A study to assess nutritional status, nutrition knowledge and dietary patterns of college going adolescent girls

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■**ABSTRACT :** Knowledge about food is considered to be beneficial not only for food choice and healthy weight reduction but also as concerns its long-term implications for general health. Continuation of poor eating choices and unhealthy diet can lead to many health problems including obesity, malnutrition, cardiovascular diseases, diabetes etc. Healthy eating habits promote growth and reduce many risks associated with both immediate and long-term health problems. The main objectives of the present study were to assess nutrition related knowledge and dietary habits and practices of college going adolescent girls. The data was collected through survey method with the help of a structured questionnaire from 110 respondents. About 39 per cent of the respondents were underweight. Nutrition related knowledge of adolescent girls was not at all satisfactory.

■**KEY WORDS:** Adolescent girls, Nutritional status, Nutrition knowledge, Food habits, Dietary patterns

As per the definition by World Health Organization, Adolescent is a person between 10 and 19 years of age (http://*www.searo. who.int*). The world is home to 1.2 billion individuals aged 10–19 years and one in every five people in the world is an adolescent (*http://www.esa.un.org*). Adolescents aged 10-19 years constitute about 21 per cent of India's population which is around 253 million. Adolescents are probably less vulnerable to various infectious diseases as compare to the younger aged children and hence are usually regarded as a relatively healthy period of life. But unfortunately every year, an estimated 1.7 million persons between ages of 10 and 19 lose their lives (*http://www.who.int*).

During adolescent period the children are in process of establishing their own health-related behaviour, including the food habits (*http://whqlibdoc.who.int*; Stang and Story, 2005). Adolescence period is characterized by rapid increase in height, weight and hormonal changes resulting in sexual maturation (*www.unicef.org*). Owing to sudden and special growth taking place in this phase, the nutritional requirement also increase tremendously compared to preceding years of growth. Adolescence, one of the nutritional stress periods of life with profound growth, comes with increased demands for energy, protein, minerals and vitamins (Gupta, 1990). The quality and quantity of food intake along with meal pattern regarded as markers for

nutrient intakes and diet quality (Kerver *et al.*, 2006). Good nutritional status in adolescents is decided by proper nutritional knowledge, eating habits, and food behaviour, which plays an important role not only in the improvement of physical development but also in the maintenance of mental and emotional stabilization (Shabnam and Khyrunnisa, 2014). But unfortunately various studies show that many adolescents' diets don't meet the dietary guidelines set my ICMR. Adolescents commonly follow erratic dietary patterns including; snacking, skipping meal, irregular meal timings, breakfast skipping, dieting, adoption of specific diets, wide use of fast food and low consumption of healthy foods etc. (Davidson *et al.,* 2012*;* Lipsky and Iannotti, 2012; Jenkins, 2005; Sodha *et al.,* 2015; and Chitra, 2007). Eating patterns and behaviours of adolescents are influenced by many factors, including peer influences, parental guidance, food availability, food preferences, personal and cultural beliefs, influence of mass media, environmental factors (Shepherd and Dennison, 1996; Redding *et al.,* 2000; Story *et al.*, 2002 and Stang and Story, 2005). Increased nutritional needs but improper consumption in adolescence results in increased proportion of wasting, stunting, anaemia and micronutrient deficiencies (Nutrition Foundation of India, 2009; Thiruselvakumar *et al.*, 2014; Davidson *et al.*, 2012 and Shepherd and Dennisom, 1996).

Objectives:

The objectives of the present study were

– To assess nutritional status of the respondents with the help of anthropometric parameters.

– To assess nutrition related knowledge of college going adolescent girls.

– To find out dietary habits and practices of the participants.

■ **RESEARCH METHODS**

Research design :

Hundred and ten college going girls aged 15-19 from Govt. Women's College, Keonjhar were selected randomly as the respondents for the study. Age of the subject was considered to the nearest whole number.

Data collection:

A structured questionnaire was developed in keeping view the objectives of the study to assess the anthropometric profile, nutrition related knowledge and dietary practices of the adolescent girls. The data has been analysed by suitable statistical methods.

The Anthropometric measurements :

Height of the respondents was measured while the subject was standing without foot wear, to the nearest 0.1 cm, using a portable Anthropometry rod. Weight was measured with the subject standing and wearing light clothes using a portable electronic weight machine. The formula for Body Mass Index (BMI) prescribed by WHO, weight (kg)/ height (m^2) was used to calculate Body Mass Index (BMI) and international cut-off for BMI was used for classification of subjects as malnourished/ malnutrition (BMI below 18.0 kg/m^2), normal 18<BMI>25kg/m^2), over weight (25 <BMI<30 kg/m^2) and obesity (BMI>30kg/m^2) (Priyadarshini, 2015).

