

ORIGINAL RESEARCH

Assessment of dietary habits and physical activity among degree students in Bangalore -A cross sectional study

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ABSTRACT

Background: Having a healthy eating habits and sufficient physical activity is the key to a healthy life. Globalization of fast food has provided the flexibility having many consumption alternatives. It has generated changes in societies and culture and also forced people to consume fancy and high calorie fast foods, popularly known as junk foods. Lack of physical activity and unhealthy eating habits during early years of life leads to non-communicable diseases such as obesity, diabetes, hypertension, coronary heart disease later on in life. **Methods:** A cross sectional study was done among medical students of East Point College of Medical Sciences, Bangalore to assess dietary habits and physical activity. 248 medical students participated in the study after informed consent. **Results:** In our study it was found 79.4% of the participants ate unhealthy foods/junk foods though 82.3% of total subjects were aware about Balanced diet. It was found that 27.1% of the participants did vigorous physical activity and 31.4% did moderate activities. **Conclusion:** Interventions and educational programs that aim to promote healthy eating habits and provide strategies for making nutritious food choices, eating habits among the adolescents could be beneficial. Majority of the participants were making an effort to incorporate some level of physical activity into their lives. While the findings are positive, there is room for improvement. Encouraging more participants to engage in physical activity, especially those who are not engaging in vigorous or moderate activities, could have a positive impact on their overall health and fitness.

Keywords: Adolescents, Diet, Fast foods, Physical activity, Body Mass Index.

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INTRODUCTION

Having a healthy eating habits and sufficient physical activity is the key to a healthy life. Globalization of fast food has provided the flexibility having many consumption alternatives. It has generated changes in societies and culture and also forced people to consume fancy and high calorie fast foods, popularly known as junk foods.¹ Fast food is a food that is prepared and served quickly at outlets called fast food outlets. It includes chips, sandwiches, burgers, fried chicken, French fries, chicken nuggets, pizza, ice-cream etc.² According to WHO (2003), frequent fast food consumption is also a health concern because most are rich in saturated fats, trans fats, simple carbohydrates and sodium-all of which are nutrients

associated with hypertension cardiovascular diseases, and type 2 diabetes.^{3,4} These fast food chains have been, innovative and forceful at inviting customers out of their kitchens up to fast food centers. Balanced diet has been replaced by junk or fast foods not only by young generation but also people from all age group demand fast food in their every-day eating habits.¹

Major eating habits change during the adolescence/college years. During these years the students prefer to eat out, fast food, junk food and soft drinks rather than a nutritious, balanced healthy diet consisting of fruits, vegetables, major & minor nutrients and dietary fibers. Many studies have shown that lack of physical activity and unhealthy eating

habits during early years of life leads to non-communicable diseases such as obesity, diabetes, hypertension, coronary heart disease later on in life. According to WHO Non-communicable disease were estimated to account for 74% of all deaths.⁵As research in this area was lacking the present study was undertaken in this geographical areato study about the dietary habits and physical activity among degree students of Bangalore.

AIMS & OBJECTIVES

- To determine the prevalence of junk food eating behavior among the degree students.
- To determine the patterns of physical activity among the degree students.
- To assess the level of obesity among the degree students.

METHODOLOGY

Study Design: A cross-sectional study.

Study area: East Point College of medical sciences & Research Centre, Bengaluru.

Study Population: All the students of 1st& 2nd phase MBBS

Study Duration: May to July 2022

Sampling method: Simple Random sampling.

Sampling frame: Attendance registers of each class

Study sample: Sample size was calculated as below

$$n = \frac{Z^2 pq}{d^2}$$

Where e = relative precision.

Z= Z is level of significance, which is 1.96 at 95% CI

p= Prevalence=51.5⁶=52%

q=1-p,

d= absolute precision=7%.

$$n = \frac{1.96^2 \times (52) \times (100 - 52)}{7^2}$$

n= 9984/49= 203.75 ≈204

To make up the anticipated loss due to incompletely filled forms, by adding an extra 10%, the estimated sample size was 224. After taking permission from the professor in charge of the class, the students were

explained about the purpose of the study, a rapport was built up and informed consent was obtained. Approximate time for filling proforma of 10-15 minutes was given to each participant after their respective classes. By using lottery method, the students were selected randomly till the sample size was achieved in accordance with inclusion and exclusion criteria. In addition to the sample size more students showed interest and participated in the study voluntarily, and hence the final sample constituted of 248 students. The pre-designed, pretested and semi-structured questionnaire included topics which were related to the dietary habits such as fast/junk foods and physical activity.

