

## Prevalence, pattern and predictors of fast-food consumption among the undergraduate nursing students of a tertiary level hospital

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World Journal of Biology Pharmacy and Health Sciences, 2024, 19(02), 475–481

Publication history: Received on 16 July 2024; revised on 25 August 2024; accepted on 28 August 2024

Article DOI: <https://doi.org/10.30574/wjbphs.2024.19.2.0553>

### Abstract

The global fast-food industry has grown exponentially, significantly impacting public health by contributing to metabolic disorders like obesity and diabetes. This study aimed to investigate the prevalence, patterns, and predictors of fast-food consumption among 201 undergraduate nursing students at a tertiary-level hospital in India. Using a cross-sectional design, data were collected through a validated self-administered questionnaire and analyzed using R software. Descriptive statistics, chi-square tests, and logistic regression were employed to assess associations between demographic factors and fast-food consumption. Results showed a high prevalence of fast-food consumption (90.0%), with a significant association between fast-food and carbonated drink consumption ( $p < 0.01$ ). However, no significant predictors of fast-food consumption were identified among demographic factors such as gender, academic year, and residence type. These findings underscore the need for targeted nutritional interventions within nursing curricula to promote healthier dietary habits among future healthcare providers.

**Keywords:** Fast-Food Consumption; Nursing Students; Dietary Patterns; R Software; Nutritional Interventions

### 1. Introduction

The global fast-food industry has witnessed exponential growth over the past few decades, driven by urbanization, changing lifestyles, and the convenience offered by quick-service restaurants. Globally, the fast-food sector is expanding at an annual rate of 4.6%, reflecting its rising popularity across diverse populations (1). Fast food has become a staple in the diets of many individuals, particularly in developed nations, where its affordability and accessibility have contributed to a dramatic shift in eating habits. This shift has significant implications for public health, as the frequent consumption of high-calorie, nutrient-poor fast foods is strongly associated with a range of metabolic disorders, including obesity, hypertension, and diabetes (2). The World Health Organization (WHO) reports that the prevalence of obesity has nearly tripled worldwide since 1975, positioning it as a major risk factor for non-communicable diseases, which account for a substantial proportion of global mortality (3).

In India, the fast-food market is growing at an even more alarming rate, outpacing global averages with an annual growth rate of 18%. The market is currently valued at approximately \$27.57 billion, making India the 10th largest fast-food market in the world (4). This rapid expansion is fueled by the country's large, young population, increasing disposable income, and the aggressive marketing strategies of fast-food chains. However, this dietary shift comes at a cost. The rising consumption of fast food in India is contributing to a surge in lifestyle-related diseases, including obesity, cardiovascular diseases, and diabetes. These conditions are not only prevalent in urban areas but are also increasingly affecting rural populations, where traditional diets are being replaced by processed and convenience foods.

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Healthcare professionals, particularly nurses, play a crucial role in combating these public health challenges. They are at the frontline of patient care and are often responsible for providing dietary advice and promoting healthy lifestyles. However, studies have shown that healthcare professionals themselves, including nurses, are not immune to the adverse effects of unhealthy eating habits. A study by the Centers for Disease Control and Prevention (CDC) highlighted that in regions where fast food is prevalent, healthcare professionals, including nurses, face a heightened risk of obesity compared to the general population (5). This paradox underscores the importance of understanding the dietary behaviours of nursing students, who represent the future of the healthcare workforce.

Nursing students occupy a unique position within the healthcare system. As they transition from students to professionals, their health behaviours, including dietary choices, are likely to influence their practice and the advice they provide to patients. Despite extensive research on fast-food consumption in various populations, there is a notable gap in understanding how these behaviours manifest among nursing students. To examine their fast-food consumption patterns and the factors that influence these behaviours.

This study was conducted to address this gap by investigating the prevalence, patterns, and predictors of fast-food consumption among undergraduate (UG) nursing students at a tertiary-level hospital in India. By examining how demographic factors such as gender, academic year, and residence type influence fast-food consumption, the study aims to provide insights that can inform targeted interventions. These interventions could be crucial in promoting healthier dietary habits among nursing students, ultimately enhancing their effectiveness as future healthcare providers. The findings from this study are expected to contribute to the development of evidence-based strategies for improving the dietary habits of nursing students, thereby supporting their role in fostering a healthier society.

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## 2. Methodology

### 2.1. Study Design and Setting

This cross-sectional study was conducted over six months, from January 2023 to June 2023, at a tertiary-level hospital in a metropolitan city in India. The hospital is affiliated with a major medical college, which enrolls a diverse student population, including undergraduate (UG) nursing students.

