

## Choose the Food - Chase the Disease!- A Study on Energy Densed Food Consumption of Selected Population in India

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### ABSTRACT

Consumption of energy densed food by college population has become common in the current scenario. Adopting stratified random sampling, 1000 college students in the age group of 19 to 22 years were selected. Students were given Food Frequency questionnaire and were asked to fill the form. The Food Frequency Questionnaire (FFQ) is a retrospective review of intake frequency, that is, food consumed per day, per week, and per month. FFQ was given to determine the frequency of consumption of various foods. After obtaining the required details, the raw data is coded and subjected to statistical analysis using SPSS version 20.0. Our results inferred that sugar and oil were consumed daily by all the subjects. About 20% consumed chocolates and packet foods daily. About 70% consumed biscuits daily. Daily about 13% and 12% consumed noodles and parota respectively. Imparting Nutrition education must be carried out to reduce the consumption of energy densed foods and encourage the students to consume nutrient dense foods. Nutritionist must take up the role along with parents and the college authorities to create nutrition education among the students who are the pillars of the nation.

**Keyword:** Food Frequency, Non-Communicable Diseases, Obesity, Energy densed food, Nutrient densed food, Diabetes

### INTRODUCTION

Diet of college students usually include little variety and often turn into high fat snacks. Lifestyle changes, peer pressure, limited finances, and access to food also contribute to erratic eating patterns.

Skipping breakfast or meals has become very common among students. <sup>[1]</sup>

According to health and diet survey by Food and Drug and Administration (FDA), 2014 almost 89% opted for high salt diet in India, namely that the majority of diets are vegetarian especially rich in fruits, vegetables and pulses with high consumption of sweets and snacks with few dishes also containing meat. The common snacks in India are usually high-fat, high-salt fried foods that may also be high in *trans*-fats, and this may explain their relationship with a number of different health outcomes. <sup>[2]</sup>

Most of them prefer potatoes as their favourite vegetable, but potatoes contain high amount of carbohydrates and fats which is unhealthy for an individual. About 33% of them eat chips rather than fruits and nuts. <sup>[3]</sup>

It has been reported that the consumption of snacks and junk foods high in fat and sugars constitutes a risk factor for obesity and cardiovascular diseases.

With the increasing number of fast-food 'joints' on campuses and a high frequency of undergraduates 'eating out' which increases the risk of non-communicable diseases. A survey of undergraduates in Ogun State South-West Nigeria revealed that over 70% consumed snacks regularly. Students opted for junk food because of their busy schedule which leads to obesity and a increased threat of coronary heart diseases.

A study by *Chin* reported that only 4.7% of respondents of the study to frequently visit fast food restaurants. <sup>[4]</sup>

However, in contrast, Moy reported 60-70% of primary school students to frequent fast foods. [5] Also, the study conducted by Kurubaran found a majority of respondents (73.5%) to have high frequencies (at least twice a week or more) of fast food consumption. A higher intake of sweets and snacks was used as an index of “unhealthy dietary habits”. [6]

Consumption of refined carbohydrates, high fatty foods, and markers of metabolic syndrome all have been related to alterations in cognitive functions (possibly lower academic performance) through hippocampal and frontal lobe volume loss and dysfunction. This dysfunction may be attributed to inflammation of neurons, oxidative stress leading to blood-brain barrier damage, and/or abnormal lipid metabolism in central nervous system. A Norwegian study among 2,432 adolescents aged 15-17 years demonstrated that a regular meal pattern, consumption of healthy foods, and regular physical activity were all related to high odds of high academic performance in contrast to decreased odds of high academic achievements in adolescents consuming unhealthy foods, beverages, and smoking. [7]

Consumption of carbonated drinks was reported to be high among the male students whereas the consumption of sweets and pastries was higher among female medical students. There was no significant difference among both genders with respect to the consumption of coffee/tea and fruit juices. [8] Eating a nutritious breakfast regularly is an important contributor to a healthy well-being or lifestyle and health status. Biggest mistake that students make in their dieting habit is to skip meals. This, on a regular basis, particularly breakfast, disturbs body metabolism. [9] A Study conducted by Bano, showed that total breakfast skipping was prominent among the non-nutrition students. [10]

Studies have shown that increasing trend the fast food consumption among college students. This may be attributed to many factors including the following:

spending time with friends, staying away from home for long periods of time, pressure of studies, ease of fast food availability combined with limited choices of availability of healthy foods in the universities in addition to the influence of mass media. [11]

