

Adequacy of Hostel Diet in Terms of Nutrient Supply

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ABSTRACT

In most of the countries for the higher education the student live in hostel and in hostel life young boys and girls neglect the importance of nutrition. Diet is vital in life as a major determinant of health, while good nutrition is essential for growth, development and maintenance of health throughout the life. A Balance dietary intake which contains all the five classes of food is essential in maintaining good health. It is highly important to have adequate dietary intake to complement daily physical and mental activities. Indian Council of Medical Research (2010 and 2020 too) has recommended diet and nutrient intake for all age groups and activities, which may be considered while deciding about balance diet. The study was conducted among 60 students (30 boys and 30 girls) from all colleges of Dr.RPCAU who were residing in University hostel and studying in seventh semester. In order to extract relevant information an interview schedule was developed and was subjected to pretesting before starting the research work. In order to know about the dietary intake of subjects 24 hours dietary recall method was used. The mean intake of nutrients were compared with the Recommended Dietary Allowance (RDA) given by ICMR (2010 and 2020) to find out the percentage of nutrients in the diet of university students. When the nutrient intake was compared with RDA(2010) boys were consuming more protein(28.82%),fat(10.33%),iron(42.12%).vitamin-c(36.4%) and less calorie(-6.93%), calcium(-6.91%),vitamin B12(-83%) and folic acid(-14.11%). Whereas, girls were consuming more protein(9.85%),fat(7.64%)vitamin-c(55.17%) and less calorie(-0.93%),iron(-7.1%),calcium(-22.23%),vitaminB12(-76%)and folic acid(-18.89%) when compared with RDA 2010. Similarly when the study was compared with latest RDA 2020 both the groups were consuming more calorie, proteins and less calcium, vitamin C, vitamin B₁₂,and folic acid. In terms of fat and iron consumption, boys were taking less fat and more iron whereas girls were taking more fat and less iron. t-test was computed to found the statistical difference between nutrient intake of boys and girls. . The energy, protein and iron were found statistically significant and positive while fat, calcium and folic acid was found non-significant. It was also found that vitamin C and vitaminB₁₂ was found non significant and negative. The relationship between protein and iron intake was found significant with haemoglobin level of students. Therefore there is an urgent need to make students aware about importance of micronutrients in maintaining their good health and future health security.

Keywords

Hostel Diet,
Nutrient intake,
RDA

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Introduction

In most of the countries for the higher education the student live in hostel and in hostel life young boys and girls neglect the importance of nutrition. At hostel, boys and girls student get food either from canteen or mess. Foods available at canteen are usually cooked in unhygienic condition and usually during the process of cooking most of the essential nutrients are destroyed and therefore may not fulfill the requirement of students. This may results in malnutrition. Diet is vital in life as a major determinant of health, while good nutrition is essential for growth, development and maintenance of health throughout the life. A Balance dietary intake which contains all the five classes of food is essential in maintaining good health. It is highly important to have adequate dietary intake to complement daily physical and mental activities. Indian Council of Medical Research (2010 and 2020 too) has recommended diet and nutrient intake for all age groups and activities, which may be considered while deciding about balance diet. Life can be sustained only with adequate nourishment. Since time immemorial the focus has been given to taking balance diet or proper nutrition. Nutrients are derived from good food and functions in one or more ways i.e. maintenance of biological functions, including metabolism, growth, and repair. There are two groups of nutrients- Macro & Micro. Micronutrients are needed by the body in much smaller amounts but still play a vital role in the body. If not available, the body may develop deficiencies.

Micronutrients (vitamins and minerals) from food promotes variety of process of brain functioning. It synthesize neurotransmitters, which carry messages across the synapses and helps in better transmission of messages from brain to body parts and from body parts to

brain. Neurotransmitters “influence mood, sleep patterns, and thinking. Deficiencies or excesses of certain vitamins or minerals can damage nerves in the brain, causing changes in memory, limiting problem-solving ability, and impairing brain function”.

Materials and Methods

The study was conducted among 60 students (30 boys and 30 girls) from all colleges of Dr.RPCAU who were residing in University hostel and studying in seventh semester. In order to extract relevant information an interview schedule was developed and was subjected to pretesting before starting the research work.

In order to know about the dietary intake of subjects 24 hours dietary recall method was used. All the subjects were interviewed in the lunch time and dietary intake of previous day of each subject was noted down in the developed interview schedule. Daily intake consisted of the meal which subjects consumed at the time of breakfast, mid-morning, lunch, snacks and tea, dinner and bed time.