### 2.2. Study Population

The study population comprised all UG nursing students enrolled in the Bachelor of Science in Nursing (BSc Nursing) program at the hospital's affiliated medical college. The inclusion criteria were all nursing students who were currently enrolled in the program and were willing to participate in the study. There were no exclusion criteria based on age, gender, or academic year, ensuring a comprehensive representation of the student body. A universal sampling technique was employed, whereby all 201 eligible students who consented to participate were included in the study.

### 2.3. Data Collection Instrument

Data were collected using a pretested and validated self-administered questionnaire shared as Google Forms. The questionnaire was designed to gather detailed information on the students' fast-food consumption patterns, including frequency of consumption, types of fast foods preferred, and associated dietary behaviours such as the intake of carbonated drinks. The questionnaire was developed based on a thorough review of the literature and was subjected to a pilot test to ensure its clarity, relevance, and reliability. The Cronbach's alpha for the questionnaire was 0.721, indicating acceptable internal consistency and reliability of the instrument.

The questionnaire was divided into the following sections: Demographic Information: This section collected data on the student's age, gender, academic year, and current residential status (hostel or home).

Fast-Food Consumption Patterns: This section inquired about the frequency of fast-food consumption (e.g., daily, alternate days, weekly, monthly, or never), and types of fast foods commonly consumed. Carbonated Drink Consumption: This section assessed the frequency of carbonated drink consumption and its correlation with fast-food intake.

### 2.4. Data Collection Procedure

Data collection was carried out from May 2023 to June 2023. The questionnaire was distributed to the students during their routine academic sessions, with the cooperation of the nursing faculty. Students were informed about the purpose of the study, assured of the confidentiality of their responses, and encouraged to participate voluntarily. The

questionnaire was administered using Google Forms to facilitate easy distribution, completion, and collection of responses. Students were given one week to complete and submit the questionnaire.

## 2.5. Ethical Considerations

Ethical approval for the study was obtained from the Institutional Ethics Committee of the affiliated medical college. Written informed consent was obtained from all participants before data collection. Participants were informed that their participation was voluntary and that they could withdraw from the study at any time without any academic or professional repercussions. Confidentiality and anonymity of the participants were strictly maintained throughout the study.

## 2.6. Data Analysis

Data analysis was performed using R software, version 4.3.2 (R Core Team, 2023). R is a language and environment for statistical computing and graphics, available as Free Software under the terms of the Free Software Foundation's GNU General Public License in source code form. The software is available at <https://www.r-project.org/>. Descriptive statistics were used to summarize the demographic characteristics of the participants and their fast-food consumption patterns. Frequencies and percentages were calculated for categorical variables.

To assess the association between demographic variables and fast-food consumption, chi-square tests were employed. This analysis aimed to identify any significant differences in fast-food consumption patterns based on gender, academic year, and residential status. Further analysis was conducted using logistic regression to identify potential predictors of fast-food consumption among the students. The independent variables included in the model were gender, academic year, residential status, and carbonated drink consumption. The results were presented as odds ratios (OR) with 95% confidence intervals (CI) and corresponding p-values.

## 3. Results

Out of the 201 nursing students surveyed, 181 (90.0%) reported consuming fast food, indicating a high prevalence of fast-food consumption in this population.

**Table 1** Socio-Demographic Distribution of Nursing Students (N=201)

	Frequency	Percentage
Age Group (Years)		
18-25	188	93.5
26-30	13	6.5
Gender		
Female	113	56.2
Male	88	43.8
Religion		
Hindu	160	79.6
Christian	15	7.5
Muslim	11	5.5
Others	15	7.5
Academic Year		
First-year	66	32.8
Second-year	56	27.9
Third-year	42	20.9
Fourth-year	37	18.4

