Research article

The study of food habits among undergraduate medical students from a health institution in Tamil Nadu in changing scenario

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Abstract

The present study was designed to assess the food habits among Undergraduate medical students in the changing scenario. A Structured Questionnaire was administered to collect information on meal pattern and food choices. A core sample of 100 undergraduate medical students from Panimalar medical college hospital and research institute, Tamil Nadu with an age range between 19 – 22 years were considered for the study and comprises 50 boys and 50 girls. Information regarding the Food and Nutrient intake of the subjects was collected using 24 hours recall for 3 consecutive days. The data collected was tabulated, grouped and subjected to Statistical analysis. The 't' test was used to compare the food and nutrient intake of the students with ICMR Standard and percentage adequacy was also calculated. Adequacy of diet was assessed by comparing the calculated nutrient intake with the Indian RDA. The result indicated that meal pattern of the subjects between boys and girls were almost similar. Fats, sugar and jaggery intake was found to be higher than RDA in both groups. Thirty percent boys and fifty percent girls skipped breakfast, and this shows a negative impact on their lifestyle. Thus, awareness on nutrition education is an important measure for improving dietary practice among this population.

Introduction

The changing lifestyle of students have marked effect on their food habits. As they become more independent and mobile, they eat fewer meals at home and more meals outside, there is a little guidance on their food choice and they share, more foods with their peers, learn new foods preferences and tend to discard old food habits. Very common behavioural characteristics of students is skipping meals and snacking, fast food, junk foods and preferring dieting. The young adolescent girls are often dissatisfied with their body image and frequently engage in slimming diets, even when they have normal weight which put them at nutritional risk, when it comes for dieting it may have some drastic effect on their fore coming health status. Nutritional health of all age groups of our population is a national asset.

The provision of good nutrition to all especially for adolescents during their formative period of growth and development is a matter of significance. Healthy food habits among medical students are even more important as they are future physicians.

There is a general perception amongst the common masses that the students of health sciences have a greater knowledge about the correct dietary habits and healthy lifestyle as compared with nonmedical students. This is significant as they are the future physicians and the students who personally adopt a healthy lifestyle are likely to positively influence their patients. However, studies have shown that medical and paramedical students especially who stay in hostels away from their home are susceptible to irregular dietary habits, lack of exercise, and addiction [1, 2].

Thus, taking the above facts into consideration, the present study was designed to assess the food habits among Undergraduate medical students in the changing scenario.

Materials and methods

A Structured Questionnaire was administered to collect information on meal pattern and food choices. A core sample of 100 undergraduate medical students with an age range between 19 – 22 years. Comparing 50 boys and 50 girls selected by random sampling method. The Questionnaire was designed with the questions to collect information on general background, dietary pattern, Food habits, Food Preference, missing meals, Snacking etc.

Information regarding the Food and Nutrient intake of the boys and girls were collected using 24 hours recall for 3 consecutive days. A 24-hour dietary recall data were collected using ASA24 (Automated self-administered 24-hour dietary assessment tool). It is a web-based tool used to collect the data for diet assessment.

The data collected was tabulated and grouped and subjected to Statistical analysis. The 't' test was used to compare the food and nutrient intake of the students with ICMR Standard and percentage adequacy was also calculated.

Adequacy of diet was assessed by comparing the calculated nutrient intake with the Indian RDA.

Nutrient adequacy ratio [NAR] was calculated as

NAR% = [nutrient intake / nutrient RDA]x 100

The adequacy of diet and nutrient intake was categorised into four groups.

Adequate 100% of RDA
Marginal adequate 75% of RDA
Marginal adequate 50-75% of RDA
Substantially inadequate <50% of RDA

Results

The results pertaining to the study "Food habits undergraduate medical students "are presented and discussed under the following headings.

A. General and specific information:
1. Type of the family
2. Size of the family
3. Family income

B. Dietary pattern
1. Meal pattern
2. Skipping meals
3. Eating outside the home
4. Beverage consumption by the subjects
5. Food intake
6. Nutrient intake

A. General and specific information

The study indicates the majority of the subjects belongs to nuclear family and a small number of subjects belonged to joint family and 90% of the family had 2 to 3 children and 10% had 4 to 5 children in a family. With respect to family income 80% of the subjects belongs to high income group,20% of the subjects belonged to middle income group.

