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Effect of meal skipping on nutritional status of college students of Prayagraj

Sweta Kumari, Ranu Prasad and Anisha Verma

Abstract

The present study entitled “Effect of Meal Skipping on Nutritional Status of College Students of Prayagraj” was supported by the objective to assess the nutritional status of the college students. Three colleges (Sam Higginbottom University of Agriculture, Technology & Sciences, Ewing Christain College and Chaudhary Mahadeo Prasad Degree College) of Prayagraj was purposively selected because of conveniences. A total one hundred sixty five respondents (58 boys and 107 girls) were randomly selected for the study. The respondents were personally interviewed with the help of survey schedule. Anthropometric measurements *i.e.* height, weight and BMI were recorded. Dietary intake was calculated by 24 hours dietary recall method and average nutrient intake was compared with the RDA (ICMR, 2010) [6]. After study it was found that out of 165 respondents, 72.12 per cent were meal skipper (34.45% boys and 65.55% girls) whereas, 27.87 per cent were non meal skipper (36.96% boys and 63.04% girls). Out of total selected respondents, 42.42 per cent respondents were vegetarian, 53.33 per cent respondents were non-vegetarian and 4.24 per cent were eggitarian. The nutritional status of the selected respondents were found in which 26.06 per cent respondents (18.97% boys and 29.91% girls) were underweight, 61.82 per cent respondents (68.97% boys and 57.94% girls) were having normal weight, 11.52 per cent respondents (12.07% boys and 11.21% girls) were overweight and 0.61 per cent respondents (0.93% girls) were in class I obesity. It is concluded that Skipping Meal is not an option. Skipping meals is an unhealthy habit that affected the nutritional status of the respondents.

Keywords: Meal, meal skipping, nutrition, nutritional status, dietary pattern

Introduction

Good nutrition is primary principle for good health and the prevention, treatment and management of disease. The relationship between food, nutrition and health, however, is complex, dynamic, and multi-faceted and highly affected by biological as well as environmental, socio-economic, cultural and behavioural factors. Nutrition, diet and physical activity play an important role in the promotion of health and the protection from, and treatment of, disease (National Institute for Health Research, 2017) [8].

Meal skipping is the omission or lack of consumption of one or more of the traditional main meals (breakfast, lunch or dinner) throughout the day (Dubois *et al.* 2007) [2]. Skipping meals may be considered as an indicator of erratic eating behaviour and is associated with numerous health compromising eating behaviours and less adequate dietary intakes. These unhealthy eating behaviours and inadequate intake are directly correlated with deficiencies in intellectual performance and cognitive development, behavioural and mental problems, obesity and overweight conditions as well as eating disorders (Rees and Pipes 1997) [11].

Individuals entering college are beginning to live independently. As individuals transition from home to college life, nutritional knowledge becomes more important because food options change and dietary challenges arise. If college students are unaware of the nutritional requirements to maintain a healthy body weight, they can make poor nutritional decisions, which can cause poor weight management and health problems. Students physical activity and eating habits usually shape or change during these years. Establishing good eating habits during this time is critical, because these behaviours often continue through adulthood and can be very difficult to change once they are established. It is inevitable that college students face a new environment for meal preparation, planning, and eating as they transition to their college life. Even though many college students are aware of the importance of meeting nutritional values, their knowledge and attitude might hinder them from changing their behaviour. Majority of undergraduate students eat at college dining facilities with limited healthy food options. Moreover, if students do not attain adequate nutrition daily, a decrease in academic or

physical performance can result. Despite the strong emphasis on meeting nutritional requirements every day to achieve optimal health, many college students tend to care less about or neglect their nutritional requirements. Many factors come in to play as they transition to college life from the parental home, adapt to new social and environmental changes, and acknowledge new financial responsibilities, build different social networks, and experience different time availability. It is very beneficial for college students to formulize good eating habits that lead them to obtaining health and optimal function (Brown *et al.* 2017) [1].

