Evaluation of Nutritional status of College-Girls in Haryana

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Abstract

Eating habits are a vital concern when it comes to good health. In India, poor eating habits are a general cause of anxiety for parents in college students. Busy in studies and other recreational activities, they have limited time to look at their diet. It's a transition period in their life during which they are exposed to stress. Now, this period is considered a crucial phase of growth and development because it offers the second and last chance to gain growth in the life cycle and poor dietary choices among them can cause significant health problems and retarded growth.

Therefore the present study was undertaken to study the nutritional status of the 105 college girls, aged 18-24 years of District Karnal, Haryana. The direct interview method was used to collect the data regarding general information, specific & dietary information through a preformulated, pretested questionnaire. Girls were evaluated for their hemoglobin level as well as for anthropometric measurements like height, weight and BMI. It was observed that about 40 percent of the college girls came under CED grade I, II & III. Most of the college girls (90%) were suffering from different categories of anemia. The consumption of protective foods like GLV, fruits, raw salad and milk was very low among them. Having snacks in-between meals & skipping major meals was a very common habit among them. Most of them (95%) were consuming junk food also on regular basis. Hence, the mean nutrient intake among the subjects was very low than RDA.

This study has clearly shown that effective awareness campaigns regarding nutritional food, nutritional requirements, eating habits, healthy lifestyle and weight management is very essential to educate the college girls' students in managing conditions like anemia, undernutrition and other related health complications. It is suggestive to have regular blood tests done in colleges to check the hemoglobin level of girl- students.

Keywords: *College Students, Nutrient Intake, Anemia, BMI, RDA.*

Introduction

The health of the countrymen is a mandate for a nation's prosperity and good nutrition is the prerequisite of good health. As college girls are in the stages of completion of growth and sexual maturation, the positive health of this section is essential for the proper development of a country. Inadequate nutrition affects students' health and academic success. College students are at risk as they make poor dietary choices that can cause significant health problems. College girls do not know the nutritional content of the food they eat and then academic responsibilities and other factors distract their eating pattern. More snacking, lifestyle changes, stress, peer group pressure, eating behavior, more consumption of junk food, poor hygiene conditions lead to the deprived health status of college girls and this is the main reason for weight loss, obesity and other nutritional deficiencies disorders among them. One of the major consequences of the physiological changes and nutritional neglect which happens during this period is Anemia.

Anemia is the most common nutritional deficiency disorder in the world. Low hemoglobin contents of blood limit the exchange of oxygen and carbon dioxide between the blood and the tissues in those humans who suffer from anemia. There are many types of anemia such as microcytic, macrocytic, megaloblastic, pernicious, etc. Particularly, women of childbearing age are at a higher risk of developing iron deficiency due to iron loss associated with menstruation.

IDA (Iron Deficiency Anemia) is characterized by the production of small erythrocytes and diminished level of circulating hemoglobin which is the last stage of iron deficiency and it represents the endpoint of a long period of iron deprivation. According to the doctoral studies, the normal amount of Hb in the blood of college girls should be 12g/dl.

People with IDA have a low level of oxygen in the blood which leads to breathlessness, tiredness, rapid and weak pulse rate, headache, etc. It affects the structure of the epithelial tissues of the tongue, nails, mouth and stomach. Other common symptoms of IDA are pale skin, pink eyelid, koilonychia of nails, atrophy of the lingual papillae, glossitis, angular stomatitis, dysphagia, gastritis, poor concentration towards work, sensitivity to cold, reduced physical capacity, loss of appetite, etc. Patients also complain of increased heart rate, heartburn, edema, neurological pain, numbness and tingling. Menstrual disturbances such as menorrhagia, irregularity of flow, or even amenorrhea are also common among girls.

Anthropometric indices indicate a cumulative effect of quality and quantity of the food as well as other health factors. Nutritionally deprived persons have smaller

body sizes as well as weight, and they expend energy only in proportion to their body weight. Thus, short stature and reduced body size due to undernutrition mean lower levels of productivity and growth.

The best way to prevent IDA and other nutritional problems is to eat a nutritional diet that contains all the nutrients in an adequate amount. Students should strive to eat a balanced diet of grains, protein, dairy products, fruits and vegetables. Fast food and unhealthy snacks should be avoided by them. Some of the tips suggested for college students in improving their diet are as follows:

- · Balance your meal
- · Drink plenty of water
- · Use dairy products
- · Read the nutrition fact label
- · Take small and frequent meals

Review of Literature

Arnett (2000) deliberates upon the emerging adulthood to the period between 18 and 25 years of age where adolescents became more independent and explore various life possibilities. Moy et al. (2009) conveyed that dietary patterns developed during adolescence may contribute to obesity and other eating disorders that may increase the risk for several chronic diseases later in life.