B. Dietary Pattern

Meal pattern of the subjects was presented in table 1. Skipping meals by the subjects were presented in table 2 and figure 1.

Table 1. Meal pattern of the subjects.

Meal pattern	Boys %	Girls %
Breakfast, Lunch, Dinner.	36 (72)	24 (48)
Breakfast, Lunch, Evening snacks, Dinner.	20 (40)	2 (4)
Breakfast, Midmorning Snacks, Lunch, Evening Sacks, Dinner.	-	4 (8)

Number in parentheses indicates percentage.

Subjects who consume three meals constituted 72% and 48% in boys and Girls respectively. In case of four-square meals, comprising 40% boys and only small (4%) had these habits.

Table 2. Skipping meals by the subjects.

Meals	Boys	Girls
Breakfast	10 (20)	15 (30)
lunch	7 (14)	8 (16)
Dinner	8 (16)	9 (18)
Frequency		
Once in a month	15 (30)	13 (26)
Twice a month	4 (8)	6 (12)
Thrice a month	8 (16)	3 (6)
Daily	3 (6)	3 (6)

Number in parentheses indicates percentage.

Majority of the girls skip their meals than boys. Breakfast is the most commonly skipped meals among teens. Consumption of biscuits, chocolates and chips results in skipping breakfast. In the present study, 30% girls and 20% boys skip breakfast. However, on the whole the frequency of skipping meals was once a month by 30% and 26% boys and girl's subjects missed lunch. Aerated drinks, chips, biscuit were substituted the lunch.

Table 3 showed that a sizeable number (20 to 40%) of subject's boy and (24 to 60%) girl subjects consumed fast foods daily. Items like samosa, vadai, Bonda, Bhajji, murukku and chips were commonly consumed fast foods. The subjects seldom consumed items like pizza, burger and pastries.

Table 4 shows the refreshing and nourishing beverage consumed by the subjects. In the modernized world, people especially youngsters have likelihood for soft drinks like coke, Pepsi, flavoured milk and the like. However increased consumption of these drinks leads to serious health hazards like obesity, dental caries, calcium depletion from the bones, but the people unaware of its health hazards. In the present study 26% and 28% of boys and girls consume coke and

Pepsi for the reason they like the flavour, to quench thirst only 10% and 6% boys and girls prefer to drink coke and Pepsi and very few consume as habit. No one preferred it for nutritional reason but the nourishing beverages like Lassi, Rose milk, Hot milk, Flavoured milk fewer percentage of subjects preferred.

It is seen in table 5 that the mean intake of all the food stuffs between boys and girls were found to be closer to each other. However, the mean intake of milk consumption by girls was comparatively higher (166.3ml) than boys (80.8ml). There existed a difference that was found to be statistically ($p<0.05$).
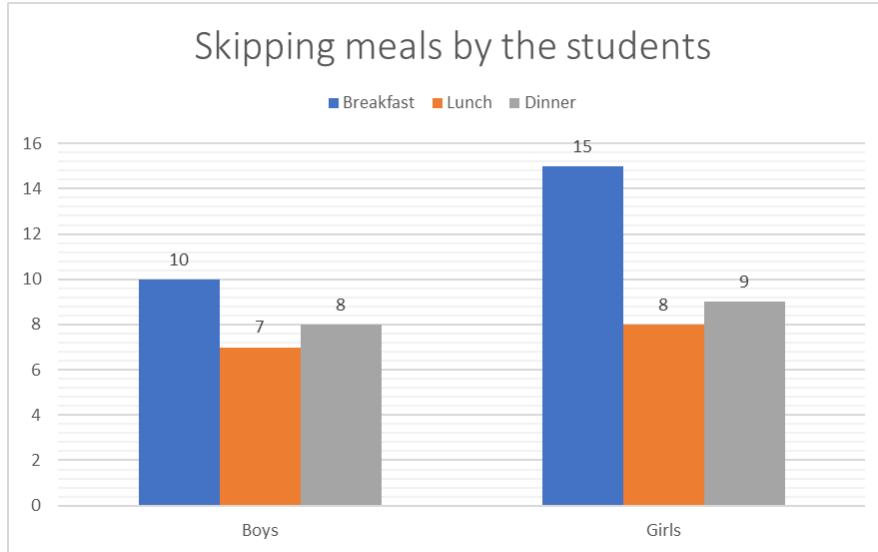

Figure 1. Skipping meals by the students.