## MATERIALS AND METHODS

Adopting stratified random sampling, 1000 college students in the age group of 19 to 22 years were selected. The study was conducted among Arts and Science college students of Chennai, India. Students who were on immune suppressants, physically challenged students, pregnant, lactating mothers were excluded from the study. Prior to the commencement of the study, ethical clearance was obtained from Universal ethical board. Permission from the college authorities were obtained to conduct the study in their respective colleges. Based on the inclusion criteria, students were randomly selected and briefed about the purpose of the research. Written consent for participating in the study was obtained from the selected students. Students were given Food Frequency questionnaire and were asked to fill the form. The Food Frequency Questionnaire (FFQ) is a retrospective review of intake frequency, that is, food consumed per day, per week, and per month. The FFQ is an advanced form of the checklist in dietary history method, and asks respondents how often and how much food they ate over a specific period. Presenting about 100 to 150 foods, food frequency questionnaire takes 20-30 minutes to complete and can self-administered or collected via interview. This method enables the assessment of long-term dietary intakes in a relatively simple, cost-effective, and time-efficient manner. Thus, various FFQs have been widely employed as a practical instrument since the 1990s. FFQs should be developed specifically for each study group and research purposes because diet may be influenced by ethnicity, culture, and individual's economic status (Jee-Seon

Shim, 2014). FFQ was given to determine the frequency of consumption of various foods. In the present study, this is done to know the common food consumed by the subjects and to know the foods which are

avoided by the study group. After obtaining the required details, the raw data is coded and subjected to statistical analysis using SPSS version 20.0.

## RESULTS AND DISCUSION

Table-1: Fat and Oil intake

Fats and oil	Daily	Alternate days	Thrice a day	Twice a day	Once a day	Rarely	Never	Total
Oil	1000 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1000(100)
Butter	0 (0)	0 (0)	12 (1.2)	33 (3.3)	58 (5.8)	578 (57.8)	319 (31.9)	1000 (100)
Ghee	0 (0)	1 (0.1)	20 (2.0)	52 (5.2)	136 (13.6)	235 (23.5)	556 (55.6)	1000 (100)
Vanaspathi	16 (1.6)	38 (3.8)	116 (11.6)	258 (25.8)	303 (30.3)	183 (18.3)	86 (8.6)	1000 (100)

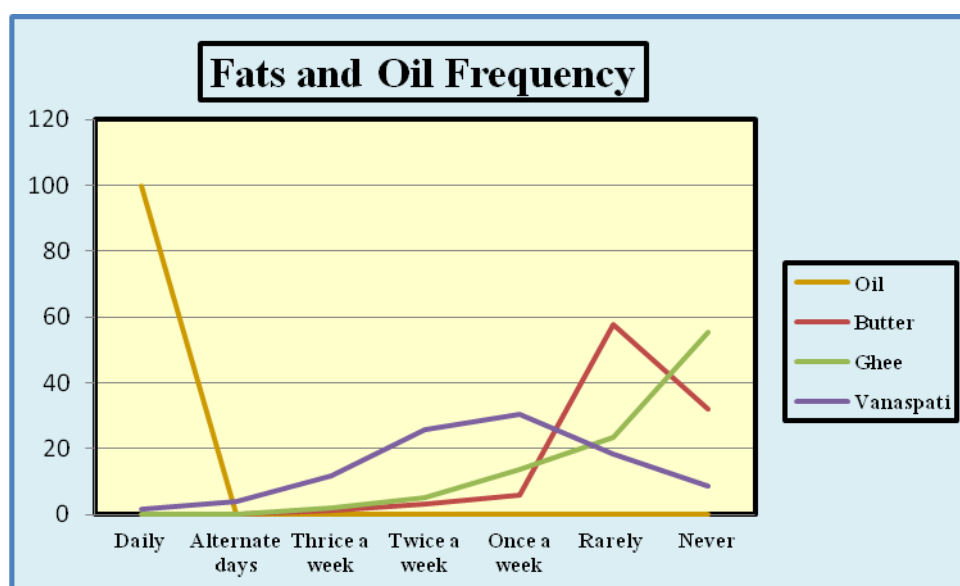


Figure-1

Oils and vanaspathi are loaded with empty calories and add taste to the food. It is clear from our study that oils are consumed by all the participants daily. Vanaspathi being inexpensive and easily available, it is consumed by 1.6% and 3.8% subjects daily and on alternate days. About 11.6% and 25.8% consumed it thrice a week and twice a week respectively. It is consumed by 30.3% and 18.3% once a week and rarely, only 8.6% never consumed vanaspathi.

