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DIET, NUTRIENT INTAKE AND NUTRITIONAL STATUS OF ADOLESCENT GIRLS

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ABSTRACT

The present study was undertaken to assess the diet nutrient intake and nutritional status adolescent girls of 18 to 19 years who attend the Arts and Commerce Mahila Mahavidyalay from Ambajogai town. Nutritional status of selected adolescent girls was assessed by recording anthropometric measurements, clinical examination and diet survey.

Majority of selected adolescent girls were from middle socio economic zone having few family members. Adolescent girls who are surveyed having normal weight and height but the girls of above 19 age we are found to under nourish as per BMI. Bleeding gums was found to be the most common clinical sign among selected girls followed by angular stomatitis and muscular cramps. Intake of all type of vegetable fruits and milk and Milk products was markedly low. Even the intake of serial and pulses where inadequate by 10 and 20% respectively in the diet of adolescent girls. The diet of adolescent girls was found inadequate in providing all essential nutrients. Thus, there is need to supplementation of diet of adolescent girls to improve their nutritional status.

Key Words: adolescents, body mass index, diet, and nutritional status.

INTRODUCTION

Adolescence is the age group between 10 to 19 years as defined by World Health Organization adolescent girls constituting nearly one tenth of Indian population form crucial segment of the society. Their current nutritional status will decide the building of the present as well as future generations.

Adolescence is an important stage of growth and development in the lifespan. Unique changes that occur in an individual during this period are accompanied by progressive achievement at biological maturity. This period is very crucial since these are the formative years in the life of an individual when major physical, psychological and behavior changes takes place.

Anthropometrics can be sensitive indicators of health growth and development in infants and children. In particular anthropometry has been used during adolescence in many context related to nutritional status. According to World Health Organization the ultimate intention of nutritional assessment is to improve human health. Malnutrition which refers to an impairment of health either from a deficiency or excess or imbalance of nutrients is public health significance among adolescents all over the world. It creates lasting effect on the growth development and physical fitness of person. It is well recognized worldwide that anthropometric measurements are in dispensable is diagnosing under nutrition. It has now been well established that the body mass index is most appropriate variable for determining nutritional status among adolescents.

Nutrition and food intake are closely related to nutritional status and health of an individual. An adequate amount of nutrients in the form of daily diet are essential for the maintenance of Health and good nutrition.

Physical growth at adolescence occurs earlier and is more rapid than during pre adolescence. In India the proportion of adolescents getting married before completion of their growth is very high (23%).If these young girls become mothers, their growth ceases, exposing them to the consequences of cephalo - pelvic disproportions. There is very little information about diet and nutritional status of adolescent girl of Ambajogai town therefore there is a need to develop a database on the diet and nutrition status of the adolescent girls from Ambajogai town. Present study was undertaken with objectives (i) to evaluate the nutritional status of adolescent girls by anthropomorphic measurements and clinical examination (ii) to measure the food and nutrient intake of adolescent girls.

METHODOLOGY:

A total sample of 100 adolescent girls of 18 to 19 years old who were attending the Arts and Commerce Mahila Mahavidyalay from Ambajogai town was randomly selected for conducting the study.

The respondents where personally interviewed by the investigator administering a prepared questionnaire and collected and information regarding religion, literacy level, total income ,occupation, size and type of family , ordinal position, age at menarche , problems during m.c. period.

Nutritional status of the selected adolescent girl was evaluated by anthropometry clinical examination and diet survey. The measurements were taken for height and weight of adolescent girls as per the standard procedure (Jelliffe, 1965) . All the selected adolescent girls were screened for the presence of any nutritional deficiencies and were noted in the prepared proforma.

The food intake was assessed by questionnaire method (Marr, 1971) . The adolescent girls were asked to fill The Daily Meal pattern for three consecutive days and approximately average daily food intake was calculated. An average food intake of the adolescent girls per day was compared with balanced diet of ICMR(1989).

Simple arithmetic means with standard deviation and percentage were calculated to interprerit the results. Besides calculating the percentages t test was applied to find the difference between two attributes (Chandel 1972).

RESULTS AND DISCUSSION:

The collected information was tabulated, statically analyzed and discussed under various heads.

Socioeconomic background of the adolescent girls: Among the selected adolescent girls 72 were from Hindu religion and 28 from Muslim religion.

Regarding the father's occupation of adolescent girls most of the girls were from farmers family (47%), while 29% of adolescent girls father's were doing labor work and 13% of adolescent girl were doing service while 11 percent of fathers where doing their own business

Based on the income level of the family,70 percent adolescent girls were belonging to 5000–10000 rs income per month and only 30 percent adolescent girls were belonging to above 10000 rs income per month.

Out of the total sample of 100 adolescent girls 73 belong to nuclear family and remaining adolescent girls belong to joint family (27).

Fifty two percent of the adolescent girls were having 125 members in their family while 48% adolescent girls were having more than five members in their family.

On the whole, it can be concluded that the selected adolescent girls were from lower middle socio economic group having few family members.