Residence		
Hostel	140	69.7
Home	61	30.3

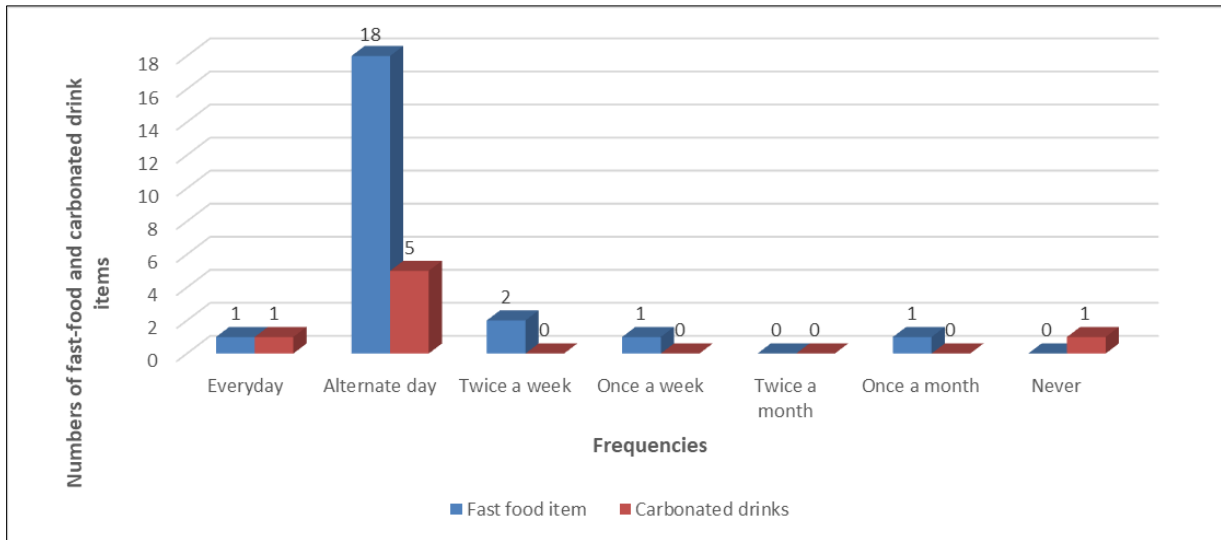
Table 1 shows the socio-demographic distribution of the participants. The study population consisted of 113 (56.2%) females and 88 (43.8%) males, with the majority being in the 18-25 age group 188 (93.5%). The dominant religion was Hinduism 160 (79.6%), followed by Christianity 15 (7.5%), Islam 11 (5.5%), and other religions 15 (7.5%). Regarding their academic year, 66 (32.8%) were first-year students, 56 (27.9%) were in the second year, 42 (20.9%) in the third year, and 37 (18.4%) were fourth-year students. Most participants resided in hostels 140 (69.7%), with the remainder living at home 61 (30.3%).

**Table 2** Association between Demographic Variables and Fast-Food Consumption

Variable	Category	Yes (n)	No (n)	Total	Yes (%)	No (%)	p-value
Gender	Female	104	9	113	51.74	4.48	0.4075
	Male	77	11	88	38.31	5.47	
Religion	Christan	14	1	15	6.97	0.50	0.7389
	Hindu	143	16	159	71.14	7.96	
	Muslim	9	2	11	4.48	1.00	
	Other	15	1	16	7.46	0.50	
Educational Year	1st Year	58	8	66	28.86	3.98	0.0674
	2nd Year	47	9	56	23.38	4.48	
	3rd Year	39	3	42	19.40	1.49	
	4th Year	37	0	37	18.41	0.00	
Current Residential Type	Home	56	5	61	27.86	2.49	0.7703
	Hostel	125	15	140	62.19	7.46	
Do you drink carbonated drinks?	No	30	20	50	14.93	9.95	<0.01*
	Yes	151	0	151	75.12	0.00	
Type of diet	Mixed	150	20	170	74.63	9.95	0.0917
	Vegetarian	31	0	31	15.42	0.00	

The chi-square test was used for all comparisons. \* Indicates  $p < 0.01$ .

Table 2 shows the association between demographic variables and fast-food consumption. While no significant differences were observed between genders or religions, a notable finding was the significant association between carbonated drink consumption and fast-food consumption ( $p < 0.01$ ). Students who consumed carbonated drinks were far more likely to consume fast food 151 (75.1%) compared to those who did not 30 (14.9%). Although not statistically significant, there was a trend indicating that first-year students had the highest prevalence of fast-food consumption 58 (28.9%), with a decline observed in the higher academic years. Similarly, a higher proportion of students on a mixed diet reported consuming fast food 150 (74.6%) compared to vegetarians 31 (15.4%), although this did not reach statistical significance.



**Figure 1** Frequencies of fast food and carbonated drink consumption patterns of undergraduate nursing students

Figure 1 illustrates the consumption patterns among nursing students, with the most common frequency being alternate-day consumption, reported by 18 students for fast food and 5 students for carbonated drinks. Only one participant reported daily consumption, while some reported no consumption at all, highlighting variability in dietary habits across the student population.

**Table 3** Logistic Regression Analysis of Demographic Factors Influencing Fast Food Consumption

Variable	Category	Estimate	Std. Error	Z-value	P-value
(Intercept)		-1.63	1.88	-0.86	0.38
Gender	Male	-1.10	0.84	-1.31	0.18
Religion	Hindu	-0.60	1.50	-0.40	0.68
	Muslim	0.49	1.96	0.25	0.80
	Other	-1.06	2.13	-0.50	0.61
Educational Year	2nd Year	1.02	0.97	1.05	0.29
	3rd Year	2.22	1.25	1.78	0.07
	4th Year	21.46	5,822.71	0.00	0.99
Current Residential Type	Hostel	1.67	1.22	1.37	0.17
Do you drink carbonated drinks?	Yes	23.19	3,464.29	0.01	0.99
Type of diet.	Vegetarian	19.92	6,550.76	0.00	0.99

Baseline categories: Gender = Female, Religion = Christian, Educational Year = 1st Year, Current Residential Type = Home, do you drink carbonated drinks? = No, Type of diet = Mixed.

