

# Fast Food and Soft Drink Consumption Pattern in Medical Students and its Association with Overweight and Obesity

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## ABSTRACT

**Background:** Fast food and soft drink consumption is an increasing trend among young people and in medical students. Increased stress in life due to increased study load, have negative influences on the food choices of medical students. Hence present study was undertaken to know objectives of study fast food and soft drink consumption patterns in medical students, and to explore various factors contributing to fast food and soft drink consumption and to correlate patterns of fast food and soft drink consumption with overweight and obesity.

**Materials & Methods:** A cross sectional study was carried out during July 2020 to August 2020 where 198 undergraduate medical students were included in study. Pretested self-administrated semi structured questionnaire was used. analysis was done using Microsoft Excel 2013 and SPSS 16 version.

**Results:** Study showed 98%of respondents consume fast foods & soft drinks. Overweight prevalence is taken based on BMI, BMI> 25 was considered to be overweight, >30 was considered to be obese. Therefore 47%were affected to overweight. Among subjects who are affected with being overweight they consume Fast foods & soft drinks more frequently. The main Reason for consumption of fast food was mainly taste 58%, easily accessible 40%.

**Conclusion:** Despite the majority 95% aware of the fact that eating fast food may lead to many diseases, still all subjects continue to consume fast food , soft drinks mostly because of taste.

**Keywords:** Fast food, Soft drink, Medical students, Overweight, Obesity

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## INTRODUCTION

Foods are the foods that are easily prepared and served at the outlets and thus called as fast foods. It includes chips, sandwiches, burgers, fried chicken, French fries, Noodles, chicken nuggets, pizza, ice-cream etc.<sup>1</sup> They are high in calories and lack micronutrients. Fast foods and soft drink consumption is an increasing trend among the young people and medical students are no exception to it.<sup>2</sup> A widespread perspective is that medical students and future doctors would have had a healthier lifestyle and food habits as compared to their non-medical counterparts and non healthcare workers.<sup>3</sup> Stressful life which is due to increased study load may

negatively influence the food choices of medical students.<sup>4</sup> Many Studies have reported a very high prevalence of physical inactivity, mental stress, tobacco and alcohol use among a large proportion of medical students and future doctors.<sup>3</sup> Consumption of fast foods has become a global phenomenon. India's fast food industry is a very rapidly growing industry at the rate of 40% every year. India ranks 10<sup>th</sup> in the fast food per capita spending figures with 2.1 % of expenditure in annual total spending expenditures.<sup>5</sup> It has been proven that fast foods and soft drinks intake leads to many diseases and disorders like obesity and various other healthcare problems which are likely to cause cardiovascular diseases later on and various other health care issues. According to WHO (2003), frequent fast food consumption

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is also associated with health concern because most fast foods and soft drinks 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 and various other healthcare issues<sup>6</sup> and sugar sweetened beverages consumption is also associated with increased weight gain, which may have many reasons such as due to low satiety of liquid calories and incomplete compensation of energy intake at subsequent meals.<sup>7</sup> Those who consume fast foods in a fast food centre once a week or more regularly than this usually have so much of an effect on nutritive adequacy of the diet that it is not that great. But for those who consume fast food daily at these places the nutritive contributions must be carefully considered.<sup>2</sup> Economic development is accompanied by a nutrition transition characterized by a shift from traditional fiber and whole grains-rich diets to fat, fast food, harmful food and sugar-rich diets.<sup>8-10</sup> This shift possibly occurs first in urban areas, with higher intake of polished food grains, fats, animal products, sugar, processed foods, and foods eaten away from home than in rural areas and other not so developed cities.<sup>8</sup> Moreover, the nutrition transition generally affects high socioeconomic individuals first, which is consistent with a generally higher prevalence of obesity in them than in low socioeconomic individuals.<sup>10</sup> However fast foods and soft drinks are gaining popularity among youngsters and are widely spreading over both traditional and non-traditional food outlets.<sup>11</sup> Unhealthy habits introduced during young adulthood usually persist in later life and can increase the risk of several chronic diseases.<sup>11,12</sup>

The main aim and objective of this study is to know the fast food and soft drink consumption pattern in the medical students correlate the patterns of fast food and soft drink consumption with overweight and obesity.

