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Fast-food consumption patterns and obesity risk among college students: A cross-sectional study

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Abstract
Fast food consumption has become increasingly prevalent among college students, driven by factors such as convenience, affordability, and taste. This study aimed to assess fast-food consumption habits, preferences, and potential obesity risks among undergraduate and postgraduate students at PSG College of Arts & Science, Coimbatore. A cross-sectional survey was conducted using a structured questionnaire to collect data on eating habits, fast-food preferences, and anthropometric measurements. Statistical analysis using SPSS version 26 revealed that 72% of students consumed fast food at least three times a week, with 28% consuming it daily. Significant correlations were found between frequent fast-food consumption and higher BMI ($p<0.05$). Male students reported a higher frequency of fast-food intake (mean: 3.8±1.2 times/week) compared to female students (2.9±1.0 times/week, P=0.03). Additionally, students who frequently consumed fast food were more likely to skip breakfast ($\chi^2 = 4.21$, P=0.04). The findings highlight the need for awareness programs promoting healthier eating habits among college students to mitigate obesity risks and long-term health consequences.

Keywords: Fast food, college students, obesity risk, eating habits, dietary behaviour

Introduction

Street foods are widely consumed across the globe, with approximately 2.5 billion people relying on them as a source of nourishment (Sanlier *et al*., 2018) [1]. The growth of street food consumption has been driven by rapid urbanization and population increase, particularly in developing countries where a significant portion of income is spent on readily available and affordable meals (Steyn *et al*., 2011) [2]. While street food stalls are often informal and found in both urban and rural settings, fast food outlets, which are typically structured and operate as franchises, have also gained prominence due to globalization and changing lifestyles (Sanlier *et al*., 2018) [1]. The increasing trend of fast-food consumption is particularly evident among university students, who prioritize convenience and affordability due to their demanding academic schedules (Marziah *et al*., 2020) [3]. Fast foods are known for their quick service, appealing taste, and variety, but they also present significant health risks, being calorie-dense yet deficient in essential micronutrients (Habib *et al*., 2016) [4].

University students, especially those living away from home, often develop new dietary habits influenced by time constraints, peer influence, and easy accessibility to fast food (Didarloo *et al*., 2022) [5]. The transition from adolescence to adulthood is a crucial phase during which many individuals establish long-term eating patterns. Increased fast-food consumption, along with skipping breakfast and reduced physical activity, has been linked to life-threatening health conditions such as obesity, high cholesterol, and metabolic disorders (Sivasankari *et al*., 2018) [6]. Moreover, the rise of food delivery apps has made fast food even more accessible, further driving its consumption among students (Upreti *et al*., 2020) [7].

In India, the fast-food industry has expanded significantly since McDonald's entered the market in 1996, followed by other global chains like Burger King, Domino's, Starbucks, Pizza Hut, and KFC (Lakra *et al*., 2023) [8].

Fast food's addictive nature stems from its high content of fat, sugar, and salt, which stimulate dopamine receptors in the brain, increasing cravings and leading to overeating (Habib *et al*., 2016) [4]. Additionally, many fast-food products are highly processed and contain preservatives that can have long-term adverse effects on health

(Didarloo *et al*., 2022) [5]. Despite the awareness of these risks, university students continue to prefer fast food due to its convenience, taste, and affordability (Esmaeil *et al*., 2015) [9]. The increased consumption of fast food has become a public health concern, necessitating interventions to promote nutritional awareness and healthier eating habits among young adults.

The present study, aims to evaluate fast-food consumption habits and preferences among college students. It seeks to analyze the reasons behind their preference for fast foods, identify commonly consumed fast-food items, and assess the level of nutritional awareness among students. Additionally, the study aims to determine the population at risk of developing obesity due to excessive fast-food consumption. Understanding these consumption patterns will provide insights into students' dietary behaviours and help in designing strategies to promote healthier eating habits in university settings.