Padma et al. (2016) conducted a study on 200 girls of age group 18-22 years and found that their hemoglobin level ranged between 7.2 to 14.9g/dl. The percentage of students with severe, moderate, mild and non-anemia were 1.5, 18.5, 20.5 and 59.5 percent respectively. The BMI values show that 55.3 percent of students belonged to the normal weight category, 17.44 percent were underweight, 16.92 percent were overweight and 10.23 percent were obese and according to Sen Emerald et.al. (2019), 15 percent of university students were underweight, 55 percent had normal BMI, 20.5 percent were overweight and 9.5 percent were obese.

Saxena, N. (2016) stated that the high prevalence of sedentary behavior, physical inactivity and unhealthy dietary habits among emerging adult girls has been a major concern. Since college-going age is a critical period of growth and development, the young girls of our country and very importantly the future mothers should be focused on their required nutrient intake, dietary habits and their nutritional status for their current and future health and well-being.

About 50 percent of college-going girls are anemic in a survey conducted by the Health Department of Haryana which pointed to unhealthy food habits especially among adolescent girls. (DeependerDeshwal, TNN, Jun 19, 2012) whereas Kurkcu

et al. (2010) stated that Nutrition education and health awareness about the importance of a balanced diet is needed for college students to maintain the health.

Research Problem

Meager work has been done on the evaluation of the nutritional status of college girls of District Karnal, Haryana. Therefore, keeping in view the importance of the health of these girls, the present study was undertaken.

Objectives

- To assess the dietary and nutritional status of the college girls by measuring their height and weight, calculating their BMI and assessing their intake of different nutrients as well.
- To determine the deficiency of iron among college girls by measuring their HB level.
- To study about nutritional knowledge of college girls.

Methodology

The area selected for the study was Karnal (Haryana). For the sample study, 105 college-going girls were selected and the data was collected in December 2020. Direct Interview Schedule Method was used for data collection, and a survey was done through the pre-formulated, and pre-tested questionnaire. Anthropometric indices were taken height (feet), weight (kg) and BMI. The measurement of height (cm) was taken with the help of measuring tape. The subjects were weighed on a simple weighing machine.

Body Mass Index (BMI) is expressed as a ratio of weight in kilograms to the square of height in meters.

BMI=Weight (kg)/ Height (m2)

The hemoglobin level of the subjects was determined by Sahlis Acid Hematin Method. The dietary intake of all the subjects was assessed via the 24 Hours Recall Method for three consecutive days. The nutritive value of diets in terms of energy, protein, fat, iron and vitamin C was calculated with the help of the book on *Nutritive Value of Indian Foods* by Gopalan et al. (2000). The average nutrient intake per day per subject was calculated and then the mean nutrient intake was compared with recommended dietary allowances given by ICMR.

The collected data was then coded, calculated & tabulated and was analyzed by the Statistical Method of Frequency & Percentage.

Result & Discussion

Table 1: Sample Profile

Characteristics	Frequency (100)	Percentage
• Age (years)		
-Less than 18	45	42.8
-18-20	35	33.3
-More than 20	25	23.8
• Type of Family		
-Nuclear	67	63.8
-Joint	38	36.1
• Monthly Income (Family)		
-Up to 30,000	25	23.8
-Up to 60,000	30	28.5
-Up to 1 Lac	33	31.4
-Above 1 Lac	17	16.1
• Occupation (Father)		
-Govt. Job	27	25.7
-Private Job	17	16.1
-Self-employed	38	36.1
-Farmer	23	21.9
• Occupation (Mother)		
-Housewife	90	85.7
-Service	15	14.2
• Marital Status		
-Married	24	22.8
-Unmarried	81	77.1
• Residential Area		
-Rural	41	39.0
-Urban	64	60.9

Table 1 indicates that 42.8 percent of the college students were less than 18 years while 33.3 percent were from the age group of 18-20 and the remaining 25 percent were more than 20 years. A majority (63.8%) of the students lived in nuclear families and the remaining (36.1%) of the students were from joint families. It was seen that 31.4 percent of the students were from the family having monthly income up to one lac followed by 28.5 percent whose monthly income was 60,000/-. Only 23.8 percent of the students belonged to the family having income less than 30,000/- per month. Occupation of the parents revealed that about 26 percent of the respondent's fathers were in a Government job and only 16 percent were in private jobs while most (90 %) of the mothers were housewives. It is inferred that 61 percent of the subjects were from the urban area and the majority (77%) of the subjects were unmarried.