INCLUSION CRITERIA

- Students who gave consent to participate in the study between the age group of 18-23 years.

EXCLUSION CRITERIA

- Students who were absent during the study.
- Those who were not willing to participate in the study.
- Students who had any health condition which prevents them from doing physical activity.

STUDY TOOLS AND TECHNIQUE

A predesigned pre-structured and self-administered questionnaire was used to collect the data regarding dietary habits and International Physical Activity Questionnaire (IPAQ) short version (6) was used after informed consent from the students.^(7,8)

STATISTICAL ANALYSIS

Collected data was entered in MS excel spreadsheet (version 2013) after coding and further analysed using SPSS v15. Data were expressed as percentages and proportions and chi-square test was used to assess the relation between eating behavior, lifestyle and health. A p value of <0.05 was considered as statistically significant.

RESULTS

Table 1: Socio-demographic characteristics of the participants.

| Variables | Frequency | Percentages |
|----------------|-------------|-------------|
| Phase | First | 49.6 |
| | Second | 50.4 |
| Age group | 18-19 | 64.1 |
| | 20-22 | 35.9 |
| Sex | Male | 46.4 |
| | Female | 53.6 |
| Religion | Hindu | 82.3 |
| | Muslim | 14.1 |
| | Christian | 3.6 |
| Type of Family | Nuclear | 87.5 |
| | Joint | 12.5 |
| Stay | Day scholar | 39.1 |
| | Hostelite | 60.9 |
| | Underweight | 14.9 |

| Body Mass Index | Normal | 130 | 52.4 |
|-----------------|------------|-----|------|
| | Overweight | 32 | 12.9 |
| | Pre-obese | 41 | 16.6 |
| | obese | 8 | 3.2 |
| Total | | 248 | 100 |

Table 1 depicts the socio-demographic details of the participants (n=248), there were about equal participation from both 1st & 2nd year students, majority belonged to 18–19 year age group (64.1%) mean age being the 19.2 years.

More than 3/4th of the participants belonged to Hindu (82.3%) & Nuclear families (87.5%). About 61 % of the students were hostites and rest were day scholars. Half of the (52.4%) of the students had normal Body Mass Index and about 13% were obese and 16.6% were in pre obese status.

Table 2: Dietary behaviour among the participants

| Variables | Frequency | Percentage |
|--|-----------|------------|
| 1. Type of Diet | | |
| Vegetarian | 53 | 21.4 |
| Non vegetarian /Mixed | 195 | 78.6 |
| 2. Awareness about the balanced diet? | | |
| Yes | 204 | 82.3 |
| No | 21 | 8.5 |
| Don't know | 23 | 9.3 |
| 3. Practice balanced diet? | | |
| Yes | 82 | 33.1 |
| No | 107 | 43.1 |
| Don't know | 59 | 23.8 |
| 4. Consumption of breakfast | | |
| Skip everyday | 40 | 16.1 |
| At least 3 times a week | 84 | 33.9 |
| Consume everyday | 124 | 50.0 |
| 5. Consumption of vegetables in the past week | | |
| Once | 40 | 16.1 |
| At least 3 times a week | 108 | 43.5 |
| Consume everyday | 100 | 40.3 |
| 6. Consumption of fruits in the past week | | |
| Nil | 60 | 24.2 |
| Once | 139 | 56.0 |
| At least 3 times a week | 49 | 19.8 |
| 7. Consumption of eggs in the past week | | |
| Nil | 70 | 28.2 |
| Once | 36 | 14.5 |
| At least 3 times a week | 124 | 50.0 |
| Consume everyday | 18 | 7.3 |
| 8. Consumption of fish in the past week | | |
| Nil | 218 | 87.9 |
| Once | 5 | 2.0 |
| At least 3 times a week | 22 | 8.9 |
| Consume everyday | 3 | 1.2 |
| 9. Consumption of meat/chicken in the past week | | |
| Nil | 97 | 39.1 |
| Once | 5 | 2.0 |
| At least 3 times a week | 129 | 52.0 |
| Consume everyday | 17 | 6.9 |
| 10. Water consumption in a day | | |
| <1 litre | 18 | 7.3 |
| 2-3 litre | 148 | 59.7 |
| >3 litre | 82 | 33.1 |
| 11. Junk food in the past week | | |