Butter and ghee contain calories as well protein, and they are considered to be expensive than oil and vanaspathi. About 1.2% and 3.3% consumed butter thrice a week and twice a week, respectively. About 5.8% and 57.8% cherished it once a week and rarely respectively. About 31.9% never consumed butter. Ghee is consumed by 0.1% and 2% on alternate days and thrice a week, respectively. About 5.2%, 13.6%, and 23.5% cherished it twice a week, once a week and rarely, respectively. About 55.6% never consumed ghee.

Table-2 Sugars intake of the participants

Sugars	Daily	Alternate days	Thrice a day	Twice a day	Once a day	Rarely	Never	Total
Sugar	1000 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1000 (100)
Jaggery	7 (0.7)	4 (0.4)	21 (2.1)	37 (3.7)	134 (13.4)	399 (39.9)	399 (39.9)	1000 (100)
Palm sugar	6 (0.6)	3 (0.3)	17 (1.7)	44 (4.4)	138 (13.8)	316 (31.6)	476 (47.6)	1000 (100)

Note: Values within ( ) denote row percentage

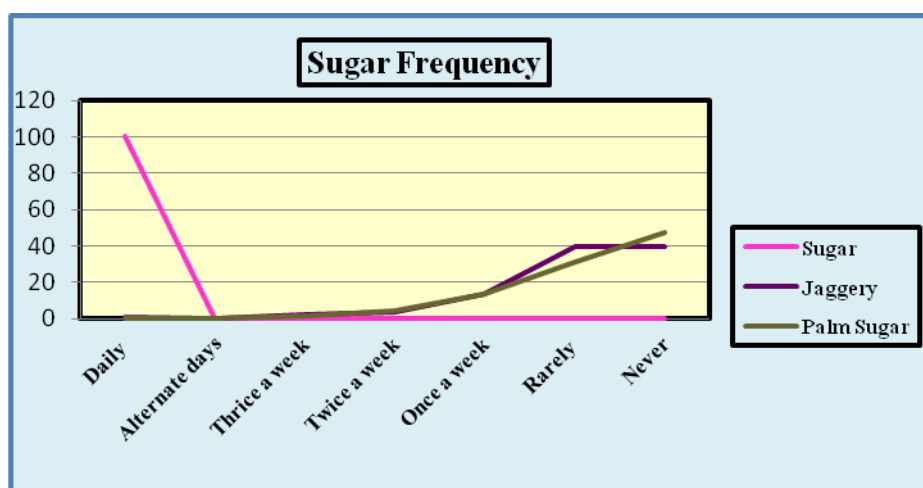


Figure-2

White sugar is a source of empty calories, and it is consumed by all the participants on daily basis. Jaggery contains potassium and negligible amount of iron. It is consumed by only 0.7% daily, followed by 0.4%, 2.1%, 3.7%, and 13.4% on alternate days, thrice a week, twice a week and once a week, respectively. About 39.9% consumed jaggery rarely, and 39.9% never consumed it.

Similarly palm sugar consumption was also found to be low among the study participants. About 0.6% consumed it daily followed by 0.3%, 1.7%, 4.4%, 13.8% consumed it on alternate days, thrice a week, twice a week, and once a week respectively. About 31.6% consumed it rarely, and about 47.6% never consumed palm sugar.

Table-3: Junk food intake of the participants

Junk foods	Daily	Alternate days	Thrice a day	Twice a day	Once a day	Rarely	Never	Total
Traditional fried foods	2 (0.2)	15 (1.5)	77 (7.7)	178 (17.8)	419 (41.9)	285 (28.5)	24 (2.4)	1000(100)
Packet fried foods	20 (2.0)	54 (5.4)	108 (10.8)	251 (25.1)	300 (30.0)	123 (12.3)	144 (14.4)	1000 (100)
Cakes	0 (0)	0 (0)	4 (0.4)	46 (4.6)	274 (27.4)	613 (61.3)	63 (6.3)	1000 (100)
Pizza	0 (0)	0 (0)	0 (0)	2 (0.2)	10 (1.0)	148 (14.8)	840 (84.0)	1000 (100)
Chocolates	20 (2.0)	41 (4.1)	38 (3.8)	70 (7.0)	338 (33.8)	407 (40.7)	86 (8.6)	1000 (100)
Ice creams	0 (0)	0 (0)	0 (0)	29 (2.9)	182 (18.2)	712 (71.2)	77 (7.7)	1000 (100)
Carbonate beverages	7 (0.7)	25 (2.5)	67 (6.7)	173 (17.3)	202 (20.2)	496 (49.6)	30 (3.0)	1000 (100)
Sweets	0 (0)	0 (0)	7 (0.7)	63 (6.3)	247 (24.7)	519 (51.9)	164 (16.4)	1000 (100)
Chats	20 (2.0)	39 (3.9)	71 (7.1)	294 (29.4)	391 (39.1)	157(15.7)	28 (2.8)	1000(100)
Noodles	13 (1.3)	15 (1.5)	25 (2.5)	161 (16.1)	438 (43.8)	296 (29.6)	52 (5.2)	1000 (100)
Parota	12 (1.2)	32 (3.2)	71 (7.1)	245 (24.5)	286 (28.6)	195 (19.5)	159 (15.9)	1000 (100)
Biscuits	70 (7.0)	85 (8.5)	114 (11.4)	257 (25.7)	315 (31.5)	138 (13.8)	21 (2.1)	1000 (100)