Methods and Materials

Three colleges of Prayagraj city were purposively selected namely Sam Higginbottom University of Agriculture, Technology & Sciences, Ewing Christian College and Chaudhary Mahadeo Prasad Degree College for the study and data collection. A total 165 (both girls and boys) respondents of age group between 18 to 26 years were randomly selected for the study and collection of required information and the self-developed questionnaire was used for the data collection. For the assessment of nutritional status anthropometric measurement (height, weight and BMI (WHO, 2000) [13], dietary habits, clinical observation (Park, 2002) [9], meal assessment and 24 hours dietary recall methods were used and statistically analysed by using t-test (Gupta and Kapoor, 2002) [5].

Results and Discussion

The data and results obtained from the study were discussed on the different aspect of the as per the methodology are:

Table 1: Distribution of the respondents according to their anthropometric measurements

Particulars	Boys=58		Girls=107		Total (n=165)	Percentage (%)	
	n	%	n	%			
BMI							
Underweight	<18.5	11	18.97	32	29.91	43	26.06
Normal	18.5 – 24.9	40	68.97	62	57.94	102	61.82
Overweight	25.0 – 29.9	7	12.07	12	11.21	19	11.52
Class I obesity	30.0 – 34.9			1	0.93	1	0.61
Class II obesity	35.0 – 39.9						
Class III obesity	>40.0						

Table 1 and figure 1-2 shows that out of 165 respondents, total 61.82 per cent respondents were having normal BMI, *i.e.*, between 18.5-24.9 BMI, in which 68.97 per cent were boys and 57.94 per cent were girls. 26.06 per cent respondents were underweight, *i.e.*, <18.5 BMI, out of which 18.97 per cent were boys and 29.91 per cent were girls. This is because they were not taking much nutrient in their diet as required

and used to consume food from vendors. Some girls were although taking all the nutrient in their diet but because of their frequent illness they were having underweight body. 11.52 per cent respondents were overweight, *i.e.*, between 25.0-29.9 BMI, out of which 12.07 per cent were boys and 11.21 per cent were girls. 0.61 per cent respondents were belonged to class I obesity, *i.e.*, between 30.0-34.9 BMI, out of which only 0.93 per cent were girls. All these because they tend to eat mostly fried food items from vendor and having irregular eating habits.

The energy intake of normal and underweight persons is more evenly distributed throughout the day than that of the obese. Moderately obese women lose more weight when they consume 70 per cent of their daily energy intake before noon instead of in the afternoon and evening. Additionally, lean individuals lose weight when consuming a 2000-calorie meal at breakfast but tend to gain weight if the meal is eaten at dinner (Keim *et al.* 1997) [7].

In contrast, eating breakfast is associated with increased eating frequency. Increased eating frequency may in turn promote less efficient energy utilization by increasing dietary induced thermogenesis, leading to lower BMI (Drummond *et al.* 1996) [3].

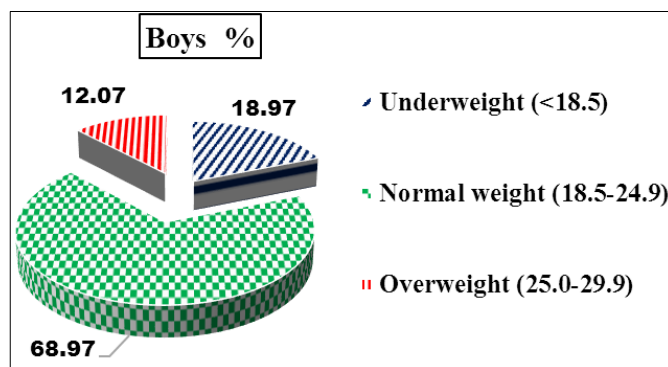


Fig 1: Distribution of boys according to their BMI

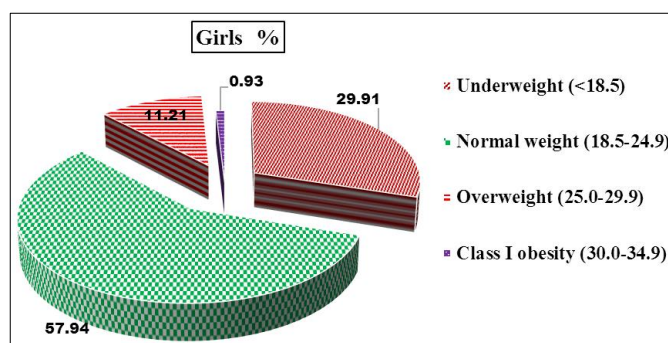


Fig 2: Distribution of girls according to their BMI

Table 2: Distribution of the respondents according to the dietary pattern and habit