The specific objectives of our study is:

1. To determine the patterns of fast food and soft drink consumption in undergraduate medical students of our collage.
2. To identify the reasons for fast food and soft drink consumption.
3. To correlate the patterns of fast food consumption and Soft drink with overweight and obesity.

## MATERIALS & METHODS

**Type of Study:** A cross sectional descriptive study

**Study Area:** The study was carried out in the Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation, Andhra Pradesh.

**Study Period:** July 2020 to August 2020.

**Study Participants:** Undergraduate medical students (1 – 9 semesters) of our college belonging to age group 8 – 25 years.

**Inclusion Criteria:** Apparently healthy female and male undergraduate medical students of the study area at the time of study.

**Exclusion Criteria:** Unhealthy female and male undergraduate medical students and those who are not willing to participate in the study were excluded.

Random sampling method was used and a convenient sample of 198 medical students was taken. After obtaining permission from Institutional Ethics Committee (IEC) and Institutional authorities, the purpose of the study will be explained to students enrolled for the Bachelor of Medicine, Bachelor of Surgery (M.B.B.S) course and written informed consent will be taken from those willing to participate in the study.

The respondents will be personally interviewed by a single observer using a self made pretested self administrated semi structured questionnaire which was developed by physiology department of Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation. Detailed history regarding the lifestyle of medical students will be taken.

### Fast food preferences:

Food preferences will be known by asking them ,in the form of questionnaire like ‘How amuch do you eat this food (Quantity) ?’ in relation to five different food categories:

- 1)Fast food (Pizza, burgers, etc.)
- 2)Salty snack foods (potato chips, pretzels, french fries, etc.)
- 3)Fruits
- 4)Vegetables
- 5)Soft drinks and sugared fruit drinks, etc.

### Dietary Knowledge :

Consumers’ dietary knowledge has been found to be an important predictor of healthy eating. In the present study it is found whether consumers’ dietary knowledge will be associated with their food preference patterns. The respondents are asked to provide their judgments on health effects of dietary knowledge statements.

**Source:** The source of beverage is referred to where the product was purchased and included the following categories, that is fast food outlets including college canteens, packaged beverages purchased from supermarkets and fresh products such as homemade juices, milkshakes or smoothies.

**Anthropometric Measurements:** The following basic and derived anthropometric measurements (indices) will be recorded in each subject, using standard methodology.

1. Height will be measured in centimeters (to the nearest 0.1centimeter) with a scale marked on a vertical wall, with the subject standing in erect position without shoes or headgear with head in Frankfort plane, feet together, heels, buttocks and upper part of the back touching the scale.<sup>13</sup>

2. Body weight will be measured in kilograms (to the nearest 0.5kg) using a precalibrated weighing scale with the subject Standing evenly on both feet, wearing normal indoor clothing but without footwear and before lunch.<sup>13</sup>

4. Body Mass Index (BMI):- Body will be calculated using the Quetelet formula - weight in kilograms divided by squared height in meters (weight in kg/height in m<sup>2</sup>). Participants will be classified into four categories using the WHO – defined cut – off points to: underweight( <18.5 kg/m<sup>2</sup> ), normal weight (18.5 – 24.9 kg/m<sup>2</sup>), overweight(25.0-29.9kg/m<sup>2</sup>), class I obesity (30.0 – 34.9 kg/m<sup>2</sup>), class II obesity (35.0 – 39.9kg/m<sup>2</sup>).<sup>14</sup>

**Statistical Analysis:**

Categorical data will be presented as frequencies and percentages and continuous data as Mean and Standard deviation (SD). If the data follows normal Distribution, Z test shall be applied, if it does not follow normal distribution as our sample size is large, significance of difference in parameters shall be calculated by Karl Pearson’s chi square test at 95% confidence interval(P<0.05)

**RESULTS**

Total of 198 medical students participated in the study. Mean age of subjects was 22.9±1.5 years. 98.86 % subjects have fast food consumption out of these 27.7 % consumed fast food once in a week, 34.3 % consumed fast food twice in a week, 26.2 % consumed fast food on alternative days, 10.6 % consumed fast foods on most of the days. However the most common type of fast food consumption was pizza (40.4 %), fried Manchuria, noodles, French fries, potato chips (23.5%), chocolates, sandwich ( 21%), burger ( 13.8%) respectively.