Table 2: Categorization of Girls based on their Weight, Height and BMI

Characteristics	Frequency	Percentage
Weight (kg)		
31-40	14	13.3
41-50	63	60.0
51-60	28	26.6
> 60	-	-
Height (feet)		
4.5-5.0	28.	26.6
5.1-5.5	77	73.3
BMI		
< 16.0 (CED Grade 111)	8	7.6
16.0-17.0 (CED Grade 11)	8	7.6
17.0-18.5 (CED Grade 1)	26	24.7
18.5-20.0 (Low Weight Normal Grade)	39	37.1
20.0-25.0 (Normal Grade)	24	22.8

Table 2 gives the information regarding the weight, height and BMI of the subjects. It is clear from the analysis of the data that when the weight of the girls was measured, their body weight ranged from 31 -60 kg. The majority of the girls (60%) had their weight between 41-50 kg whereas 26.6 percent had their weight lying between 51-60 kg, followed by 13.3 percent who had 31-40 kg of body weight. The height of the girls ranged between 4.5 to 5.5 feet. The majority of them (73.4%) had their height lying between 5.1-5.5 feet and the remaining 26.6 percent had their height in between 4.5-5.0 feet. Table 2 also provides the information regarding the Body Mass Index of the 105 girls under study. 37.1 percent of girls came under Low Weight Normal Grade followed by CED Grade 1 (24.7%). An equal number of the subjects (7.6%) were in CED Grade 11 & CED Grade 111. Only 22.8 percent came under Normal Grade. Ritu Priya et al. (2020) in a study found that 75 percent of the students were having BMI in the range of 18.5-25 (Normal), 13.66 percent were having BMI below 18.5 (Underweight) while 11.66 percent were in the range of 25.1 -29.8 (Overweight).

Table 3 Distribution of the Subjects according to their Hemoglobin level

Characteristic	Frequency	Percentage
Severe Anemia (< 7.0g/dl)	40	38.0
Moderate Anemia (7.0-8.9 g/dl)	20	19.4
Mild Anemia (9.0-10.9g/dl)	18	17.1
Marginal Anemia (11.0-11.9g/dl)	16	15.2
Non-Anemic (> 12.0)	11	10.4

Table 3 provides information regarding the hemoglobin level of collegegirls. Out of the total of 105 subjects, only 10.4 percent of subjects were non-anemic and

the remaining 89.6 percent were suffering from different categories of anemia. 38 percent were having severe anemia, followed by moderate anemia (19.4%) and mild anemia (17.1%). About 15 percent of the subjects were marginal anemic. Subramaniyan et al. (2016) in a study also found that 43 percent of University students in South India were suffering from different grades of anemia. Ritu Priya et al. (2020) in a study found that 21.66 percent of female students were having hemoglobin levels in the range of 10-12g/dl and 1.66 percent in the range of 6-8g/dl.

Table 4: Distribution of the Subjects according to their Dietary History

Characteristics	Frequency	Percentage
Vegetarian	57	54.2
Ova- vegetarian	28	26.6
Non- vegetarian	20	19.4
Consume fruits		
-Yes	50	47.6
- No	55	52.3
Consume raw salad		
-Yes	54	51.4
-No	51	48.5
Consume Junk Food		
-Yes	100	95.2
-No	05	4.7
Consume Milk		
-Yes	40	38.0
-No	65	61.9
Skip Meal		
-Yes	61	58.0
-No	44	41.9
Type of meal skipped		
-Breakfast	28	45.9
-Lunch	23	37.7
-Dinner	10	16.3
Consume food in between meal		
-Yes	45	42.8
-No	60	57.1
Type of food consumed in between meal		
-Cold drink	40	38.0
-Junk food	95	90.4
-Tea	20	19.0
Do you keep fast		
-Yes	46	43.8
-No	59	56.1

