatr. 1998 Jul;35(7):619-28.
- [9] S. Kumar et al. Prevalence of Obesity and its influencing factor among affluent school children of Devangere city, Indian journal of Community Medicine, Vol. 32, No.1 (2007-01 - 2007-03).
- [10] Swaminathan S et al. Dietary Patterns in Urban School Children in South India. : Indian Pediatr. 2007 Aug 8;44(7):893-596.