About 0.2%, 1.5%, 7.7%, 17.8%, 41.9%, and 28.5% consumed traditional foods daily, on alternate days, thrice a week, twice a week, once a week, rarely respectively. Only 2.4% never consumed traditional fried foods.

Packet fried food were consumed by 2.0%, 5.4%, 10.8%, 25.1%, 30.0% and 12.3% daily, alternate days, thrice a week, twice a week, once a week and rarely. About 14.4% never consumed packet fried foods.

Cakes consumption found to be less among the study participants. More number of female participants cherished cakes and other bakery foods than male participants. About 0.4%, 4.6%, 27.4%, 61.3% consumed cakes thrice a week, twice a week, once a week, and rarely respectively. Only about 6.3% never consumed cakes.

Biscuits consumption found to be more among the study group. It was cherished by 7.0%, 8.5%, 11.4%, 25.7%, and 31.5% and 13.8% daily, on alternate

days, thrice a week, twice a week and once a week, rarely. Only about 2.1% never consumed biscuits.

Pizza is an Italian delight. It is one of the most popular foods in the world which is also found expensive in India. Pizza intake found to be very minimal in our study. Only about 0.2% reported to consumed it twice a week. About 1.0 % and 14.8% consumed it once a week and rarely respectively. About 84% never consumed pizza.

Chocolates were consumed by 2.0%, 4.1%, 3.8%, 7.0%, and 33.8% on daily, on alternate days, thrice a week, twice a week, once a week respectively. About 40.7% consume it occasionally and 6% of the participants never consumed chocolates.

Ice creams were consumed by 2.9%, 18.2% and 71.2% twice a week, once a week and rarely. About 7.7% never consumed ice-creams. Carbonated beverages consumption found to be more in our study. Higher number of male population consumed carbonated beverages than female counterparts. About 0.7%, 2.5%, 6.7%, 17.3%, and 20.2% consumed carbonated beverages daily, on alternate days, thrice a week, twice a week, once a week respectively. About 49.6% consumed it occasionally and only 3.0% never consumed carbonated beverages. *Bachani (2013)* stated that intake of carbonated drinks was very high in his study.

Sweets consumption found to be less in our study. About 0.7%, 6.3%, 24.7%, and 51.9% cherished sweets thrice a week, twice a week, once a week, and rarely, respectively. About 16.4% never consumed sweets.

Chats are most preferred junks consumed by our study participants. About 2.0%, 3.9%, 7.1%, 29.4%, and 39.1% consumed chats daily, on alternate days, thrice a week, twice a week, and once a week, respectively. About 15.7% consumed it rarely, and only 2.8% never consumed chats.

Noodles are loaded with calories, fats, and simple carbohydrates. About 1.3%,

1.5%, 2.5%, 16.1%, 43.8%, and 29.6% consumed noodles daily, on alternate days, thrice a week, twice a week, once a week and rarely, respectively. Only about 5.2% never consumed noodles.

About 1.2%, 3.2%, 7.1%, 24.5%, 28.6%, and 19.5% consumed parota daily, on alternate days, thrice a week, twice a week, once a week, and rarely. Only 15.9% never consumed parota.

## CONCLUSION

Consumption of energy densed food by college population has become common in the current scenario. High intake of fatty, fried and processed foods leads to weight gain. This inturn increases the risk of non-communicable diseases like diabetes, cardiovascular diseases and few types of cancers. Lifestyle management is essential to prevent excessive weight gain and non-communicable diseases. Imparting Nutrition education must be carried out to reduce the consumption of energy densed foods and encourage the students to consume nutrient dense foods like vegetables, fruits, nuts, whole grains. Intake of carbonated beverages must be completely avoided and the healthiest choices like soups, buttermilk, tender coconut water, milk can be included. Nutritionist must take up the role along with parents and the college authorities to create nutrition education among the students who are the pillars of the nation. Thus it is vital to create good eating habits among the students to lead a healthy and happy future.

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