Original Research Article

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Dietary patterns among students of health sciences and its association with morbidity in a private medical university of coastal Karnataka: a cross-sectional study

Sanjeev Badiger, Sanjay Kini*, Nanjesh Kumar

Department of Community Medicine, KS Hegde Medical Academy, Mangalore, Karnataka, India

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***Correspondence:** Dr. Sanjay Kini, E-mail: sanjaykini2010@gmail.com

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ABSTRACT

Background: In general students who get into health sciences experience transition from home and family care to university and hostel life, which in turn exerts lot of stress which affects their dietary pattern. Many life style factors and poor eating habits acquired during this period can lead to serious diseases later in life.

Methods: The present study was a questionnaire based cross-sectional study conducted to find out the dietary pattern among the students of health sciences and to know their health and morbidity status.

Results: The study included 175 students of Nitte University with 93 Medical, 49 Dental, 33 nursing students. 75% of students who ate outside almost daily had stomach upsets regularly and it was much less (46.8%) among those who had a frequency of not more than once a week. It was seen that 87 (49.71%) students skipped breakfast, 14 (8%) students skipped lunch, 14 (8%) students skipped dinner. 5.7% of subjects were underweight, 85.2% of subjects had a normal BMI and 9.1% were overweight.

Conclusions: Hereby we recommend that a nutritional health education intervention aimed at improving the dietary habits of students is the need of the hour.

Keywords: Dietary pattern, Health Sciences, Coastal Karnataka

INTRODUCTION

Diet can be defined as the kind of food on which a person or group lives. A balanced diet can be defined as one which contains a variety of foods in such quantities and proportions that the need for energy, amino acid, vitamins, minerals, fats, carbohydrate and other nutrients is adequately met for maintaining health, vitality and general well-being and also makes a small provision for extra nutrients to withstand short duration of leanness.¹

Most common stomach upsets include diarrhea, vomiting, stomach ache and loss appetite.² Diarrhea and vomiting

are usually self-limiting. More precautions should be taken while preparing and handling the food, especially non-vegetarian food. Diet of college students usually include little variety and often turn into high fat snacks.³ Lifestyle changes, peer pressure, limited finances, and access to food also contribute to erratic eating patterns.⁴ Skipping breakfast or meals has become very common among students.⁵ Hygiene is not ensured in outside food.⁶ So there is a high risk of getting stomach upsets and other GI disturbances.⁷

Symptoms in Salmonella infection usually develop within 12–36 hours and commonly include abdominal pain,

diarrhea, fever and vomiting.⁸ Microbial contamination typically causes 100–200 fatalities per year, mostly in young children and the elderly.⁹ But other milder cases usually go unnoticed. Current 'Western diets' with their relatively high amounts of fat, sugar and salt and low amounts of fruits and vegetables, are risk factors for the development of numerous cancers and heart diseases; as many as 1 in 3 of all cancers may be diet-related.¹⁰

Although determining an exact figure is difficult, it is estimated that 17% of women and 31% of men do not regularly wash their hands after using the toilet. Those may include cooks working in the restaurants.¹⁰ Now-adays because of lack of time, competitive world and urban lifestyle we see a lot of irregularity in the diet of students. Hence this study was conducted to find out the dietary pattern among the medical/dental/nursing students and to know their health state or morbidity state, including sickness and absenteeism due to stomach upset.

METHODS

Study design and study settings

A cross-sectional study was conducted among 175 students of Nitte University including 93 Medical, 49 Dental, 33 Nursing students.

Study period

The study was conducted between April 1st to April 15th, 2016

Sample size and sampling technique

Sample size was calculated based on a previous study done by Laxmaiah et al where 62% of students had a specific nutritional deficiency (Vitamin A).¹¹ For the above purpose, the formula $4PQ/L^2$ was used, where P=62, Q=38, and L=allowable error in P (12%). Thus, the sample size was worked out to be 172. We took a round figure number of 175 as sample size. Then probability proportional to size sampling was done to select the required number of medical, dental and nursing students.

Methodology

Data was collected by a pretested, semi structured questionnaire. The questionnaire comprised details of socio-demographic profile, dietary pattern and morbidity associated with unhealthy diet. Anthropometric measurements were obtained from the study subjects.

Weight was measured to the nearest 100 gms, in light clothing, using a standard weighing machine after correcting the zero error.

Height was measured using a stadiometer to the nearest 0.5 cm with the person standing upright with heels together, and the head held in upright position.

Body mass index (BMI)

It was calculated using the formula BMI= Weight in (Kgs)/ Height in (metre).² The subjects were classified as underweight (<18.5), normal (18.5-24.9), preobese/overweight (25-29.9), obese (\geq 30). The WHO classification of BMI was used.¹²

Statistical analysis

Data was compiled and analyzed using Statistical Package for Social Sciences (SPSS) version 16 and findings are presented in the form of frequencies and proportions.

RESULTS

Table 1 depicts the socio-demographic profile of the study subjects.

Table 1: Socio-demographic profile of subjects.