Table 3. Eating outside home by the subjects.

Items	Frequency					
	Daily		Weekly		Monthly	
	Boys	Girls	Boys	Girls	Boys	Girls
Pizza	4(8)	8(16)	2(4)	17(34)	4(8)	20(40)
Cake	3(6)	6(12)	9(18)	18(36)	19(38)	36(72)
Pastries	-	4(8)	-	8(16)	5(10)	31(62)
Noodles	10(20)	15(30)	5(10)	21(42)	12(24)	42(84)
Burger	-	10(20)	-	15(30)	4(8)	24(48)
Samosa	14(28)	16(32)	20(40)	25(50)	25(50)	34(68)
Chips	13(26)	30(60)	15(30)	19(38)	19(38)	26(52)
Bhaji, Bonda	10(20)	12(24)	19(38)	26(52)	32(64)	45(90)
Murukku	20(40)	16(32)	21(42)	19(38)	12(24)	4(8)

Number in parentheses indicates percentage.

Table 4. Refreshing and nourishing beverage consumed by the subjects.

Soft drinks	Reason							
	Like the flavour		Quench thirst		Nutritious		Habit	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Coke	13(26)	13(26)	5(10)	3(6)	-	-	2(4)	8(16)
Pepsi	14(28)	14(28)	6(12)	4(8)	-	-	4(8)	9(18)
Flavoured milk	9(18)	10(20)	3(6)	3(6)	5(10)	8(16)	-	-
Lassi	10(20)	2(4)	8(16)	-	2(4)	5(10)	4(8)	2(4)
Rose milk	11(22)	6(12)	13(26)	8(16)	3(6)	6(12)	6(12)	8(16)
Hot milk	9(18)	15(30)	10(20)	11(22)	2(4)	-	4(8)	6(12)

Number in parentheses indicates percentage

Table 5. Food intake of boys and girl.

Food groups	Gender	Mean	SD	't' value
Cereals	Boys	367.1	20.2	0.497
	Girls	370.8	16.6	
Pulses	Boys	43.3	3.7	0.502
	Girls	55.4	2.7	
Green leafy vegetables	Boys	25.8	2.65	0.582
	Girls	40.4	2.2	
Other Vegetables	Boys	14.5	2.3	0.602
	Girls	13.9	2.4	
Roots & Tubers	Boys	16.8	2.3	0.315
	Girls	16.5	1.5	
Fruits	Boys	67.5	18.4	0.704
	Girls	72.1	13.0	
Milk and milk products	Boys	80.8	20.3	2.180
	Girls	166.3	18.9	
Fleshy foods	Boys	12.9	3.3	2.132
	Girls	22.7	3.1	
Fats and oil	Boys	30.5	5.7	0.979
	Girls	40.8	4.7	
Sugar and jaggery	Boys	38.7	3.5	0.141
	Girls	40.8	2.2	

Number in parentheses indicates percentage.

Table 6. Comparison of mean nutrient intake and percentage adequacy ratio between Undergraduate medical student boys and girls against RDA [Recommended Dietary Allowances].

Nutrients	Boys	Percent nutrient Adequacy	RDA	Girls	Percent nutrient Adequacy	RDA
Calories (kcal)	1987.5±38.5	81.1	2450	1766.2±49.6	85.7	2060
Protein [g]	64.9±11.2	92	70	55.9±21.5	86	65
Fat [g]	42.7±10.6	194.0	22	49.4±12.3	224.5	22
Calcium [mg]	626.6±302.7	104.4	600	579.4±403.9	96.6	600
Iron [mg]	15.6±4.3	38.0	41	15.8±1.65	56.4	28
Vit A, B - Carotene [mcg]	1670.18±1322.9	69.6	2400	1065.8±371.2	45.2	2400
Thiamine [mg]	1.04±0.4	83	1.2	0.69±0.35	69	1.0
Riboflavin	0.5±0.12	34	1.5	0.42±0.27	35	1.2
Vit C	22.1±42.9	52.3	40	40.8±21.2	102	40