To assess the quantity of food consumed, subjects were shown the standardized utensils and asked to express the amount of food consumed. In addition for eating habit of subject’s consistency and size of cooked food for e.g. rice, pulse, vegetable and chapatti were also shown to the subject.

The different food items consumed were converted to their raw equivalents. Average daily intake of all nutrients were calculated from per 100gm edible portion given in the “Food Composition Tables” (Gopalan *et al.*, 1989).

The mean intake of nutrients were compared

with the Recommended Dietary Allowance (RDA) given by ICMR (2010 and 2020) to find out the percentage of nutrients in the diet of university students.

Results and Discussion

Present study showed that boys were consuming more protein (28.82%), fat (10.33%), iron (42.12%), vitamin-c (36.4%) and less calorie (-6.93%), calcium (-6.91%), vitamin B12 (-83%) and folic acid (-14.11%) in comparison to RDA. Whereas, girls were consuming more protein (9.85%), fat(7.64%)

vitamin-c(55.17%) and less calorie(-0.93%), iron(-7.1%), calcium(-22.23%), vitaminB12(-76%) and folic acid (-18.89%) when compared with RDA 2010.

Similarly when the study was compared with latest RDA 2020 both the groups were consuming more calorie, proteins and less calcium, vitamin C, vitamin B₁₂,and folic acid. In terms of fat and iron consumption, boys were taking less fat and more iron whereas girls were taking more fat and less iron.

Table.1 Nutrient intake of boys and girls

Particulars Nutrients	Subjects (N= 60)					
	Boys (30)	Girls (30)	RDA* (ICMR)			
			Boy		Girl	
Mean ± SD	Mean ± SD	2010	2020	2010	2020	
Energy (kcal)	2159.30±342.28	1882.31± 279.19	2320	2110	1900	1660
Protein (g)	77.29± 19.31	60.42±12.71	60	54.0	55	45.7
Fat (g)	34.97±10.87	33.37±8.35	39	35	31	28
Iron (mg)	24.16 ± 9.76	19.51±7.80	17	19	21	29
Calcium (mg)	558.52± 297.13	466.60±180.20	600	1000	600	1000
Vitamin C (mg)	54.56± 22.69	62.07±22.04	40	80	40	65
Vitamin B ₁₂ (µg)	0.17± 0.16	0.24±0.41	1.0	2.5	1.0	2.5
Folic acid (µg)	171.78± 58.15	162.23±59.12	200	300	200	220

*Recommended Dietary Allowance (ICMR, 2010&2020)

Table.2 Comparison of nutrient intake of boy with RDA

	Mean ± SD	Boy(RDA)		Percentage	
		2010	2020	2010	2020
Energy (kcal)	2159.30±342.28	2320	2110	-6.93	+2.33
Protein (g)	77.29± 19.31	60	54	+28.82	+43.13
Fat (g)	34.97±10.87	39	35	+10.33	-0.09
Iron (mg)	24.16 ± 9.76	17	19	+42.12	+27.16
Calcium (mg)	558.52± 297.13	600	1000	-6.91	-44.15
Vitamin C (mg)	54.56± 22.69	40	80	+36.4	-31.8
Vitamin B ₁₂ (µg)	0.17± 0.16	1.0	2.5	-83	-93.2
Folic acid (µg)	171.78± 58.15	200	300	-14.11	-42.74

Table.3 Comparison of nutrient intake of girl with RDA

	Mean ± SD	Girl(RDA)		Percentage	
		2010	2020	2010	2020
Energy (kcal)	1882.31± 279.19	1900	1660	-0.93	+13.37
Protein (g)	60.42±12.71	55	45.7	+9.85	+32.21
Fat (g)	33.37±8.35	31	28	+7.64	+19.18
Iron (mg)	19.51±7.80	21	29	-7.1	-32.73
Calcium (mg)	466.60±180.20	600	1000	-22.23	-53.34
Vitamin C (mg)	62.07±22.04	40	65	+55.17	-4.51
Vitamin B₁₂ (µg)	0.24±0.41	1.0	2.5	-76	-90.4
Folic acid (µg)	162.23±59.12	200	220	-18.89	-26.26

Table.4 Comparison of nutrient intake between boys and girls

Particulars	Boys(30)	Girls(30)	Difference(t-test)
	Mean ± SD	Mean ± SD	t-value
Energy (kcal)	2159.30±342.28	1882.31± 279.19	3.409**
Protein (g)	77.29± 19.31	60.42±12.71	3.93*
Fat (g)	34.97±10.87	33.37±8.35	.568
Iron (mg)	24.16 ± 9.76	19.51±7.80	9.08*
Calcium (mg)	558.52± 297.13	466.60±180.20	1.50
Vitamin C (mg)	54.56± 22.69	62.07±22.04	-1.82
Vitamin B₁₂ (µg)	0.17± 0.16	0.24±0.41	-1.43
Folic acid (µg)	171.78± 58.15	162.23±59.12	.664