| | | |
|------------------|------------|------------|
| Nil | 51 | 20.6 |
| At least 3 times | 158 | 63.7 |
| Everyday | 39 | 15.7 |
| Total | 248 | 100 |

Table 2 represents the dietary behavior of the participants. Around 78.6% consume mixed diet. More than 3/4th of the participants i.e,82.3% are aware about the balanced diet but yet only 33.1% follow it and 16.1% skip breakfast every day. About 14.5% of the participants consume eggs at least once a day and only 2 % of participants eats fish/meat once a week. About 7.3% students consume less than 1 liter of water.

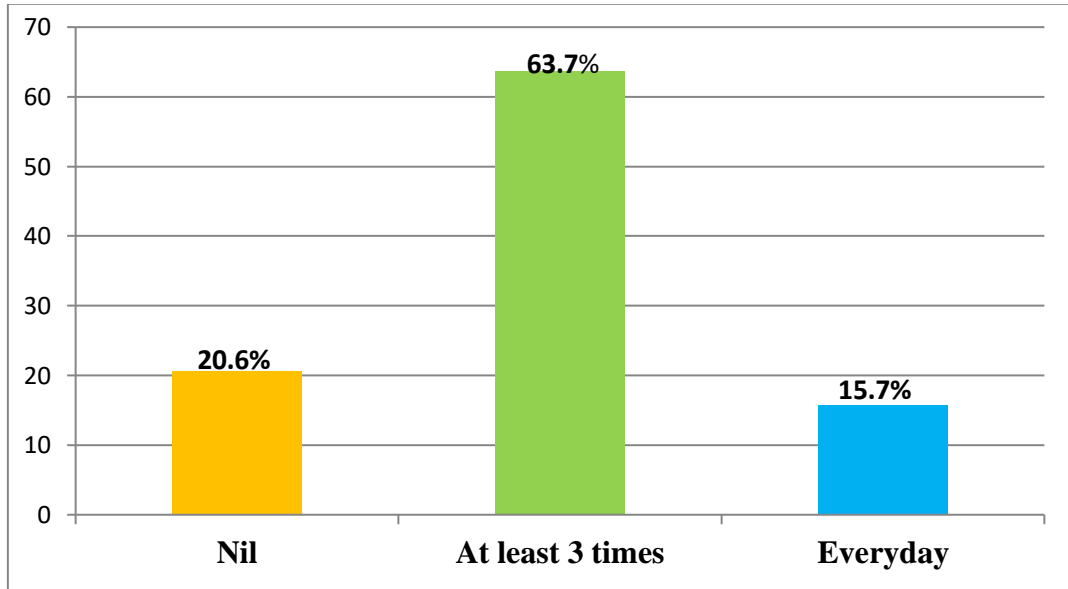


Figure1: Number of servings of junk food by individuals per week(n=248)

Figure 1 depicts that 63.7% of the participants consume Junk foods at least 3 times a week and 15.7% consumed on a daily basis.