S. No.	Particulars	Boys=58		Girls=107		Total (n=165)	Percentage (%)
		n	%	n	%		
Dietary Pattern							
1	Vegetarian	21	36.21	49	45.79	70	42.42
	Non-Vegetarian	35	60.34	53	49.53	88	53.33
	Eggitarian	2	3.45	5	4.67	7	4.24
Meal Pattern							
2	(a) Breakfast + Dinner	4	6.90	6	5.61	10	6.06
	(b) Lunch + Dinner	7	12.07	10	9.35	17	10.30
	(c) Breakfast + Lunch + Dinner	21	36.21	32	29.91	53	32.12
	(d) Breakfast + Lunch + Evening snack's + Dinner	18	31.03	55	51.40	73	44.24

(e) Early Morning+ Breakfast + Mid-Morning + Lunch + Evening snacks + Dinner + Bed Time	8	13.79	4	3.74	12	7.27
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In table 2 out of total 165 respondents, 36.21 per cent boys and 45.79 per cent girls were vegetarian, 60.34 per cent boys and 49.53 per cent girls were non vegetarian and 3.45 per cent boys and 4.67 per cent girls were eggitarian. Also out of 165 respondents, 6.90 per cent boys and 5.61 per cent girls were having only breakfast + dinner as their meal pattern, 12.07 per cent boys and 9.35 per cent girls were having only lunch + dinner as their meal pattern, 36.21 per cent boys and 29.91 per cent girls were having 3 meal pattern, i.e., breakfast + lunch + dinner, 31.03 per cent boys and 51.40 per cent girls were having breakfast + lunch + evening snacks + dinner as their meal pattern, 13.79 per cent boys and 3.74 per cent girls were having early morning + breakfast + mid-morning + lunch + evening snacks + dinner + bed time as their meal pattern.

Table 3: Average nutrient intake per day by boys respondents

Parameter	Energy (kcal/day)	Protein (g/day)	Fat (g/day)	Iron (mg/day)	Calcium (mg/day)
Intake	2112.17	66.81	50.2	22.82	592.99
RDA	2320	60	25	17	600
Difference	-207.83	6.81	25.2	5.82	-7.01
t-value (cal)	21.33	18.62	2.98	6.85	170.18
t-table	12.70	12.70	12.70	12.70	12.70
Result	S	S	NS	NS	S

*Significant at 0.05% level of significance

Table 3 shows the average value of nutrients intake by the selected boys respondents with respect to energy, protein, fat, iron and calcium. The value obtained by calculating the average nutrient intake per day were compared with the average nutrient value of ICMR, RDA (2010) [6] and it was observed that protein intake, fat intake and iron intake were higher than the RDA whereas, energy intake and calcium intake were less than RDA. This conclude that they were skipped meals and there may be a chances of stress, headache and depression in their day to day life. The protein intake was higher because for building their body fit and stronger they tend to consumed more proteinous food like high protein shake, banana shake, nuts, egg curry and roll, chicken etc. By applying t-test, it was found that there is significant difference between the intake and RDA for energy, protein and calcium.

Table 4: Average nutrient intake per day by girls respondents

Parameter	Energy (kcal/day)	Protein (g/day)	Fat (g/day)	Iron (mg/day)	Calcium (mg/day)
Intake	1543.52	49.11	44.59	14.44	466.66
RDA	1900	55	20	21	600
Difference	-356.48	-5.89	24.59	-6.56	-133.34
t-value (cal)	9.72	17.68	2.63	5.40	7.99
t-table	12.70	12.70	12.70	12.70	12.70
Result	NS	S	NS	NS	NS

*Significant at 0.05% level of significance

Table 4 shows the average value of nutrients intake by the selected girls respondents with respect to energy, protein, fat, iron and calcium. The value obtained by calculating the average nutrient intake per day were compared with the average nutrient value of ICMR, RDA (2010) [6] and it was observed that only fat intake was higher than the RDA whereas, energy intake, protein intake, iron intake and calcium intake were less than RDA. This conclude that they were skipped meals and there may be a chances of stress, headache and depression in their day to day life and also may

be prone to anaemic, obesity and suffer from micro nutrient deficiency. By applying t-test, it was found that there is significant difference between the intake and RDA for protein only.