■ **RESEARCH FINDINGS AND DISCUSSION**

The result obtained by the present study is presented in Table 1 to 4.

In this study, regarding body composition, the mean height of the respondents was 1.56 meter (SD ±3.532), mean body weight was found 46.84 kg (SD ±5.687) and the mean BMI was 19.048 (SD ±8.177). The nutritional status of the subject has been assessed by the help of WHO cut offs on percentile basis.

Table 1 : Anthropometric measurements of the subjects		(n=110)
Variable	Mean	SD
Body composition		
Current height (in cm)	156.721	±3.532
Current weight (in kg)	46.841	±5.687
BMI (weight (kg)/ height (m^2)	19.048	±8.177

Table 2 shows the association between body mass index (BMI) and marital status. Out of 110 respondents, 12 respondents were married. 8 (7.27%) married and 35 (31.81%) unmarried respondents were found to be under-weight having BMI<18.5. Approximately half of the respondents *i.e.*, 56 (50.09%) unmarried adolescents were found within normal range of BMI and only 7 (6.36%) unmarried respondents were overweight. As to the married respondents, 3 (2.73%) were under normal category of BMI and only 1 (0.9%) was over-weight. No significant association was found between BMI and

Table 2 : Association between marital status and BMI

Marital status	Underweight <18.5		Normal 18.5 – 24.5		Over weight >24.5		Total	
	F	%	F	%	F	%	F	%
Single	35	31.81	56	50.9	7	6.36	98	89.1
Married	8	7.27	3	2.73	1	0.90	12	10.90

Chi Square = 5.388, df = 3, p value is 0.145493, $p < 0.05$ (not significant)

Table 3 : Association between nutritional knowledge and age

Nutritional knowledge questions	Correct		Incorrect		Total	
	F	%	F	%	F	%
Knowledge of food group to be eaten the least						
Age 15 – 17 yrs	15	13.63	35	31.81	50	45.45
Age > 17 yrs	12	10.9	48	43.63	60	54.54
Total	27	24.54	83	75.45	110	100
Chi Square = 1.472, df = 1, $p < 0.05$ (not significant)						
Knowledge of the three main components of food						
Age 15 – 17 yrs	18	16.36	32	29.09	50	45.45
Age > 17 yrs	25	22.72	35	31.81	60	54.54
Total	43	39.09	67	60.90	110	100
Chi Square = 0.367, df = 1, $p < 0.05$ (not significant)						
Awareness of which foods have more fibre						
Age 15 – 17 yrs	37	33.63	13	11.81	50	45.45
Age > 17 yrs	21	19.09	39	35.45	60	54.54
Total	58	52.72	52	47.27	110	100
Chi Square = 16.642, df = 1, $p > 0.05$ (significant)						
Awareness of which foods have more calcium						
Age 15 – 17 yrs	42	38.18	08	7.27	50	45.45
Age > 17 yrs	33	30	27	24.54	60	54.54
Total	75	68.18	35	31.81	110	100
Chi Square = 10.573, df = 1, $p > 0.05$ (significant)						
Knowledge of food containing protein other than meat/fish/poultry						
Age 15 – 17 yrs	18	16.36	32	29.09	50	45.45
Age > 17 yrs	31	28.18	29	26.36	60	54.54
Total	49	44.54	61	55.45	110	100
Chi Square = 2.71, df = 1, $p < 0.05$ (not significant)						
Knowledge of food containing carbohydrates						
Age 15 – 17 yrs	13	11.81	37	33.64	50	45.45
Age > 17 yrs	32	29.09	28	25.45	60	54.54
Total	45	40.90	65	59.09	110	100
Chi Square = 8.429, df = 1, $p > 0.05$ (significant)						
Knowledge of the sources of vitamin B12 and iron						
Age 15 – 17 yrs	19	17.27	31	28.18	50	45.45
Age > 17 yrs	20	18.18	40	36.36	60	54.54
Total	39	35.45	71	64.54	110	100
Chi Square = 0.259, df = 1, $p < 0.05$ (not significant)						
Adverse effect of iron deficiency						
Age 15 – 17 yrs	10	9.09	40	36.36	50	45.45
Age > 17 yrs	16	14.54	44	40	60	54.54
Total	26	23.63	84	76.36	110	100
Chi Square = 0.672, df = 1, $p < 0.05$ (not significant)						

Table 3 contd....