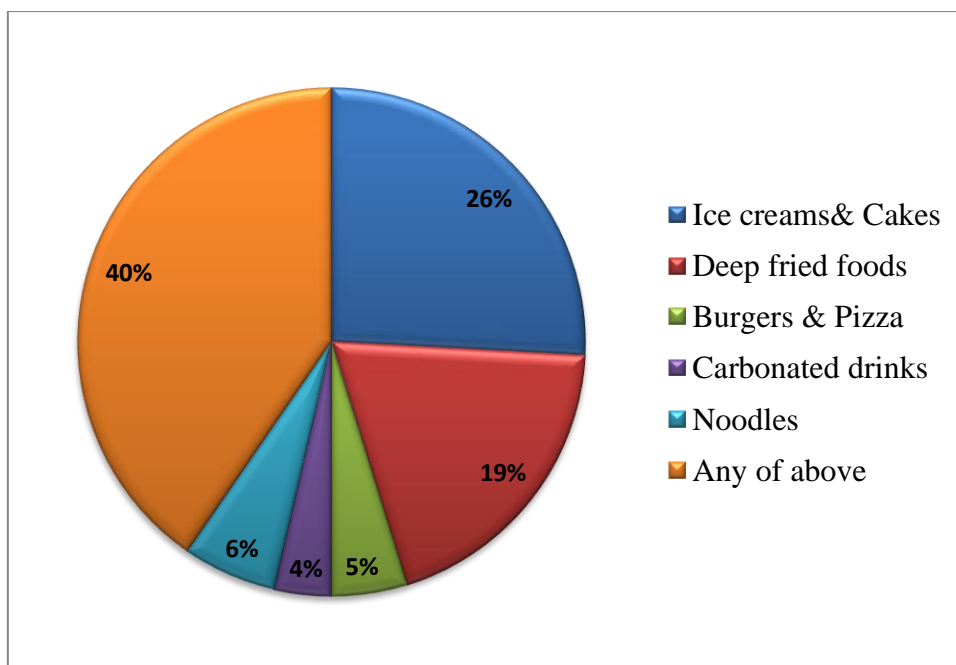


Figure 2: Choice of junk food (n=248)

Figure 2 shows that there are various choices of Junk food items out of which about quarter of the participants choose ice creams & cakes (25.8%) followed by the deep-fried foods (19.3%). But majority i.e, 40% of the participants chose mixed variety of junk food items.

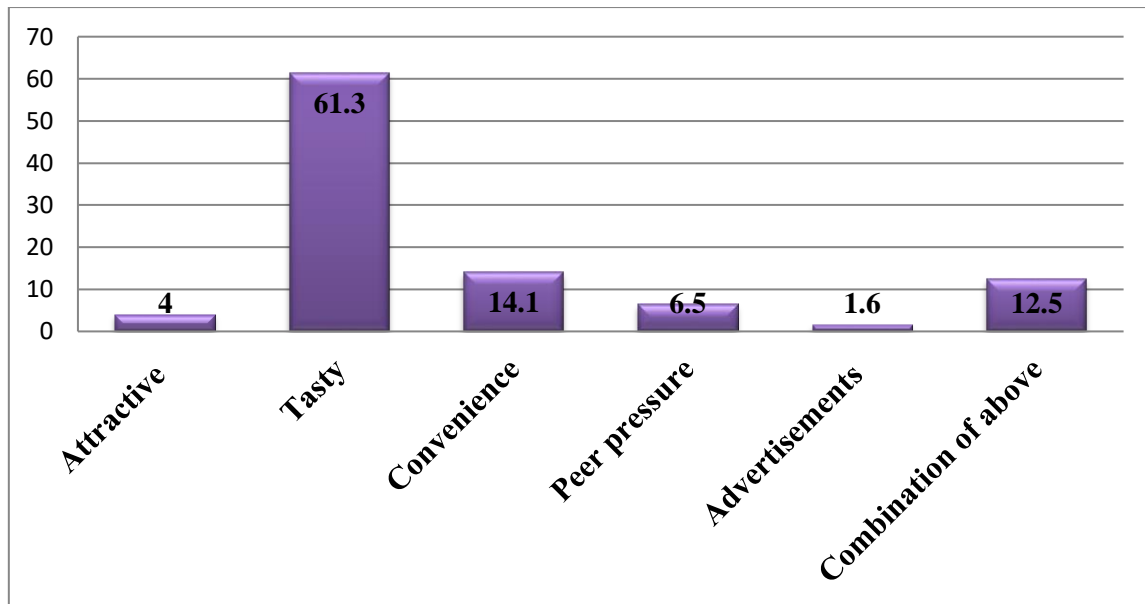


Figure 3: Reasons for consuming junk foods (n=248)

Figure 3 depicts the reason for consuming junk food items and it is seen that 61.3% of the participants find it tastier. Rest eats because of the convenience, peer pressure and attractive designs.