Energy intake is influenced by the effect of foods energy density, total energy content and meal frequency and the extent to which these alter satiety. The efficacy of increased meal frequency (or snacking) regimens in causing metabolic alterations, particularly in relation to weight management (Solomon *et al.* 2008) [12].

Table 5: Distribution of the respondents regarding Meal Skipping

Questions	Boys=58		Girls=107		Total (n=165)	Percent age (%)
	n	%	n	%		
Do you Skip Meals?						
Yes	41	70.69	78	72.89	119	72.12
No	17	29.31	29	27.10	46	27.87
If Yes, Why do you Skip Meals?						
Lack of time	23	39.66	48	44.86	71	43
Taste	5	8.62	12	11.21	17	10.30
Cannot cook	6	10.34	11	10.28	17	10.30
Habit	12	20.69	10	9.35	21	12.72
Weight control	4	6.89	7	6.54	11	6.66
Money	1	1.72	2	1.87	3	1.8
Illness	2	3.45	7	6.54	9	5.45

Table 5 revealed that out of total 165 respondents, 70.69 per cent boys and 72.89 per cent girls were skipped meals whereas, 29.31 per cent boys and 27.10 per cent girls were did not skipped meals. Boys who skip meal because of their habit, cannot cook and lack of time and girls who skip meal because of lack of time, taste preference, weight conscious and also because of they having fast. Total 72.12 per cent respondents skipped meals due to many reasons in which 39.66 per cent boys and 44.86 per cent girls skipped meals due to lack of time, 8.62 per cent boys and 11.21 per cent girls skipped meals due to taste preference, 10.34 per cent boys and 10.28 per cent girls skipped meals because they cannot cook, 20.69 per cent boys and 9.35 per cent girls skipped meals due to habit, 6.89 per cent boys and 6.54 per cent girls skipped meals to control the body weight, 1.72 per cent boys and 1.87 girls skipped meals because of money, 3.45 per cent boys and 6.54 per cent girls skipped meals due to illness.

Table 6: Distribution of respondents according to the status of meal

Questions	Boys=58		Girls=107		Total (n=165)	Percentage (%)
	n	%	n	%		
What is your Breakfast Status?						
Rarely eating	16	27.59	26	24.30	42	25.45
Frequently eating	12	20.69	16	14.95	28	16.96
Daily eating	30	51.72	65	60.75	95	57.57
What is your Lunch Status?						
Rarely eating	12	20.69	17	15.89	29	17.57
Frequently eating	18	31.03	34	31.78	52	31.51
Daily eating	28	48.28	56	52.34	84	50.90
What is your Dinner Status?						
Rarely eating	1	1.72	11	10.28	12	7.27
Frequently eating	8	13.79	13	12.15	21	12.72
Daily eating	49	84.48	83	77.57	132	80

Breakfast status: Table 6 revealed that that out of total 165 selective respondents, 27.59 per cent boys and 24.30 per cent girls were rarely eat the breakfast, 20.69 per cent boys and 14.95 per cent girls were frequently eat the breakfast whereas, 51.72 per cent boys and 60.75 per cent girls were daily eat the

breakfast.

A nocturnal lifestyle with breakfast skipping and a delayed eating pattern thus can lead to increased 24-h glycaemia and impairment of insulin response to glucose and could therefore contribute to an increased risk of type 2 diabetes (Qin *et al.* 2003) [10].

Lunch status

The above table 6 shows that out of total 165 respondents, 48.28 per cent boys and 52.34 per cent girls were eat the lunch daily whereas, 31.03 per cent boys and 31.78 per cent girls were frequently eat the lunch and 20.69 per cent boys and 15.89 per cent girls were rarely eat the lunch.