Contd.... Table 3

Adverse effect of iodine deficiency						
Age 15 – 17 yrs	41	37.27	09	8.18	50	45.45
Age > 17 yrs	46	41.81	14	12.72	60	54.54
Total	87	79.09	23	20.9	110	100
Chi Square = 0.470, df = 1, p < 0.05 (not significant)						
Special nutrient required during adolescent						
Age 15 – 17 yrs	08	7.27	42	38.18	50	45.45
Age > 17 yrs	06	5.45	54	49.09	60	54.54
Total	14	12.72	96	87.27	110	100
Chi Square = 0.884, df = 1, p < 0.05 (not significant)						
Knowledge of problems related to low intake of fruits and vegetables						
Age 15 – 17 yrs	16	14.54	34	30.90	50	45.45
Age > 17 yrs	22	20	38	34.54	60	54.54
Total	38	34.54	72	65.45	110	100
Chi Square = 0.262, df = 1, p < 0.05 (not significant)						
Awareness of hazards related to soft drinks						
Age 15 – 17 yrs	08	7.27	42	38.18	50	45.45
Age > 17 yrs	17	15.45	43	39.09	60	54.54
Total	25	22.72	85	77.27	110	100
Chi Square = 2.363, df = 1, p < 0.05 (not significant)						

marital status of the respondents.

Nutrition related knowledge of adolescent girls was not satisfactory in the study area. Majority of them were not aware about the sources of micronutrients and harmful effect of micronutrients deficiency and nutrition knowledge imparted in the college had been too limited to make any tangible effect on their nutritional status. Majority of the subjects were not aware about the nutritional requirements during adolescent age. The result was significant at p<0.05 in cases of awareness of which foods have more fibre, awareness of which foods have more calcium and knowledge of food containing carbohydrates. In the light of these finding there is need for designing and implementing adolescent nutrition education programme in school and colleges.

Table 2 represents dietary patterns among adolescent girls. Of 110 subjects, about 83.63 per cent took two major meals a day but it was lacking in balanced diet. Only 16.36 per cent of the respondents took breakfast <5 days per week. 82.73 per cent girls found to have non-vegetarian diet. As to answer frequency of snacks about 79 per cent respondents had one snacks per day, 12.72 per cent had twice and 8.18 per cent had

3 snacks per day. But the girls used to take unhealthy, not nutritious snacks such as pani-puri, chat, chips etc. only 24.54 per cent of the adolescent girls consumed green leafy vegetables and fruits regularly and 10 per cent consumed fruits on a regular basis. Another thing was that food rich in proteins like meat, chicken and fish were taken by only about few. Consumption of ghee, oil, rice, potato even in recommended daily allowance was recognised as weight gaining food. Majority (89%) of the respondents consumed fast food quite regularly. The main reason sighted by the adolescents was for taste/ flavour of fast foods. However, only 19 per cent of the respondents took fast food rarely.

Conclusion :

Access of nutrition related knowledge was poor for adolescent girls as there was no provision for nutritional knowledge in the curriculum. The majority of them were not aware about their nutritional needs. Ignorance about micronutrients and protective foods prevailed in adolescent girls. The eating practices raised serious concerns about inadequate intake of proteins, green leafy vegetables and fruits, emphasizing the need for a

Table 4 : Dietary pattern of the respondents				
Dietary pattern	Number	Per cent	Total	
	F	%	F	%
Regular meals				
Yes	63	57.27	110	100
No	47	42.72		
Had breakfast (days/ week)				
Never	13	11.81		
Infrequently (1-4 days/week)	79	71.81	110	100
Frequently ($\geq$5 days/week)	18	16.36		
Major meals per day				
One	03	2.72	110	100
Two	92	83.63		
Three or more	15	13.63		
Type of food they eat				
Vegetarian	19	17.27	110	100
Non-vegetarian	91	82.73		
Preferred main item for meal				
Only cereals	12	10.90	110	100
Only Pulses	02	1.81		
Both	96	87.27		
Frequency of Snacks per day				
One	87	79.09	110	100
Two	14	12.72		
Three	09	8.18		
Frequency of green leafy vegetables				
Regular	27	24.54	110	100
Occasional	73	66.36		
Never	10	9.09		
Frequency of fruit				
Regular	11	10	110	100
Occasional	85	77.27		
Never	14	12.72		
Consumption of food help in gaining weight				
Rice, Potato	23	20.9	110	100
Ghee, Oil	78	70.9		
Cheesy Fast-food	09	8.2		
Consumption of fast food				
Often	89	80.9	110	100
Rarely	21	19.1		

practical, relevant and tailored nutrition education programme, specially focusing on the nutrients and their benefits to the body, the consequences of skipping meals, the way they prepare their food. Also the study revealed an urgent need to educate not only the students but their families as well. Due to the importance of nutrition and

its impact on health the study suggests that nutrition courses should be part of the university requirements.

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