The dietary history of the respondents in Table 4 depicts that about half of the respondents were vegetarian followed by ova-vegetarian and the remaining 18.8 percent respondents were non-vegetarian. About 52.3 percent of respondents were not consuming fruits and raw salad was preferred by almost half of them. The maximum number (95.2%) of the college girls were eating junk food which is not good for

health. Only 38 percent of respondents were consuming milk. Table 4 reveals that 58 percent of the respondents were skipping major meals and the majority of the respondents (45.9%) skipped breakfast followed by lunch (37.7%) and the remaining 16.3 percent of respondents skipped dinner. Eating habit in between major meals was also found among respondents and major eatable taken in between main meal were junk food, tea and a cold drink. On further analysis of the data, it was clear that about 42-44 percent of respondents were consuming food in between meals & were keeping fast also. Sen Emerald et al. (2019) also stated that skipping breakfast, negligence of taking meals at a proper time, usage of junk food as an alternative, etc. were common among university students whereas Saxena, N. (2016) found that the consumption of protective foods such as fruits, vegetables, milk and milk products was very low in college going girls and having snacks in between meals was a very common habit among them which lead to poor nutrition among them.

Table: 5 Distribution of the Subjects based on food fads and fallacies

Characteristics	Frequency	Percentage
A good way to do more work is to skip breakfast		
-Yes	44	41.9
-No	61	58.0
Honey is not fattening		
-Yes	60	57.1
-No	45	42.8
We need no milk		
-Yes	54	51.4
-No	51	48.5
White shell eggs are more nutritious than brown		
-Yes	43	40.9
-No	62	59.4
Curd, buttermilk, oranges are supposed to be very cold		
-Yes	81	77.1
-No	24	22.8
Groundnuts, mango, saag, etc. are supposed to be hot		
-Yes	88	83.8
-No	17	16.1

Table 5 provides information regarding the distribution of subjects based on their belief in food fad and fallacies. The data depicts that 41.9 percent of the girls believed that a good way to do work was to skip breakfast whereas the rest 58

percent did not agree with this opinion. Out of the total studied subjects, 42.8 percent of girls had faith that honey was fattening whereas 51.4 percent thought that they needed no milk. About 43 percent of girls thought that white-shell eggs are more nutritious than brown whereas 59.4 percent did not believe in this statement. Most of the subjects (77.1%) believed that curd, buttermilk, oranges, etc. are cold whereas 83.8 percent had the opinion that groundnut, mango, saag, etc are not hot food. It was indicated by the finding of Ruchi (2004) that there was a high prevalence of food fads and fallacies among adolescent girls in the hilly area of Solan. Our findings also coincided with this study. Hence, it can be stated that nutritional education is necessary to increase the level of nutrition among college girls of District Karnal (Haryana).

Table: 6 Distribution of the Subjects based on Nutrient Intake

Characteristics	Worked out RDA	Mean Actual Intake	Deviation from RDA
Energy (kcal)	2060	973	-1087
Protein (gm)	63	30	-33
Fat (gm)	22	20	-2.0
Carbohydrates (gm)	404	168.25	-235.75
Iron (mg)	30	17.4	-12.6
Vitamin C (mg)	40	32.1	-7.9
Calcium (mg)	500	204	-296

Table 6 revealed the nutrient intake of the college girls. The daily mean intake of carbohydrates, protein and fat was found to be 168.2gm, 30 gm and 20 gm respectively. These figures did not satisfy the RDA standards and attributed to the low-calorie intake by the subjects i.e. 973 kcal per day. The observation showed that the daily Iron, Vitamin C and calcium intake of the subjects was 17.4 mg, 32.1 mg and 204 mg respectively which was very less than RDA. The low consumption of nutrients was the root cause of the prevalence of anemia and low weight among these girls. Saxena et al. (2016) in a study on college girls also found that daily intake of nutrients like calories, protein, iron, calcium, vitamin A, vitamin C, vitamin B1 and vitamin B2 was statistically and significantly low as compared to RDA.

Conclusion

In the present study, it was found that the mean intake of energy, protein, carbohydrates, fats, vitamin C, iron and calcium were less than RDA which was the main reason for low body weight and anemia among them. Fruits, vegetables, milk and milk-product consumption was very low among the girls. Having a snack in between the meals and often skipping the meals was very common among them. Also, junk food consumption was a very regular eating habit.

The present study concluded that unhealthy eating habits were the main reason for malnutrition among college girls and are a major health concern. As college-going age is a critical period of growth and development, nutrition education regarding the balanced diet, food groups, meal pattern, spacing of meals, etc. should be provided to them. Information about iron-rich foods such as GLV, meat, jaggery and enhancers and inhibitors of iron absorption should be communicated to them. Also, the use of iron utensils should be encouraged. Regular health checkups, especially blood testing should be promoted in the colleges for better health results.

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