The overweight and Obesity prevalence is taken based on BMI classification. Therefore 47.4 % were affected to overweight. Among these subjects who were affected with overweight & obesity 2.51% of people consume fast foods once in a week, 19.6 % of people consume fast foods twice in a week, 16.16% of people consume fast foods in alternative days, 9.08 % of people consume fast foods in most of the days. Therefore the consumption of fast foods is related to

Table 1. Relationship between Bodymass Index and Frequency of Consumption of Fast Foods and Soft Drinks (n=198)

Body Mass Index				
Fast food consumption	%	Normal weight %	Overweight /obese %	Total
Yes	98.6 %	52.4 %	47.4 %	98.6%
No	1.04 %	1.04 %	–	1.04%
Total	100 %	53.53 %	47.4 %	100 %
Crude Death Rate **	6.2			7.1
Infant Mortality Rate **	36			44
Maternal Mortality Rate ***	359			212
Frequency of Fast Food Consumption:				
Fast food consumption	%	Normal weight %	Overweight /obese %	Total
Once in a week	27.7 %	25.18 %	2.51 %	27.7 %
Twice in a week	34.3 %	15.13 %	19.6 %	34.3 %
Alternative days	10.6 %	1.51 %	9.08%	10.6 %
Most of the days	26.26 %	10.1 %	16.16 %	26.26 %
Frequency of Soft Drink Consumption :				
Soft Drink Consumption	%	Normal weight%	Overweight %	Total
Once in a week	27.7 %	22.16 %	5.54 %	27.7 %
Twice in a week	38.3 %	20.15 %	18.14 %	38.3 %
Alternative days	22.7 %	6.05 %	16.64 %	22.7 %
Most of the days	10.1 %	2.02 %	8.08 %	10.1 %

obesity. Moreover there is a significant relationship was observed between overweight and consumption of soft drinks. Among these subjects who were affected with overweight and obesity 5.54 % of people consume soft drinks once in a week, 18.14 % of people consume soft drinks twice in a week, 16.64 % of people consume soft drinks in alternative days, 8.08 % of people consume soft drinks in most of the days. The relationship between BMI and frequency of consumption of fast foods and soft drinks was described in [Table – 1]. Therefore consumption of soft drinks is related to overweight and obesity.

Based on multivariate regression model many factors were related for the consumption of fast food & soft drinks [Table – 2]. Like parental consumption of fast food, status of living – Hostlers/Day scholars, years of fast food consumption and soft drink consumption and exercise habits etc.

Almost 196 subjects as high as (98.86 %) were eating fast foods and Among them the majority were consumers from the past 2-5 years (98.86%). As many as 64 (32.32%) participants said that they will prefer fast foods over usual meals. Reason for the consumption was stated by 196 participants. The