Table 3: Awareness/Perception about the junk foods

| Variables | Frequency | Percentage |
|---|------------|------------|
| 1. Do you think the junk foods are healthy? | | |
| Yes | 19 | 7.7 |
| No | 196 | 79.0 |
| Don't know | 33 | 13.3 |
| 2. Do u check the manufacture and expiry date on them? | | |
| Yes | 194 | 78.2 |
| No | 54 | 21.8 |
| 3. Do u read the nutrient fact label on it while you eat it? | | |
| Yes | 34 | 13.7 |
| No | 214 | 86.3 |
| 4. Do u know the harmful effects of the chemicals / preservatives added in them? | | |
| Yes | 171 | 69.0 |
| No | 47 | 19.0 |
| Don't know | 30 | 12.1 |
| Total | 248 | 100 |

Among our participants 7.7% think that junk foods are healthy and 79% are aware that they aren't healthy. The date of manufacture and expiry is checked by about 78.2% of the participants and nutrient fact label is read by only 13.7% of the participants.

Table 4. Prevalence of physical activity level(IPAQ categories)

| IPAQ categories | Male | Female | Total Participants (248) |
|-----------------|------------|------------|--------------------------|
| Vigorous | 32(51.6%) | 30(48.4%) | 62(100%) |
| Moderate | 40(55.5%) | 32(44.5%) | 72(100%) |
| Low | 45(47.9%) | 50(52.6%) | 95(100%) |
| Total | 117(51.1%) | 112(48.9%) | 229(100%) |

Table 4 represents the physical activity levels between Males and female participants. It is found that 62 out of 229 participants does vigorous physical activity and 72 do moderate activities. And in both types of physical activity, male participants does more physical activity than the female participants.

Table 5: Relation of physical activity with BMI among medical students

| Physical Activity | BMI <25 Kg/m ² | BMI >25 Kg/m ² | Total |
|--------------------------|---------------------------|---------------------------|-----------|
| Vigorous activity | 12(15.0%) | 50(33.5%) | 62(27.1%) |
| Moderate activity | 28(35.0%) | 44(29.5%) | 72(31.4%) |

| | | | |
|---------------------|-----------|-----------|-----------|
| Low activity | 40(50.0%) | 55(37.0%) | 95(41.5%) |
| Total | 80(100%) | 149(100%) | 229(100%) |

$X^2=9.265$, $df=2$, p value= 0.0097

The above table 5 represents the significant association of physical activity and body mass index with p value of 0.009, total of 27.1% of the participants did vigorous activity and 31.4% did Moderate physical activities. Around 33.5% of the participants who had BMI >25 did vigorous physical activity which was more than those who had BMI levels <25 , which may be justified that those participants who had BMI on higher side did workout more compared to others.

Table 6: Relation between junk food consumption and BMI of the participants

| Junk foods/week | $\leq 18.5 \text{ Kg/m}^2$ | $> 18.6- 24.9 \text{ Kg/m}^2$ | $>25 \text{ Kg/m}^2$ | Total | P value |
|------------------|----------------------------|-------------------------------|----------------------|-------|----------------|
| Nil | 9 | 28 | 14 | 51 | 0.00005 |
| At least 3 times | 27 | 35 | 96 | 158 | |
| Everyday | 11 | 10 | 18 | 39 | |
| Total | 47 | 73 | 128 | 248 | |

$X^2=24.93$, p value= 0.00005 , $df=4$

The above table shows the significant association between the junk food consumption and BMI of the participants with p value ≤ 0.00005 .