** Correlation is significant at the 0.01level

Table.5 Correlation coefficient of nutritional intake with haemoglobin level

	Protein	Iron
Hemoglobin level	0.276*	0.906**

** Correlation is significant at the 0.01level

* Correlation is significant at the 0.05 level

Table.6 Anthropometric status of boys and girls

Particulars	Subjects (N= 60)			
	Boy		Girl	
A. Weight (kg)	Frequency	Percentage	Frequency	Percentage
30-40	-	-	2	7
40-50	-	-	15	50
50-60	11	37	9	30
60-70	15	50	4	13
70-80	4	13	-	-
B. Height (cm)				
145-155	-	-	16	53
155-165	8	27	14	47
165-175	18	60	-	-
175-185	4	13	-	-
C. BMI (kg/m ²)				
Below 18.5	1	3	7	23.33
18.5-25	26	87	19	63.33
25.1-29.9	3	10	4	13.33
30 above	-	-	-	-

Table.7 Hemoglobin level of boys and girls

Particulars	Subjects (N= 60)			
	Boys		Girls	
Hemoglobin level (g/dl)	Frequency	Percentage	Frequency	Percentage
6-8	-	-	1	1.66
8-10	-	-	13	21.66
10-12	17	28.33	16	26.66
12-16	13	21.66	-	-

This finding is similar to Al-Rewashdeh *et al.*, (2010), conducted anthropometry and dietary assessment of males and females students at Mu'tah University. They found males and females received lower vitamins (except E), macro minerals (except sodium) and micro minerals (except iron in males) than recommended. This finding is also similar to Hakim *et al.*, (2012), study was conducted among University students in selected universities in Selangor, Malaysia. They found a significant difference in energy

intake, protein and fat intake in regards to gender.

Comparison of nutrient intake between boys and girls

It was observed from table 4 that the mean \pm SD of energy, protein, fat, iron, calcium, and folic acid of boys were more than girl students. t-test was computed to found the statistical difference between nutrient intake of boys and girls. The energy, protein and

iron were found statistically significant and positive while fat, calcium and folic acid was found non-significant. It was also found that vitamin C and vitaminB₁₂ was found non significant and negative.

Table 5 depicted that hemoglobin level of students was significantly correlated at 5 per cent level of significance with protein($r=0.276$) intake whereas with iron (0.906) intake hemoglobin level was highly significant at 1 per cent level of significance. This is because protein is important part of haemoglobin it is well accepted fact that good amount of protein, iron intake will improve haemoglobin level of subjects.

Table 6. indicates that majority of both boys (87%) and girls (63.33%) were within normal BMI range followed by underweight (23.33%) and overweight in girls. Though the percentage of underweight and overweight was opposite to the girls among boys, still there was a vast difference between underweight percentage of girls (23.33%) and boys (3%). The present study contradicts the report of Pengid and Pelzar (2015) who reported that more of male students to be overweight and obese than female students of Thailand University. The reason may be that in the present study the energy expenditure by the boys was more than the girls. However the underweight percentages of women were more as in our study.

A normal haemoglobin level is at 14gm/dl for males and 12gm/dl of blood for females. (Source:- Shubhangini A Joshi. Nutrition & Dietetics with Indian case studies)

Table 7 shows that majority of male and females students (28.33 & 26.66 per cent) having haemoglobin level in the range of 10-12g/dl followed by 21.66 per cent of male comes in the range of 12-16g/dl. In case of females students 21.66 per cent having

haemoglobin level in the range of 8-10g/dl and 1.66 per cent in the range of 6-8g/dl.

This finding shows similarity with result of Shill KB *et al.*, (2014), found that 55.3 per cent students were found anaemic, of whom 36.7 per cent were male and 63.3 per cent were female. Majority (51.3%) of male students showed their haemoglobin level in the range of 13-15g/dl, followed by 26.0 per cent and 21.3 per cent with 10-12g/dl and 16-18g/dl respectively.

From the findings of present study and comparing with latest RDA(ICMR,2020) for both boys and girls, this may be interpreted that the diet of both boy's and girl's hostel was not adequate in terms of micronutrient supply. Surprisingly boy's intake of iron was more than RDA which may be related to their own habit of consuming fresh and dry fruits in between meal. Therefore there is an urgent need to make students aware about importance of micronutrients in maintaining their good health and future health security.

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