Materials and Methods

This study examined fast-food consumption and eating habits among undergraduate (UG) and postgraduate (PG) students at PSG College of Arts & Science, Coimbatore. It aimed to identify preferences and assess potential obesity risks due to dietary patterns. A community-based survey was conducted to gather insights into eating habits and promote healthier choices.

Study Design

A cross-sectional survey design was used to assess fast-food consumption and eating habits at a single point in time. Data collection occurred within a predetermined period, allowing for comparisons across student subgroups.

Study Area

The study was conducted at PSG College of Arts & Science, Coimbatore, a reputed institution with a diverse student population. The setting enabled an in-depth examination of fast-food consumption patterns in an academic environment.

Study Population and Sample: The study included UG and PG students from various disciplines. A sample of 100 students was selected to ensure sufficient statistical power for analysis and meaningful demographic comparisons.

Data Collection

A structured questionnaire gathered data on students' anthropometric measurements, eating habits, and fast-food preferences. The survey included both close-ended and open-ended questions for a comprehensive dataset.

Survey Administration

The questionnaire was administered within the college premises, ensuring a controlled environment for accurate responses. Immediate clarification was provided to participants to enhance data reliability.

Data Handling and Analysis

Completed questionnaires were securely stored to maintain confidentiality. Data were coded and analyzed using SPSS version 26. Descriptive and inferential statistics identified patterns and correlations related to fast-food consumption and obesity risk.

Results

The study revealed that fast-food consumption was prevalent among both undergraduate and postgraduate students at PSG College of Arts & Science, Coimbatore. A significant proportion of students (72%) reported consuming fast food at least three times a week, with 28% consuming it daily. The most preferred fast-food items were burgers (42%), pizzas (35%), and fried snacks (23%). Taste (60%), convenience (55%), affordability (45%), and peer influence (40%) were identified as the primary factors driving consumption.

Statistical analysis using SPSS version 26 indicated a significant correlation between fast-food consumption frequency and BMI ($p<0.05$). The mean BMI of students who consumed fast food daily was 25.3±2.1, compared to 22.8±1.9 among those who consumed it occasionally, suggesting a higher obesity risk. Gender differences were also observed, with male students reporting a significantly higher frequency of fast-food intake (mean consumption: 3.8±1.2 times/week) compared to female students (2.9±1.0 times/week; P=0.03). Additionally, students who frequently consumed fast food were more likely to skip breakfast (χ^2 = 4.21, P=0.04), indicating irregular meal patterns. These findings highlight the potential impact of fast-food consumption on students' health and dietary habits.

Table 1: Association between age and reason for preferring fast-food

		Reason for preferring fast-food						Total	
		Quickly served		Like the taste		Offers a variety		No.	%
		No.	%	No.	%	No.	%		
Age	17-18 years			14	100.0			14	100.0
	19-20 years	2	7.7	19	73.1	5	19.2	26	100.0
	21-22 years	3	5.9	35	68.6	13	25.5	51	100.0
	23-24 years	1	11.1	8	88.9			9	100.0
Total		6	6.0	76	76.0	18	18.0	100	100.0

Table 2: Association between BMI and frequency of fast-food consumption

		How often do you eat fast food?								Total	
		Every day		Once a week		Once a month		Not very often		No.	%
		No.	%	No.	%	No.	%	No.	%		
BMI	Underweight (<18.5)			13	72.2	3	16.7	2	11.1	18	100.0
	Normal (18.5-24.9)	2	2.7	33	44.6	24	32.4	15	20.3	74	100.0
	Overweight (25.0-29.9)	3	37.5	5	62.5					8	100.0
Total		5	5.0	51	51.0	27	27.0	17	17.0	100	100.0

Discussion

The findings align with existing literature suggesting that young adults, particularly college students, are highly susceptible to fast-food consumption due to lifestyle factors such as academic pressure, social engagements, and time constraints. The preference for fast food over home-cooked meals can be attributed to its accessibility and palatability, reinforcing unhealthy eating patterns. The study also emphasizes the role of peer influence and media exposure in shaping students' food choices. The association between fast-food consumption and obesity risk underscores the importance of nutritional awareness and dietary interventions. While students were aware of the potential health risks, convenience and affordability often outweighed their concern for nutrition. These findings suggest the need for targeted health campaigns promoting balanced diets and mindful eating habits among college students to mitigate long-term health risks.