Table 2. Factors Related for the Consumption of Fast Foods and Soft Drinks (n=198)			
<b>Body Mass Index</b>			
Fast food consumption	Yes	no	overweight
Parental consumption of fast food	26.26 %	73.73 %	25.2 %
Status of living (hostlers)	55.5 %	-	28.3 %
Status of living (with parents)	43.4 %	1.01 %	19.1 %
<b>Years of Fast Food Consumption:</b>			
Years of fast food consumption	Yes	Normal weight	Overweight / obese
1-2years	-	-	-
2-3 years	2.5 %	2 %	0.5 %
3-4 years	14.1 %	12.08 %	2.01 %
4 -5 years	11.1 %	10.09 %	1.009 %
>5years	72.2 %	26.75 %	45.44 %
<b>Years of Soft Drink Consumption:</b>			
Years of soft drink consumption	yes	Normal weight	Overweight /obese
1-2 years	-	-	-
2-3 years	2.5 %	2 %	0.5 %
3-4 years	14.1 %	12.08 %	2.01 %
4-5 years	11.1 %	10.09 %	1.009 %
>5years	72.2 %	26.75 %	45.44 %
<b>Exercise Habits:</b>			
Exercise habits	yes	Normal weight	Overweight /obese
0 hrs	82	9	73
0-6 hrs	94	75	19
6-12 hrs	17	15	2
12-18 hrs	5	5	-
<b>Preference of Fast Foods Over Usual Meals:</b>			
	Number	Percentages	
Yes	64	32.32 %	
No	134	67.6 %	
<b>Preference of Branded Fast Foods:</b>			
	Number	Percentages	
Yes	175	88 %	
No	23	11.6 %	
<b>Preference of Aerated Drinks Over Fresh Fruit Juices:</b>			
	Number	Percentages	
Yes	128	64 %	
No	70	35.3%	
<b>Place of Fast Food Consumption:</b>			
Place of fast food consumption	Number	Percentages	
At home	35	18 %	
Collage Premises	60	30.3 %	
Fast foodstall	101	51.01 %	
Total	196	98.86 %	
<b>Parental Consumption of Fast Foods:</b>			
	Number	Percentages	
Yes	51	26.02 %	
No	147	75 %	

various reasons were taste of the food (58 %), as they are easily accessible with plenty of fast food eateries and restaurants around (40%). Out of these 196 consumers of fast food and soft drinks said that their parents and other family members will also consume fast foods and soft drinks. Therefore the consumption of fast foods and soft drinks among parents was significantly associated with its usage among their children. Reasons for non consumption of fast foods stated by 2 non – users were following parental advice, and being aware of ill effects stated by another one. Awareness of harmful effects of fast foods and soft drinks was noted in 186 students (94.8%). Association of various risk factors with consumption of fast and soft drinks among participants and association of consumption of fast foods and soft drinks with body mass index was described in [Table - 3], [Table - 4] respectively

Students who consumed fast foods and soft drinks in alternative days /most of the days had greater proportion of being overweight (or) obese compared to less frequent consumers (25.4 %) Although it was also noted that duration of physical activity was found to poor among greater proportion of students who are fast food consumers in alternative days and on most of the days in a week. Among 196 students who consume fast food and soft drinks, the overweight and obesity was found to be more among those who consume it for >5 years (45.44 %).

## DISCUSSION

According to our results, 98.86 % of subjects have fast food and soft drink consumption. It seems that the consumption of fast foods and soft drinks is high in these subjects. Fast food consumption was reported by 98% in a study done in Lucknow, India and by all students in a study done in Jammu Kashmir, India which was similar to our observations (100%).<sup>1,15</sup> In the present study Pizza was the most preferred fast food followed by fried Manchuria, noodles, French fries, potato chips, chocolates, sandwich, burger respectively. In this study it is observed that who consume fast foods and soft drinks more frequently from 4 – 5 years with low exercise habits were affected with overweight and obesity. Fast food and Soft drink consumption at our home and outside is one of the risk factors for obesity and overweight. Fast foods and Soft drinks are considered more energy

**Table 3. Association of Various Risk Factors with Consumption of Fast and Soft drinks among Participants (n=198)**

Parental Consumption of Fast Foods and Soft Drinks :			
	Consumers (%)	Non consumers (%)	Total
Yes	50(26.02%)	0	50
No	146(75%)	2(1.01%)	148
Total	196	2	198
Chi square = 0.683, Degrees of freedom = 1, Probability = 0.409			
Awareness of Health Hazards of Fast Foods and Soft Drinks :			
	Consumers (%)	Non consumers (%)	Total
Yes	186(93%)	2(1.01%)	188
No	10(5.9%)	0	10
Total	198	2	198
Chi square =0.107, Degrees of freedom = 1, Probability = 0.743			