Age group (in years)	No.	Percentage (%)
18 - 19	67	38.29
20 - 21	85	48.57
22 - 25	23	13.14
Gender		
Male	75	43
Female	100	57
Religion		
Hindu	136	77.71
Christian	26	14.86
Others	13	7.43
Place of residence		
Hostel	168	96
Apartment	6	3.43
Own residence	1	0.57

It was found that 51 (29.14%) students were vegetarian, 72 (41.14%) were occasional non-vegetarians and 52 (29.71%) were regular non-vegetarians. Regarding opinion about hostel food it was found that 6 (3.43%) people found it excellent, 82 (46.86%) found it satisfactory, 87 (49.71%) found it unsatisfactory. Table 2 shows the association between the frequency of eating outside among students and stomach upsets.

It was seen that 125 (71.4%) students did not miss any class due to stomach upset, 38 (21.7%) missed 1-3 classes in a month, while 12 (6.9%) missed 4-6 classes per month.

Regarding consumption of safe drinking water 58 (32.95%) students preferred carrying a bottle of clean water, 51 (28.98%) preferred buying mineral water bottle, 30 (17.05%) preferred drinking only if its treated with UV rays, while 37 (21.02%) were not bothered about all these.

Table 2:	Frequency of	f eating	outside	and	stomach	
upset.						

Encaronar	Stomach ups	Total	
Frequency	Yes (%)	No (%)	(%)
Not more than once a week	30 (46.88)	34 (53.13)	64 (100)
2-3 times a week	52 (73.23)	19 (26.77)	71 (100)
4-5 times a week	23 (71.85)	9 (28.15)	32 (100)
Almost everyday	6 (75)	2 (25)	8 (100)
Total	111 (63.42)	64 (36.58)	175 (100)

When we assessed the morbidity pattern of students with respect to Gastro-intestinal ailments in the last 2 months we found that 32 (16%) students had diarrhea, 24 (12%) had vomiting, 37 (18.5%) had loss of appetite and 43 (21.5%) had pain abdomen. (Note: The total may not correlate with the total no. of study subjects due to multiple responses to the question). It was found that 62 (35.43%) students preferred to seek medical assistance from doctor if they were sick, 53 (30.29%) students self-medicated when they were sick, 51 (29.14%) students allowed it to subside by itself and 9 (5.14%) students preferred to fast. When we assessed the type of main meal skipped we found that 87 (49.71%) students skipped breakfast, 14 (8%) students skipped lunch, 14 (8%) students skipped dinner.

With regards to the presence of Non-communicable diseases in the family, it was found that 40 (20.3%) students had family history of hypertension, 59 (29.95%) had family history of Coronary heart disease, 13 (6.6%) had family history of obesity. (It has to be noted that the total may

not correlate with the total no. of study subjects due to multiple responses to the question).

Among the total number of students who were vegetarians (N=51) it was found that 23 (45.09%) chose to be vegetarian because of custom/caste/religious reasons, 21 (41.17%) chose to be vegetarian because of ethical reasons, 6 (11.76%) chose to be vegetarian because of health reasons and 1 (1.9%) for no obvious reason. When we asked the vegetarians (N=51) about their major source of vitamins and proteins 17 (33.33%) said that its milk and milk products, 8 (15.69%) said that they take multivitamins and protein supplements and the rest said that they are not bothered about being deficient of vitamins and proteins.

Among the regular non-vegetarians (N=52) when we assessed the reason why they chose to be non-vegetarians it was found that 13 (9.49%) chose to be so because of custom, 81 (59.12%) because food is tastier, 40 (29.2%) because food provides better nutrition and 3 (2.19%) for no obvious reasons. (It has to be noted that the total may not correlate with the total no. of study subjects due to multiple responses to the question). Regarding the preference of non-vegetarian food it was observed that 33 (21.42%) had preference for sea food, 112 (72.73%) had preference for chicken, 7 (4.55%) had preference for mutton, 2 (1.30%) had preference for beef/pork. (It has to be noted that the total may not correlate with the total no. of study subjects due to multiple responses to the question). It was found that 24 (19.35%) students consumed non-veg food less than once a week, 58 (46.77%) students consumed 1-3 times per week, 24 (19.35%) students consumed 3-5 times a week and 18 (14.52%) consumed almost daily.

The association of BMI and type of diet is depicted in Table 3.

BMI	Vegetarian (%)	Occasional non-vegetarian (%)	Regular non-vegetarian (%)	Total (%)
<18.5	3 (5.88)	6 (8.33)	1 (1.92)	10 (5.7)
18.5–24.9	43 (83.32)	62 (86.11)	44 (84.61)	149 (85.2)
≥25	5 (9.8)	4 (5.55)	7 (13.46)	16 (9.1)
Total	51 (100)	72 (100)	52 (100)	175 (100)

Table 3: BMI in relation with type of diet.