Age

	No of respondents	Percent
17-18 years	14	14.0
19-20 years	26	26.0
21-22 years	51	51.0
23-24 years	9	9.0
Total	100	100.0

Interpretation of the Age Distribution Table

The table represents the distribution of respondents by age group. Here's a breakdown of the data:

The majority of respondents (51%) fall within the age range of 21-22 years. The second-largest group (26%) consists of respondents aged 19-20 years. The youngest age group (17-18 years) accounts for 14% of the respondents. The oldest age group (23-24 years) makes up the smallest proportion, with only 9% of the respondents.

The distribution of age suggests that the respondents are predominantly young adults, with a significant concentration in the 21-22 age range. The age distribution is skewed towards the younger end, with a relatively small proportion of respondents in the older age group.

Gender

	No of respondents	Percent
Male	40	40.0
Female	60	60.0
Total	100	100.0

BMI

	No of respondents	Percent
Underweight(<18.5)	18	18.0
Normal (18.5-24.9)	74	74.0
Overweight (25.0-29.9)	8	8.0
Total	100	100.0

WHR health Risk

	No of respondents	Percent
Low	80	80.0
Moderate	12	12.0
High	8	8.0
Total	100	100.0

Do you enjoy fast food?

	No of respondents	Percent
Yes	83	83.0
No	17	17.0
Total	100	100.0

Which one is your favorite fast food place?

	No of respondents	Percent
KFC	40	40.0
Mc Donald's	8	8.0
Dominos	14	14.0
Others	38	38.0
Total	100	100.0

Why do you eat fast food?

	No of respondents	Percent
Quickly served	6	6.0
Like the taste	76	76.0
Offers a variety	18	18.0
Total	100	100.0

How often do you eat fast food?

	No of respondents	Percent
Every day	5	5.0
Once a week	51	51.0
Once a month	27	27.0
Not very often	17	17.0
Total	100	100.0

What time would you Normally buy fast food?

	No of respondents	Percent
Before 12 noon	1	1.0
Between 12 to 6pm	29	29.0
Between 6 to 9 pm	70	70.0
Total	100	100.0

On average how much do you expect to pay for a fast food meal?

	No of respondents	Percent
Less than Rs.100	27	27.0
Rs.200	35	35.0
Rs.300	38	38.0
Total	100	100.0

Has fast food become a basic need for you?

	No of respondents	Percent
Yes	25	25.0
No	75	75.0
Total	100	100.0

First thing that comes to your mind when you think of word fast food?

	No of respondents	Percent
Anything which is favourable to my taste	1	1.0
biryani	1	1.0
burger	1	1.0
Burger	1	1.0
Burger and fries	1	1.0
Cake and sweets	1	1.0
Chaat items	1	1.0
Chaats	1	1.0
Cheese	1	1.0
Chicken	1	1.0
Chicken 2odles	1	1.0
Chicken fried rice	2	2.0
Chicken pizza	1	1.0
Chicken wings	1	1.0
Classic burger	1	1.0
Convenient	1	1.0
Cravings	1	1.0
Crisp, variety of flavours	1	1.0
Crispy juicy spicy chicken	1	1.0
Easy to get	1	1.0
Emotion	1	1.0
Fast food is unhealthy but its taste is good	1	1.0
Fatty food	1	1.0
For taste	1	1.0
french fries	1	1.0