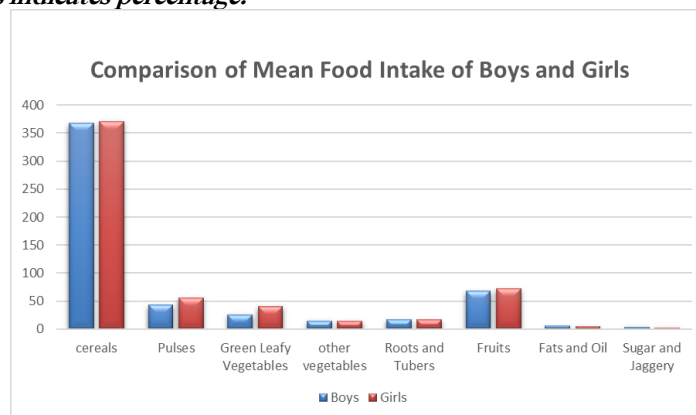_Number in parentheses indicates percentage._

Figure 2. Comparison of mean food intake of boys and girls.

Results in table 6 and figure 2 indicates that the mean percent adequacy ratios for the nutrients like energy, riboflavin and Vitamin C, boys and girls almost closer to each other. The mean nutrient intake of other nutrients like protein, fat, calcium and thiamine were found to be slightly higher among boys than that of Girls. However, the mean intake of beta-Carotene was comparatively similar among boys and girls. This could be because the consumption of foods rich in Vitamin A was found to be much higher among subjects.

Discussion

Positive attitude toward a healthy lifestyle and nutritional habits among medical students is vital, as they are the future health-care professionals, who, in turn, can influence the society at large [3-4]. The present study focuses the food habits among medical students in changing scenario. It was evident from the results that the students have improper food habits. Breakfast was commonly skipped meals. Eating in between meals were also prevalent in both groups, as far as food likes and dislikes of the students were concerned. Green leafy vegetables and other vegetables were the most disliked food. Fats and sugar intake was higher among both groups.

In the present study, the participants who consume three meals constituted 72% and 48% in boys and girls respectively. In case of four-square meals, comprising 40% boys and only small (4%) had these habits. Majority of the girls skip their meals than boys. Breakfast is the most commonly skipped meals among teens. Consumption of biscuits, chocolates and chips results in skipping breakfast.

In the present study, 30% girls and 20% boys skip breakfast. However, on the whole the frequency of skipping meals was once a month by 30% and 26% boys and girls group missed lunch. Aerated drinks, chips, biscuit were substituted the lunch.

Similarly, the result was correlated with Mathiyalagen P *et al.*, reported that 59.8%, 40.8% and 24.0% of the students skip breakfast at least once/week, twice/ week and thrice/week respectively. In their study breakfast skipping was higher among male undergraduates than the female counterparts. But the present study showed majority of girls skip their meals. The most common reason cited for skipping breakfast was their busy schedule followed by lack of appetite [5]. In the present study 30% girls and 20% boys skip breakfast. Majority of the girls skip their meals than boys. This may be due to consumption of biscuits, chocolates and chips by girls.

According to the present study the green leafy vegetables and other vegetables were the most disliked food. The intake of fruits was 67.5% in boys and 72.1% in girls. These findings were corroborated with Moriasi AN *et al.*, established in their study that only one-fifth (21.5%) of the participants consumed five or more servings of fruit and/or vegetables per day. More females (24.7%) than males (16.7%) consume five or more servings of fruit and/or vegetables on average per day [6].

Paul *et. al.* reported that obesity and hypertension were highly prevalent among the medical students. Majority of them took <5 servings of fruit or vegetables per day (97.6%), ate junk foods (91.3%) and had long sedentary activity (47.6%). Taking red meat intake (OR 4.79), junk foods (Odds Ratio, OR 2.59), and snacking habit (OR 1.73) was observed more among male students; no physical activity or sports was significantly more in females [7].