General information of the adolescent girls: Among 100 selected adolescent girls 73 were of 18 yrs of age while 27 were of 19 yrs of age.

Regarding the ordinal position of the adolescent girls 33% of selected girls were first born while 44% of selected adolescent girls were second born. Only 15% of the girls were born at 3rd position and 4% of adolescent girls were born in 4 th and 5th position.

Age of menarche of the selected admission girls ranged from 13 to 17 years. Most of the adolescent girls had started their menstrual cycle at the age of 15(36%) and 16 years (35%) of the age. In the present study age at menarche was found in accordance with other studies done in India and some other parts of the world (Kulkarni S 2000).

Majority of girls had normal blood flow and regular menstrual cycle of 5 days. Stomach pain was experienced by the 45% of the subjects during menstruation but only 15% among them consumed consumed medicine for pain relief.

Anthropometric measurements of the selected adolescent girls:

An average anthropometric measurement of different parameters of the selected adolescent girls was presented in table 1

Weight:

The body weight (kg) of the girls ranged from 30.00 to 70.00 from 18+ and 33.0-59.0 from 19+ years age group respectively. The observed values were found to be 2 to 3 percent less than that of ICMR Values (Table 1).

Height:

The height (cm) of the girls ranged from 132-163 for 18+ and 142-164 for 19+ groups respectively. The observed values for height were found to be similar that that of ICMR values (Table 1).

BMI:

The BMI (kg/m2) of the girls ranged from 14.85-24.32 for 18+ and 14.81-24.89 for 19+ age groups respectively. The observed values for BMI were found to be lower than the reference value adopted by NHAMES (24.6 for 18+ and 25.6 for 19+) while on comparison with garrows classification the girls of 18+ age were found in normal while girls of 19+ age were found low weight (18.15) range of BMI.

It can be inferred from the results that adolescent girls who were surveyed were having normal weight and height, but the girls of age 19+ were found to be Under nourished, as per BMI. Though the girls are having normal anthropometric parameters but there is need to maintain this because al the values are at border line, which can be easily affected.

The results are in line with Goswami et al 2009 for height and weight. Sweta et al (2014) and Dasgupta et. Al. (2010) also found the undernourished adolescent girls as per BMI.

Table 1. Average Anthropometric parameters of selected adolescent girls.

Anthropometric parameters	Adolescent girls of 18 yrs of age N=73			Adolescent girls of 19 yrs of age N=27		
	Observed values	ICMR standard value	Percent of ICMR values	Observed values	ICMR standard value	Percent of ICMR values
Weight (kg)	41.78±7.44	43.1±6.55	96.93	42.14±7.68	43.1±6.44	97.77
Height (cm)	152.24±8.16	152.2±5.81	100.02	152.22±6.01	152.1±5.96	100.07
BMI (kg/m2)	19.00±2.84	<18.5 under weight 18.5 to 24.9 normal weight		18.15±2.25	<18.5 under weight 18.5 to 24.9 normal weight	

Observed values are mean ± S.D.

Clinical examination of the selected adolescent girls:

Out of total 100 adolescent girls presence of spongy bleeding gums was found more (57%) followed by angular stomatities (38%) muscle cramps (33%) discolored hair (26%), head ache (22%) and dental carries (18%) these types of clinical symptoms also observed by Deshmukh Asha (2011) among adolescent girls of Yavatmal town.

Thus from these symptoms it can be concluded that most of the girls are pale and anemic, which need biochemical analysis of blood for identifying the grade of anemia.

Food habits and daily meal pattern:

Regarding food habits majority of the girls were vegetarian (87%) and only 13 percent adolescent girls were non vegetarian. The results depict that the trend was towards vegetarianism, it may be due to the consciousness of adolescent girls about their health or ill effects of non vegetarianism or Religion.

The girls were consuming three meals – breakfast, lunch and dinner. The usual breakfast consisted of tea with biscuits, bread or chapatti, chutney, only 22 percent girls were consuming packed lunch of chapatti with vegetable or pickle, lunch at home consisted of chapatti or rice with seasonal vegetable, dinner comprised of chapatti or rice with seasonal vegetable.

It can be inferred from the data that in lunch, dinner pulse and vegetables were common features along with other preparation. There were some vegetables like green leafy vegetables bitter gourd, bottle gourd etc. which were disliked by majority of the subjects. Skipping of meals (57%) laws also very common feature among the subjects. The most commonly skipped meal was breakfast (33%) which may be due to time shortage or rushing to college. Indulgence in consumption of snacks and fast foods was found in 36 percent of the subjects. These were samosa, kurkure, panipuri as reported by girls and have become an integral part of their dietaries.