Dinner status

The above table 6 shows that out of total 165 respondents, 1.72 per cent boys and 10.28 per cent girls were rarely eat the dinner and 13.79 per cent boys and 12.15 per cent girls were frequently eat the dinner whereas, 84.48 per cent boys and 77.57 per cent girls were daily eat the dinner.

Table 7: Distribution of the respondents according to clinical observation

Particulars	Boys=58		Girls=107		Total (n=165)	Percentage (%)
	n	%	n	%		
General appearance						
Normal	44	75.86	92	85.98	136	82.42
Thin	14	24.14	15	14.02	29	17.57
Sickly	00	00	00	00	00	00
Hair						
Normal	51	87.93	80	74.77	131	79.39
Lack of lustre	5	8.62	6	5.61	11	6.66
Dyspigmentated	00	00	00	00	00	00
Thin and Sparse	3	5.17	16	14.95	19	11.51
Easily pluck able	00	00	5	4.67	5	3.03
Face						
Diffuse depigmentation	00	00	3	2.80	3	1.82
Naso-labial dyssebacia	6	10.34	4	3.74	10	6.06
Moon face	00	00	00	00	00	00
Normal	52	89.66	100	93.46	152	92.12
Eye colour						
Normal	51	87.93	102	95.33	153	92.72
Pale	7	12.07	5	4.67	12	7.27
Angular Stomatitis						
Present	3	5.17	3	2.80	6	3.64
Absent	55	94.83	104	97.20	159	96.36
Fatigue						
Present	7	12.07	25	23.36	32	19.39
Absent	51	87.93	82	76.64	133	80.60
Dizziness						
Present	5	8.62	19	17.76	24	14.54
Absent	53	91.38	88	82.24	141	85.45
Behavioural implication						
Irritable	4	6.90	17	15.89	21	12.73
Normal	54	93.10	90	84.11	144	87.27
Depression						
Present	9	15.52	24	22.43	33	20
Absent	49	84.48	83	77.57	132	80

Above table 7, revealed that out of 165 respondents, 75.86 per cent boys and 85.98 per cent girls were having normal appearance whereas, 24.14 per cent boys and 14.02 per cent girls were having thin appearance. 8.62 per cent boys and 5.61 per cent girls were having lack of lustre in their hair, 5.17 per cent of boys and 14.95 per cent of girls were having thin and sparse hair and only 4.67 per cent girls respondents

were easily pluck able hair. 10.34 per cent boys and 3.74 per cent girls were having naso-labial dyssebacia and 12.07 per cent boys and 4.67 per cent girls had pale colouration in their eyes. Also 5.17 per cent boys and 2.80 per cent girls respondents were having angular stomatitis. 12.07 per cent boys and 23.36 per cent girls were suffered from fatigue and 8.62 per cent boys and 17.76 per cent girls were suffered from dizziness. Out of total 165 selective respondents, 6.90 per cent boys and 15.89 per cent girls were having irritable behaviour whereas, 93.10 per cent boys and 84.11 per cent girls having normal behaviour. Also 15.52 per cent boys and 22.43 per cent girls were suffered from depression whereas, 84.48 per cent boys and 77.57 per cent girls were not suffered from depression.

Conclusion

From the results, it is concluded that out of 165 respondents, 72.12 per cent were meal skipper in which 34.45 per cent were boys and 65.55 per cent were girls whereas, 27.87 per cent were non meal skipper in which 36.96 per cent were boys and 63.04 per cent were girls. The nutritional status of the selected respondents (including boys and girls) were found that 26.06 per cent respondents were underweight, 61.82 per cent respondents were having normal weight, 11.52 per cent respondents were overweight and 0.61 per cent respondents were in class I obesity.

The average nutrient intake *i.e.* energy, protein, iron and calcium were found less than RDA in girls whereas, energy and calcium were found less than RDA in boys. And fat intake were found more than RDA in girls whereas, protein, iron and fat intake were found more than RDA in girls. Significant differences were found between the average intake and RDA for protein in case of girls and energy, protein and calcium in case of boys. Out of total selected respondents, 42.42 per cent respondents were vegetarian, 53.33 per cent respondents were non-vegetarian and 4.24 per cent were eggitarian. So we conclude that Skipping Meal is not an option. Skipping meals is an unhealthy habit that affected the nutritional status of the respondents.

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