Table 3 shows that none of the demographic variables were statistically significant predictors of fast-food consumption among nursing students. Although male students (Estimate: -1.10,  $p = 0.18$ ) and those in their third year (Estimate: 2.22,  $p = 0.07$ ) exhibited trends, these did not reach statistical significance. Additionally, while high estimates were observed for carbonated drink consumption (Estimate: 23.19,  $p = 0.99$ ) and vegetarian diet (Estimate: 19.92,  $p = 0.99$ ), these associations were also not statistically significant.

#### 4. Discussions

This study highlights the high prevalence of fast-food consumption among undergraduate nursing students, with 90.0% reporting regular intake. This finding is consistent with previous research conducted across various populations,

particularly in low- and middle-income countries. For instance, Li et al. (2020) found that fast-food consumption among adolescents in 54 countries was alarmingly high, which aligns with the patterns observed in this study (6). The increasing reliance on fast food among nursing students is concerning, given their future role as healthcare professionals responsible for advising patients on healthy dietary practices.

Interestingly, while the study did not find significant associations between demographic factors such as gender, religion, and academic year with fast-food consumption, the significant link between carbonated drink consumption and fast-food intake stands out. This association has been corroborated by other studies that have explored the co-consumption of fast food and sugar-sweetened beverages. Mohammadbeigi et al. (2018) reported that students who frequently consume fast food are more likely to consume carbonated drinks, which can contribute to the increased risk of obesity and related metabolic disorders. The combined intake of these high-calorie, low-nutrient foods suggests a dietary pattern that may predispose students to future health issues (7).

The absence of significant predictors for fast-food consumption among the demographic variables studied contrasts with findings from previous research. Studies such as those by Sharma et al. (2023) have indicated that demographic factors, particularly academic stress and time constraints, are influential in shaping dietary habits among healthcare students (8). The lack of significance in this study may be attributed to the relatively homogenous nature of the nursing student population, who share similar academic and clinical pressures. This suggests that other factors, such as environmental influences and personal preferences, may play a more critical role in dietary choices.

Moreover, the high estimates observed in the logistic regression analysis for factors like carbonated drink consumption and a vegetarian diet, despite not reaching statistical significance, highlight potential areas for further research. These findings align with the work of Mirza et al. (2018), who noted that lifestyle factors and dietary preferences significantly influence fast-food consumption patterns among students (9). While this study did not find significant predictors, the trends observed warrant further investigation, particularly in larger and more diverse samples.

The findings from this study underscore the need for targeted nutritional interventions among nursing students. Given their future role as healthcare providers, it is essential to address these dietary behaviours early in their careers. Educational initiatives that emphasize the long-term health risks associated with fast-food consumption and promote healthier dietary alternatives are crucial.

### *Limitations*

The study acknowledges certain limitations, including the reliance on self-reported data, which may be subject to recall bias or social desirability bias. Additionally, the cross-sectional design of the study limits the ability to establish causal relationships between the variables. Despite these limitations, the study provides valuable insights into the fast-food consumption patterns of nursing students, which can inform future research and intervention strategies.

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## **5. Conclusion and Recommendations**

This study reveals a high prevalence of fast-food consumption among undergraduate nursing students, with 90.0% of participants reporting regular intake. Despite exploring various demographic factors, including gender, religion, and academic year, no statistically significant predictors of fast-food consumption were identified, except for the significant association with carbonated drink intake. These findings highlight the pervasive nature of fast-food consumption within this population, underscoring the need for targeted interventions to address these unhealthy dietary patterns. Given the role of nursing students as future healthcare providers, their dietary behaviours are particularly concerning, as they are likely to influence their health and the advice they provide to patients.

Based on the findings of this study, it is recommended that targeted nutritional education programs be developed and implemented within nursing curricula to raise awareness about the health risks associated with frequent fast-food and carbonated drink consumption. These programs should emphasize the importance of balanced diets and provide practical strategies for making healthier food choices, even within the constraints of a busy academic schedule. Additionally, institutions should consider improving the availability of healthy food options on campus, making it easier for students to access nutritious meals. Further research is needed to explore the underlying factors driving fast-food consumption among nursing students and to assess the effectiveness of interventions aimed at promoting healthier eating habits in this population.

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest is to be disclosed.

### *Statement of ethical approval*

Ethical approval was obtained from the Institutional Ethics Committee (IEC) before the initiation of the study.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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