In the present study there are sizeable number (20 to 40%) of subject's boy and (24 to 60%) girl subjects consumed fast foods daily. Items like samosa, vadai, Bonda, Bhajji, murukku and chips were commonly consumed fast foods. The subjects seldom consumed items like pizza, burger and pastries. The result of present study shows that 26% and 28% of boys and girls consume coke and Pepsi for the reason they like the flavour, to quench thirst only 10% and 6% boys and girls prefer to drink coke and Pepsi and very few consume as habit. No one preferred it for nutritional reason but the nourishing beverages like Lassi, Rose milk, Hot milk, Flavoured milk fewer percentage of subjects preferred. However, the mean intake of milk consumption by girls was comparatively higher (166.3ml) than boys (80.8ml). The current findings depict a similar view revealed by Amruth M and Kumar A conducted cross-sectional study among medical students in a medical college in Kerala that skipping breakfast, eating full stomach, not knowing balanced nutrition, eating fatty foods and snacks, eating more under stress and drinking soft drinks were common unhealthy eating habits among obese students [8].

Anupama M e*t al.*, showed prevalence of overweight/obesity among the students was found to be 16% as per BMI cut-off. 39% of the female and 80%of the male students had normal waist-hip ratio while 61% of the female students and 20% of the male students had a higher waist-hip ratio where the risk of developing the metabolic complications was substantially increased. However, apart from breakfast skipping, no other Life-style behaviour was found to have any significant effect on obesity in the study [9].

Patel PH *et al.,* emphasized the lifestyle patterns of male (n=78) and female (n=94) respondents included vegetarianism (27.9%), skipping breakfast (13.95%), consuming four or more meals daily (61.63%), snacking between meals (43.02%), consumption of caffeinated soft drinks (38.37%) and tea/coffee (84.31%), sleeping for 6-8 hours daily (80.81%) with no gender difference in minimum and maximum sleep hours, lack of physical exercise (65.12%) or outdoor recreation (25.58%) and dominance of internet, television and computers as recreational tools [10].

Kulkarni MV reported that only 9.62% students consumed adequate intake of fruits. Frequent consumption of fast food and carbonated drinks was reported by 41.67% and 26.67% medical students [11].

Omar M *et al.*, reported that the percentage of subjects who consume 3 serving of fruits daily is (2.2%); while the

subjects who consumed four servings of daily vegetables is (2 %) [12].

El-Gilany AH *et al.*, studied in 908 medical students among them more than half of students (51.0%) prefer fast food to save time, its taste and save money. About two-thirds of them ate fast food at least once during the last week. The independent factors associated with fast food consumption are being in the clinical years (AOR=1.7), family of rural residence (AOR=1.99) and belonging to high socioeconomic classes (AOR=3.0). The majority (64%) of the students took their lunch as fast food and most of them drank carbonated beverages (79.8%). The majority (94.3%) of the study participants knew the hazards of fast food on health [13].

In the present study the mean percent adequacy ratios for the nutrients like energy, riboflavin and Vitamin C, boys and girls almost closer to each other. The mean nutrient intake of other nutrients like protein, fat, calcium and thiamine were found to be slightly higher among boys than that of Girls. However, the mean intake of beta-Carotene was comparatively similar among boys and girls. This could be because the consumption of foods rich in Vitamin A was found to be much higher among subjects. These findings are correlated with the findings reported by Mary Thoesen Coleman *et al.*, that eleven nutrients were consumed in a quantity that did not meet the Daily Value (DV): total carbohydrate, dietary fibre, calcium, iron, magnesium, potassium, vitamin C, vitamin A, vitamin D, choline, and vitamin E; fat and folate were slightly less than 100%. These nutrient deficiencies were reflected in the student's inadequate intake of the fruit, vegetable, grains, and dairy food groups [14]. Consumption of the nutrient protein was almost two-fold higher than the daily amount needed. This increase was reflected by a higher intake of foods from the protein food group [15].

Thus, awareness on nutrition education is an important measure for improving dietary practice among this population.

Limitations

The limitation of the present study is that, the students included in this study were from just one medical college, and therefore, they may not be representative of all university medical students in Tamil Nadu. The sample size should also be increased to study the changes in food habit in recent scenario.

Conclusion

The findings of the Study revealed that Students were having improper food habits. Breakfast was the most skipped meals. Eating between meals such as junk foods was also prevalent in both groups. Subjects in both reported that food advertisements on television influence their food habits. Limelight of the present scenario is that there is a dire need of appropriate Knowledge on nutrition, emphasizing the acquisition of healthy food habits and lifestyle practice.

Ethics approval and consent to participate

There are no ethical issues related to the conducted study. Informed consent was obtained from all participants involved in the study.

Data availability

All data generated or analyzed during this study are included in this published article.

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