DISCUSSION

In the present study there were 175 students comprising of 75 (43%) males and 100 (57%) females, hence had a higher proportion of female subjects when compared to some of the similar studies done elsewhere. A study conducted by Yadav et al in Belagavi, Karnataka among adolescents to assess the dietary pattern included 400 college going adolescents (17-19 years) with an equal gender ratio of 50% males and 50% females.¹³ In a similar study conducted by Manwa in Zimbabve among university students to assess dietary pattern there were 40 respondents among which 22 (55%) were males and 18 (45%) females.¹⁴ A study conducted among medical students in Ghana by Ackuaku-Dogbe et al to assess breakfast eating habits it was observed that there were 154 pre-clinical students and 163 clinical students with a total of 317, comprising of 203 males and 114 females.¹⁵ Neumark-Sztainer et al in their study included 1088 high school students which comprised of 47% males and 53% females.¹⁶ In another study conducted by Neumark-Sztainer there were 4746 adolescents (aged 11–18 years).¹⁷

In our study we found that 51 (29.14%) students were vegetarian, 72 (41.14%) were occasional non-vegetarians and 52 (29.71%) were regular non-vegetarians. The proportion of people consuming non-vegetarian diet was slightly high in our study when compared to other studies. In the study conducted by Yadav et al it was found that 214 (53.5%) were vegetarians and 186 (46.5%) consumed a mixed diet.¹³ Sharma et al in their study found that 50.5% of the subjects were vegetarian and 49.5% were non-vegetarian (N=200).¹⁸ A study conducted among 1000 healthy young female students aged 11-28 years in Mysore by Omidvar et al found that there were 332 (33.7%) vegetarians, 88 (8.9%) regular non-vegetarians and 564 (57.3%) were occasional non-vegetarians.¹⁹

The present study highlighted the fact that gastrointestinal ailments were very common among students who regularly eat outside food. It was observed that among those who consumed outside food with a frequency of not more than once a week 46.88% had stomach upsets, among those who were consuming outside food 2-3 times a week 73.23% had stomach upsets, among those who were consuming outside food 4-5 times a week 71.85% had stomach upsets and among those who consumed outside food almost every day 75% had stomach upsets. A study conducted by Bagordo et al in Italy to assess the dietary habits and health among university students, found that 73.6% of students reported at least one episode of gastroenteritis (70.7% of students living with their families and 81.1% of those living away from their families).²⁰ On average, 4.35 cases per year of gastroenteritis were recorded, with a significantly higher frequency among students living outside the family home (5.35 cases/ year) than those living at home (3.98 cases/year). This definitely points out the fact that those living at home or with family are more likely to eat home cooked food and thus have lesser incidence of gastrointestinal ailments than those staying away from home/family and eating outside food.

In the present study we found that 87 (49.71%) students skipped breakfast, 14 (8%) students skipped lunch and 14 (8%) students skipped dinner. A systematic review conducted by Pendergast on meal skipping in young adults showed that breakfast was the most frequently skipped meal (14-88%) compared to lunch (8-57%) and dinner (4-57%).⁶ The results of our study is in par with the result obtained from systematic review. A study conducted by Sarkar et al among adolescent girls in West Bengal showed that 19.3% of girls skipped meals.²¹ Alsharani MM et al in their study regarding dietary habits among college students in Saudi Arabia found that only 31% were regular in consuming meals and the rest 69% were irregular.²² In the study conducted by Ackuaku-Dogbe et al it was found that the overall breakfast skipping among the students was 71.92%.¹⁵ In the study conducted by Bagordo et al 11% of students said that they skip the first meal of the day.²⁰ Omidvar et al in their study observed that 14.2% of students skipped breakfast, 1.8% skipped lunch and 3% skipped dinner.¹⁹

In our study we found that 5.7% of subjects were underweight, 85.2% of subjects had a normal BMI and 9.1% were overweight. Thus in our study majority of the students had normal BMI. The result of our study is consistent with the results found in the study conducted at West Bengal by Sarkar et al wherein the prevalence of normal BMI was 72.7%, the proportion of underweight and overweight were 16% and 11.4% respectively.²¹ Studies done elsewhere have shown varying results. In the study conducted at Belgaum by Yaday et al it was seen that 48.5% were underweight, 39.2% had normal BMI, 6.5% were overweight and 5.8% were obese.¹³ Alsharani et al in their study in Saudi Arabia found that 45% were normal weight, 28% were overweight and 20% were obese.²² In a study conducted by Huang et al among the students of University of Kansas, USA it was found that 21.6% were overweight, 4.9% were obese and the rest had a normal BMI (N=736).²³ Racette et al conducted a study at Washington University in St.Louis, Missouri, USA and found that 5% were underweight, 76% normal weight, and 18% overweight (N=764).²⁴

CONCLUSION

These findings may prove useful for the design of nutritional health education and health promotion programmes within the university framework, in order to improve students' dietary habits. Since hectic lifestyles, stress, and peer pressure may put students at great risk for chronic disease development later in life, nutrition interventions in this young population should be encouraged to promote healthier diets and lifestyles. The study also warrants further investigation as effective strategies for interventions to combat meal skipping in students.

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