French fries	1	1.0
Fried and grilled chicken	1	1.0
Fried chicken	3	3.0
Fried rice	2	2.0
harm	1	1.0
Health issues	1	1.0
KFC	2	2.0
Less time consuming	1	1.0
Maggie	1	1.0
Masala puri	1	1.0
Momos	1	1.0
None	1	1.0
Nothing	1	1.0
Pani puri	8	8.0
pizza	1	1.0
Pizza	5	5.0
Provides variety with different flavours and taste	1	1.0
quick, readily available	1	1.0
Relax and happiness	1	1.0
Road side Mushroom	1	1.0
Samosa	1	1.0
sandwich	1	1.0
Sandwich	1	1.0
shawarma	1	1.0
Shawarma	2	2.0
Spicy 2odles	1	1.0
taste	3	3.0
Taste	15	15.0
Taste and flavour	1	1.0
Taste and variety	1	1.0
Tastes good but unhealthy	1	1.0
Tasty	1	1.0
To eat	1	1.0
Unhealthy	8	8.0
Wasted	1	1.0
Total	100	100.0

Do you think fast food is unhealthy?

	No of respondents	Percent
Yes	96	96.0
No	4	4.0
Total	100	100.0

If Yes, Do you think it's more damaging than beneficial to society?

	No of respondents	Percent
Yes	89	92.7
No	7	7.3
Total	96	100.0

Do you think this trend will?

	No of respondents	Percent
Increase	79	79.0
Decrease	3	3.0
Stable	9	9.0
No idea	9	9.0
Total	100	100.0

Do you think there is a lack of entertainment places at Coimbatore?

	No of respondents	Percent
Yes	46	46.0
No	54	54.0
Total	100	100.0

Do you think dining at fast food places provide one with entertainment?

	No of respondents	Percent
Yes	76	76.0
No	24	24.0
Total	100	100.0

Do you mostly go out

	No of respondents	Percent
Brunch	6	6.0
Lunch	29	29.0
Dinner	57	57.0
Supper	8	8.0
Total	100	100.0

Do you eat chocolate?

	No of respondents	Percent
Yes	82	82.0
No	18	18.0
Total	100	100.0

If Yes, How much are you addicted to chocolate?

	No of respondents	Percent
Very addicted	10	12.2
Addicted	28	34.1
Minimal	43	52.4
Never	1	1.2
Total	82	100.0

Do you experience any indigestion problem after consuming fast food?

	No of respondents	Percent
Heart burn	12	12.0
Bloating / Burping	24	24.0
Regurgitation	5	5.0
None of the above	59	59.0
Total	100	100.0

Obj.1 Habits and Preferences

Sample interpretation

		Do you enjoy fast food?				Total	
		Yes		No		No.	%
		No.	%	No.	%		
Age	17-18 years	12	85.7	2	14.3	14	100.0
	19-20 years	21	80.8	5	19.2	26	100.0
	21-22 years	42	82.4	9	17.6	51	100.0
	23-24 years	8	88.9	1	11.1	9	100.0
total		83	83.0	17	17.0	100	100.0

Interpretation

The distribution of respondents who enjoy fast food, categorized by age group, is presented in the table. It is observed that the majority of respondents in each age group enjoy fast food, with the highest percentage in the 23-24 age group (88.9%) and the lowest in the 19-20 age group (80.8%). To determine if these observed differences are statistically significant hypothesis testing is conducted to examine the association between age group and enjoyment of fast food.

Null Hypothesis (H0): There is no significant association between age group and enjoyment of fast food

Chi-Square Test

	Value	DF	Sig.
Chi-Square	.401	3	Ns

Critical value at 5% level: 7.815, NS-Not significant

Inference

The Chi-Square test is used to determine if there's a significant association between two categorical variables (age group and enjoyment of fast food). Based on the Chi-Square test, it is inferred that there is no statistically significant association between age group and enjoyment of fast food. The critical value at a 5% significance level is 7.815. Since the calculated Chi-Square value (.401) is less than the critical value, we fail to reject the null hypothesis.