DISCUSSION

In our study, the majority of the students belonged to 18-19 year age group (64.1%), Mean age being the 19.2 years. The prevalence of junk food eating behavior among the degree students was found to be 78.4% which is comparable with study done by Owolabi JB et al (80%) and Shree V et al (75.6%) whereas it was relatively higher than results of Phulambrikar RM et al (24.8%), Saranya SV et al (9.4%).⁹⁻¹²

Junk food was consumed by 63.7% of the participants at least 3 times a week which was higher compared to findings of Thiruselvakumar D et al i.e, 23.8% and 15.7% of our participants consumed on a daily basis which was less than the findings of Phulambrikar RM et al i.e, 24.81%.^{13,11}

13% of our participants were overweight which was similar and comparable to studies done by Owolabi JB (13.1%) & Krishna S et al (11.5%) respectively and 16.6% of our participants were pre obese which was higher than Krishna C et al (12%) and less compared to Owolabi JB et al (18.4%) respectively.^{9,6}

Around 78.6% participants consumed mixed diet, and more than 3/4th of the participants i.e, 82.3% were aware about the balanced diet which was better than findings of Owolabi JB et al (76%), whereas it was less compared to findings of Saranya SV et al (97%) and only 33.1% followed balanced diet which was much lesser compared to study findings of Saranya SV et al (42.9%).^{9,12}

Breakfast was skipped everyday by about 16.1% participants which similar to studies conducted by Saranya, et al, Ganasegeran K et al and Chhaya S et al and less compared to study done by Omidvar S et al.^{9,14-16} Skipping breakfast was due to mainly lack of time, weight consciousness and instead they choose either sandwiches or cakes.

In our study it was also found that the major reasons for consuming junk foods was taste estimated by 61.3% of participants which was higher compared to reports of Shree V et al (55%), 14.1% said its

convenience and 6.5% of them ate when in company of friends which was much lesser than findings of Shree V et al (58.3%).¹⁰

In our study 7.7% of participants think that junk foods are healthy and 79% are aware that they aren't healthy. The date of manufacture and expiry is checked by about 78.2% of the participants demonstrates a level of vigilance in ensuring food safety. This behaviour aligns with recommended practices to avoid consuming expired or spoiled foods, which is a positive sign for food safety awareness. Whereas only 13.7% of the participants read the nutrient fact label on them which implies that students often neglect to read these labels, which can provide valuable information about the nutritional content and health impacts of the food.

Significant association was found between consumption of junk foods and body mass index of the participants which was similar to reported literature of Saranya SV et al and Nisar N et al.^{12,17}

There was significant association of physical activity and body mass index also in our study unlike the findings reported by Saranya SV et al and Rao et al.^{12,18}

It was found that 27.1% of the participants did vigorous physical activity and 31.4% did moderate activities out of 229 participants which are less compared to the study reported by Padmapriya Ket al i.e., 41.3% and 43.2% respectively.^{19,20} The results indicate that there is a diversity in the types and intensities of physical activities among the participants. Some individuals are engaging in vigorous activities, while others are opting for moderate activities. This diversity could reflect varying fitness levels, interests, and preferences among the participants. It's worth noting that when combined, approximately 58.5% of the participants are actively engaging in physical activities.

Based on these results, tailored interventions and programs can be designed to target specific groups of participants. For example, those who are currently

inactive or engaging in low-intensity activities might benefit from programs that promote gradual increases in physical activity.

Male participants carry out more physical activity compared to females which can be attributed to maintaining physique. Gender differences in preferred activities can also play a role. While some males may gravitate toward competitive sports, some females may prefer alternative forms of physical activity such as yoga, dance, or group fitness classes.

CONCLUSION

In our study it was found 79.4% of the participants ate unhealthy foods/junk foods though 82.3% of total subjects were aware about Balanced diet. Interventions and educational programs that aim to promote healthy eating habits and provide strategies for making nutritious food choices, eating habits among the adolescents could be beneficial.

More than half of the participants i.e. 58.5% took up either vigorous or moderate physical activities such as jogging, aerobics, or brisk walking, yoga etc. This suggests that a majority of the participants are making an effort to incorporate some level of physical activity into their lives. While these findings are positive, there is room for improvement. Encouraging more participants to engage in physical activity, especially the 41.5% who are not engaging in vigorous or moderate activities, could have a positive impact on their overall health and fitness.

It was also seen that consumption of unhealthy diet and BMI are significantly related. Hence incorporating healthy diet and lifestyle modifications early in the adulthood is utmost important for preventing the non communicable diseases such as Diabetes, Hypertension, and cardiovascular diseases and many more.

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