dense and higher in fat intake as compared to their other counterparts. It was also observed that the prevalence of obesity and overweight grew in children and adolescents with frequent snacking and consumption of junk food.<sup>16,17</sup> Increased frequency of various junk food consumption was significantly associated with overweight/obesity similar to Veena V et al., study.<sup>18</sup> Consumption of soft drinks was a significant risk factor for overweight and obesity. Consumption of these fast foods and soft drinks increases weight as they add more calories. In addition, consumption of sandwich, fried chicken and pizza were associated with obesity/overweight.<sup>19</sup> The various reasons stated were being taste of the food (58 %), as they are easily accessible with plenty of fast food eateries and restaurants around (40%). While In a similar study done on adolescent girls of Saudi Arabia it was found that they eat fast food primarily for enjoying the delicious taste followed by convenience.<sup>20</sup> American college students chose to eat fast food for a limited time, followed by enjoyment of the taste.<sup>21</sup> Peer influence stated as a reason for consumption was also mentioned in other studies done in the USA and Iran similar to the finding of our study.<sup>22,23</sup> Easy availability of fast foods at any time of the day as a reason for fast food usage was mentioned in several studies.<sup>1,21,23</sup> In the present study despite of awareness regarding morbidities of fast food eating majority of the subjects were consuming fast food similar to a study done in Baroda, India where children despite knowing the harmful effects continued to eat fast foods and for reasons like taste preferences, strong desire to do so and quick to eat.<sup>24</sup> Nutrition counselling could help to reduce this gap between knowledge and practice.

## CONCLUSION

Fast food and soft drink consumption was reported by most of the students in this study. Despite of a majority (95 %)

**Table 4. Association of Consumption of Fast Foods and Soft Drinks with Body Mass Index**

Fast food consumption	Body Mass Index		Total
	Normal weight/ Underweight (%)	Overweight/Obese (%)	
Yes	102(52.4%)	94(47.4%)	196
No	2(1.04%)	0	2
Total	104	94	198

Chi square =1.83, Degrees of freedom = 1, Probability= 0.177

### Frequency of Fast Food Consumption

	Body Mass Index		Total
	Normal weight/ Underweight (%)	Overweight/Obese (%)	
Once in a week	49(25.18%)	5(2.51%)	54
Twice in a week	30(15.13%)	39(19.6%)	69
Alternative days	4 (1.51%)	18(9.08%)	22
Most of the days	19(10.1%)	32(16.16%)	51
Total	102	94	196

Chi square =49, Degrees of freedom =3, Probability = 0.000

Soft drink consumption	Body Mass Index		Total
	Normal/Underweight (%)	Overweight/Obese (%)	
Yes	102(52.4%)	94(47.4%)	196
No	2(1.04%)	0	2
Total	104	94	198

Chi square = 1.83, Degrees of freedom =1, Probability= 0.177

### Frequency of Soft Drink Consumption

	Body Mass Index		Total
	Normal/Underweight (%)	Overweight/Obese (%)	
Once in a week	43(22.16%)	11(5.54%)	54
Twice in a week	40(20.15%)	36(18.14%)	76
Alternative days	4(2.02%)	16(8.08%)	20
Most of the days	12(6.05%)	34(16.64%)	46
Total	99	97	196

Chi square= 36.9, Degrees of freedom= 3, Probability = 0.000

### Association between Frequencies of Fast Food and Soft Drink Consumption with Physical Activity among Students

Fast food and soft drink consumption	Duration of physical activity		Total
	Good	Poor	
Yes	110(55.3%)	86(43%)	196
No	2(1.01%)	0	2
Total	112	86	198

Chi square=1.55, degrees of freedom = 1, probability = 0.213

being aware that consuming fast foods and soft drinks leads to many diseases, all the subjects continue to consume fast food and soft drinks mostly because they found it tasty. In our study 98.86% students were consuming fast food and soft drinks in their diet, among them 47.4% were found to be overweight /obese. On the same side, more frequency

of fast food and soft drink consumption in a week and with less physical exercise were significantly related to high BMI. In conclusion, there is significant relationship between Body mass index and fast food, soft drink consumption along with decreased or less amount of physical activity.

## END NOTE

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