Food and nutrient intake of the selected adolescent girls:

Average daily food intake (g/day) of adolescent girls is presented in table 2. It is evident from the result of table 5 that the daily diet of the adolescent girls was in adequate in supplying all the food groups, the consumption of fruits and vegetables, was found to be i.e. only 50 percent of suggested intake by ICMR. The

highest percent of food deficit (60%) was found incase of milk and milk products. While supply of food groups like cereals, pulses fats and oils, sugar and jiggery was found high i.e. more than 80 percent than other food groups. It can be indicated from the above results that the intake of all food groups was inadequate in meeting the recommended daily allowances.

The results are in line with the studies reported by Goswami et.al. (2009) and Vasmthamani and Durga Devi (2009).

Table 2. Average daily food intake (g/day) of the selected adolescent girls
N = 25.

Food groups	Range (g)	Observed value (g)	Percent adequacy	Suggested intake by (g)
Cereals	260-350	300.2±4.6	90.97	330
Pulses	45-65	60.3±1.7	80.4	75
Green leafy vegetables	0-100	50.1±4.4	50.1	100
Roots & tubers	75-160	100.3±3.7	50.15	200
Other vegetables	100-200	100.5±4.5	50.25	200
Fruits	20-120	50.2±3.2	50.20	100
Milk and milk products	100-400	200.4±15.2	40.08	500
Fats & oils	25-50	30.6± 2.70	87.43	35
Sugar and jaggery	15-40	20.8±0.7	83.2	25

ICMR 1999 observed value are mean ± S.E.

Average daily nutrient intake of the selected adolescent girls along with the recommended daily allowances (ICMR, 1999) is presented in table 3.

Table 3 : Average daily nutrient intake of selected adolescent girls

Nutrient	Range	Observed value	Percent adequacy	RDA
Energy (Kcal)	1500-2000	1985.3±20.8	96.37	2060
Protein (g)	53.69	58.2±1.3	92.38	63
Iron (mg)	15.0-28	20.3±0.9	67.67	30
Calcium (mg)	236-440	340±11.3	68.00	500
B-carbotone (mg)	1430-2000	1850±20.6	77.08	2400
Thiamine (mg)	0.7-102	0.8v0.1	80.00	1.0
Riboflamin (mg)	0.9-1.3	1.0±0.1	83.33	1.2
Niacin (mg)	9.2-12	11±0.3	78.57	14
Folic acid (mg)	58-89	62±3.5	62.00	100
Ascubic acid (mg)	30-38	32±1.7	80.00	40

The diet of the selected adolescent girls provided 1985.3±20.8 calories, 58.2±1.3 g of proteins, 340±11.30 mg of calcium and 20.3±0.9 mg of iron.

The diet was found to be inadequate in providing vitamins, minerals, proteins and calories. Among the nutrients folic acid, iron and calcium was noticed to be deficient to a great extent i.e. 32 to 38%. Even to supply of other nutrients was found to be deficient by 4 to 23 percent. Lower intake of iron, protein calcium may be attributed to the lower intake of given leafy vegetables, pulses and milk and milk products.

It can be concluded from the results that the diet was in adequate in providing all the essential nutrients. This may be due to the lower food intake.The results are similar to the report presented by Asha Deshmukh (2011).

Summary and conclusions

The present study was undertaken to assess the effect of supplementation on nutritional status of adolescent girls. A total sample of hundred adolescent girls of 8-19 yrs who were attending the arts and commerce Mahila Mahavidyalaya was randomly selected from Ambajogai town.

The relevant data with regards to socio economic background and general information of the selected adolescent girls were collected by personal interview method by using questionnaire. Nutritional status of

selected adolescent girls was assessed by recording anthropometric measurements, clinical examination and diet survey..

Majority of selected adolescent girls were from lower middle socio economic zone having few family members. Most of the selected adolescent girls had normal blood flow and regular menstrual cycle of five days. Stomach pain was experienced by 45% of the subjects during menstruation but only 15% among them consumed medicine for pain relief,

Adolescent girls who were surveyed were having normal weight and height but the girls of 19 + age were found to under nourish as per BMI. Though the girls are having normal anthropometric parameters there is a need to maintain this, because all the values are at border line which can be affected by any change.

Bleeding gums was found to be most common clinical sign (57%) among selected adolescent girls followed by angular stomatities (38%) and muscle cramps (33%).

Regarding food habits majority of the girls were vegetarian (87%). In lunch and dinner pulse and vegetables were common features along with other preparations. Skipping of meals mostly the breakfast was very common feature among subjects.

The intake of di9fferent foods by the selected adolescent girls was found to be deficient in all the food groups, when compared with the recommended daily allowances of ICMR (1999).the intake of all types of vegetables, fruits and milk and milk products was markedly low. Event the intake of cereals and pulses was in adequate by 10 and 20% respectively in the diet of adolescent girls.

When the intake of different nutrients by the adolescent girls was compared with the ICMR recomond3e daily allowances it was observed that the diet was highly deficient in iron, calcium and folic acid while it was near about adequate in providing energy and protein. B complex vitamins like thiamine, riboflavin and niacin and vitamin C was also found deficient in their diet by20%. Thus the diet of adolescent girls was found in adequate in providing all the essential nutrients, this may be due to the lower food intake.

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