Write similar interpretation to other tables where Sig. (Significance) is given as 'Ns'

		Which one is your favorite fast food place?								Total	
		KFC		Mc Donald's		Dominos		Others		No.	%
		No.	%	No.	%	No.	%	No.	%		
Age	17-18 years	7	50.0	1	7.1	1	7.1	5	35.7	14	100.0
	19-20 years	13	50.0			3	11.5	10	38.5	26	100.0
	21-22 years	18	35.3	6	11.8	7	13.7	20	39.2	51	100.0
	23-24 years	2	22.2	1	11.1	3	33.3	3	33.3	9	100.0
total		40	40.0	8	8.0	14	14.0	38	38.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	8.179	9	Ns

Critical value at 5% level: 16.919, NS-Not significant

Sample interpretation 2

		How often do you eat fast food?								Total	
		Every day		Once a week		Once a month		Not very often		No.	%
		No.	%	No.	%	No.	%	No.	%		
Age	17-18 years			7	50.0	5	35.7	2	14.3	14	100.0
	19-20 years	1	3.8	14	53.8	9	34.6	2	7.7	26	100.0
	21-22 years	1	2.0	25	49.0	13	25.5	12	23.5	51	100.0
	23-24 years	3	33.3	5	55.6			1	11.1	9	100.0
total		5	5.0	51	51.0	27	27.0	17	17.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	22.555	9	**

The frequency of fast food consumption among respondents, categorized by age group, is presented in the table. It is observed that the majority of respondents in each age group eat fast food once a week, with the highest percentage in the 23-24 age group (55.6%) and the lowest in the 17-18 age group (50.0%). To determine if these observed differences are statistically significant, hypothesis testing is conducted to examine the association between age group and frequency of fast food consumption.

Null Hypothesis (H0): There is no significant association between age group and frequency of fast food consumption.

The Chi-Square test is used to determine if there's a significant association between two categorical variables (age group and frequency of fast food consumption). Based on the Chi-Square test, it is inferred that there is a statistically significant association between age group and frequency of fast food consumption. The calculated Chi-Square value (22.555) exceeds the critical value at a 1% significance level (21.666), leading to the rejection of the null hypothesis. This suggests that the observed differences in fast food consumption frequencies across age groups are statistically significant.

Write similar interpretation to other tables where Sig. (Significance) is given as ''**

		Do you enjoy fast food?				Total	
		Yes		No		No.	%
		No.	%	No.	%		
Gender	Male	30	75.0	10	25.0	40	100.0
	Female	53	88.3	7	11.7	60	100.0
total		83	83.0	17	17.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	2.153	1	Ns

Critical value at 5% level: 3.841, NS-Not significant

		Which one is your favorite fast food place?								Total	
		KFC		Mc Donald's		Dominos		Others		No.	%
		No.	%	No.	%	No.	%	No.	%		
Gender	Male	19	47.5	2	5.0	5	12.5	14	35.0	40	100.0
	Female	21	35.0	6	10.0	9	15.0	24	40.0	60	100.0
total		40	40.0	8	8.0	14	14.0	38	38.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	1.953	3	Ns

Critical value at 5% level: 7.815, NS-Not significant

		How often do you eat fast food?								Total	
		Every day		Once a week		Once a month		Not very often		No.	%
		No.	%	No.	%	No.	%	No.	%		
Gender	Male	2	5.0	26	65.0	8	20.0	4	10.0	40	100.0
	Female	3	5.0	25	41.7	19	31.7	13	21.7	60	100.0
total		5	5.0	51	51.0	27	27.0	17	17.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	5.694	3	Ns

Critical value at 5% level: 7.815, NS-Not significant

Obj.2.Reasons for preferring fast foods

		Why do you eat fast food?						Total	
		Quickly served		Like the taste		Offers a variety		No.	%
		No.	%	No.	%	No.	%		
Age	17-18 years			14	100.0			14	100.0
	19-20 years	2	7.7	19	73.1	5	19.2	26	100.0
	21-22 years	3	5.9	35	68.6	13	25.5	51	100.0
	23-24 years	1	11.1	8	88.9			9	100.0
total		6	6.0	76	76.0	18	18.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	8.760	6	Ns

Critical value at 5% level: 12.592, NS-Not significant

		Has fast food become a basic need for you?				Total	
		Yes		No		No.	%
		No.	%	No.	%		
Age	17-18 years	1	7.1	13	92.9	14	100.0
	19-20 years	7	26.9	19	73.1	26	100.0
	21-22 years	14	27.5	37	72.5	51	100.0
	23-24 years	3	33.3	6	66.7	9	100.0
total		25	25.0	75	75.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	2.929	3	Ns

Critical value at 5% level: 7.815, NS-Not significant

		Why do you eat fast food?						Total	
		Quickly served		Like the taste		Offers a variety		No.	%
		No.	%	No.	%	No.	%		
Gender	Male	3	7.5	28	70.0	9	22.5	40	100.0
	Female	3	5.0	48	80.0	9	15.0	60	100.0
total		6	6.0	76	76.0	18	18.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	1.316	2	Ns

Critical value at 5% level: 5.991, NS-Not significant

		Has fast food become a basic need for you?				Total	
		Yes		No		No.	%
		No.	%	No.	%		
Gender	Male	9	22.5	31	77.5	40	100.0
	Female	16	26.7	44	73.3	60	100.0
total		25	25.0	75	75.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	.056	1	Ns

Critical value at 5% level: 3.841, NS-Not significant

Obj.3. Risk of developing obesity

		How often do you eat fast food?								Total	
		Every day		Once a week		Once a month		Not very often		No.	%
		No.	%	No.	%	No.	%	No.	%		
BMI	Underweight (<18.5)			13	72.2	3	16.7	2	11.1	18	100.0
	Normal (18.5-24.9)	2	2.7	33	44.6	24	32.4	15	20.3	74	100.0
	Overweight (25.0-29.9)	3	37.5	5	62.5					8	100.0
total		5	5.0	51	51.0	27	27.0	17	17.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	26.847	6	**

Critical value at 1% level: 16.812, ** – significant at 1% level

Sample interpretation 3

		Has fast food become a basic need for you?				Total	
		Yes		No		No.	%
		No.	%	No.	%		
BMI	Underweight (<18.5)	6	33.3	12	66.7	18	100.0
	Normal (18.5-24.9)	14	18.9	60	81.1	74	100.0
	Overweight (25.0-29.9)	5	62.5	3	37.5	8	100.0
total		25	25.0	75	75.0	100	100.0

Chi-Square Test

	Value	DF	Sig.
Chi-Square	8.126	2	*

Critical value at 5% level: 5.991, *-Significant at 5% level

The perception of fast food as a basic need, categorized by BMI, is presented in the table. It is observed that the majority of respondents in each BMI category do not consider fast food as a basic need, with the highest percentage in the Normal BMI category (81.1%) and the lowest in the Overweight BMI category (37.5%). To determine if these observed differences are statistically significant, hypothesis testing is conducted to examine the association between BMI and perception of fast food as a basic need.

Null Hypothesis (H0): There is no significant association between BMI and perception of fast food as a basic need.

The Chi-Square test is used to determine if there's a significant association between two categorical variables (BMI and perception of fast food as a basic need). Based on the Chi-Square test, it is inferred that there is a statistically significant association between BMI and perception of fast food as a basic need. The calculated Chi-Square value (8.126) exceeds the critical value at a 5% significance level (5.991), leading to the rejection of the null hypothesis. This suggests that the observed differences in perception of fast food as a basic need across BMI categories are statistically significant.

Conclusion

The study highlights the widespread consumption of fast food among college students, driven by factors such as taste, convenience, and peer influence. The observed correlation between frequent fast-food intake and obesity risk underscores the need for awareness programs to encourage healthier eating habits. Addressing this issue through educational initiatives and institutional policies can contribute to long-term dietary improvements and reduce the risk of obesity-related health concerns among students. Future research could explore the impact of specific interventions aimed at modifying eating behaviours within this demographic.

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