

Title: Nutritional Awareness and Junk Food Consumption Among College Students: A Power BI Survey Study

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Abstract:

The nutritional habits of young adults are increasingly important due to the rising prevalence of lifestyle-related diseases. This paper examines whether student's nutritional awareness is related to their junk food consumption. Data were collected from 93 undergraduate and postgraduate students using a Google Forms questionnaire distributed across the college. A structured survey with demographic variables, seven nutritional awareness items, and four junk food consumption items was designed. Responses were numerically encoded, standardized, averaged, and normalized using Min–Max scaling to generate two composite indices on a 0–100 scale. Power BI was employed for visualization, and Pearson correlation was used for hypothesis testing.

Key findings include: (1) only 29.03% of respondents met the NHS-recommended intake of five or more servings of fruits/vegetables per day; (2) nutritional awareness scores tended to increase with age, with postgraduate students reporting higher scores; (3) junk food consumption was highest among hostel residents and lowest among students living with family; and (4) the correlation between awareness and junk food consumption was negligible ($r = 0.01, p = 0.92$), indicating that knowledge does not necessarily translate into healthier eating. These results highlight a knowledge-behaviour gap and suggest that interventions should address environmental and behavioural factors in addition to awareness.

Keywords: Nutritional Awareness, Junk Food Consumption, dietary behavior, Power BI, Hypothesis Testing, College Students.

1. Introduction:

Young adulthood is a stage where dietary patterns shape long-term health outcomes. With growing access to fast food and time constraints in academic life, college students often consume nutritionally poor diets despite having access to health information [1], [8], [9]. The

World Health Organization (WHO) and NHS UK recommend a minimum of 400 g of fruits and vegetables per day (commonly referred to as “5 servings-a-day”) to maintain health and reduce disease risk [2]. Yet, survey data across many countries reveal that students rarely meet this standard [3], [10].

The central research question in this study is whether students who are more nutritionally aware consume less junk food. While nutrition education has been shown to increase awareness, its impact on behaviour is inconsistent, often due to environmental influences such as hostel food environments, affordability, and convenience [4], [5], [12].

This paper investigates this relationship using a sample of 93 students from diverse colleges and academic programs. By combining descriptive analytics with hypothesis testing, it aims to clarify whether greater awareness is significantly associated with healthier food choices.

2. Objectives and Hypotheses:

A. Main Hypothesis

The study tested the relationship between nutritional awareness and junk food consumption, formally stated as:

- H_0 (Null Hypothesis): There is no significant relationship between a student's junk food consumption and their nutritional awareness.
- H_1 (Alternative Hypothesis): There exists a statistically significant relationship between a student's junk food consumption and their nutritional awareness.

0.03	1.99	0.28
Correlation	t_critical	t_stat

This hypothesis was evaluated by constructing composite indices for nutritional awareness and junk food consumption, each scaled to 0–100. Statistical testing based on survey responses indicated that the observed correlation ($r = 0.03$, $t = 0.28$, $p = 0.92$, $df = 91$) was not significant at the 95% confidence level, leading to failure to reject H_0 . Thus, within this dataset, awareness and consumption appear independent of each other, highlighting the persistence of a knowledge–behaviour gap.

B. Analysis Questions

Beyond the central hypothesis, several exploratory analysis questions were formulated to better understand the dataset:

1. Does nutritional awareness increase with age?
2. What proportion of students meet the recommended intake of 5 or more fruit/vegetable servings per day (NHS guideline)?
3. How does living type (hostel, PG, family) affect junk food consumption?
4. Are there observable gender differences in nutritional awareness and junk food consumption?
5. Which awareness components most strongly align with the overall nutritional awareness score?

Each of these analysis questions is supported by Power BI visuals in Figures/Visuals section, and descriptive interpretations in the Results section.

3. Methodology:

A. Survey Design

The survey was developed using Google Forms and distributed online across multiple colleges. A total of 93 valid responses were collected from undergraduate and postgraduate students.

Nutritional Awareness Items (sample):

- *I understand the basic nutritional needs of my age group.*
- *I try to maintain a balanced diet.*

- *I read nutritional labels before buying packaged food.*
- *I know the daily recommended intake of fruits/vegetables.*
- *I actively avoid foods with high sugar or saturated fat.*
- *I keep track of my daily protein intake.*

Junk Food Consumption Items (sample):

- *How many times do you consume junk food (chips, pizza, soft drinks) per week?*
- *How often do you skip meals due to time constraints?*
- *How many servings of fruits or vegetables do you eat per day?*
- *How often do you eat home-cooked food?*

B. Data Preprocessing

1. Responses were numerically **encoded** (e.g., Likert scales → 1–5).
2. Each group of items was **standardized** to eliminate scale bias.
3. Items were **averaged per respondent** to form composite scores.
4. Scores were **normalized with Min–Max scaling (0–100)** for interpretability.
 - Higher *Awareness Score* = stronger nutritional knowledge.
 - Higher *Junk Food Score* = greater consumption.

C. Ethical Considerations

Informed consent was obtained from all participants at the start of the survey. Participation was voluntary, no personal identifiers were collected, and anonymity was maintained throughout.

D. Statistical Analysis

Pearson correlation was computed between awareness and junk food scores. The test statistic was calculated using:

$$t = r \sqrt{\frac{n - 2}{1 - r^2}}$$

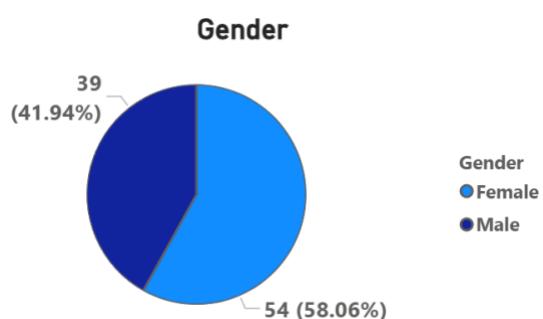
with degrees of freedom (df) = $n - 2 = 91$. A two-tailed significance test was conducted at $\alpha = 0.05$. The reported values were $r = 0.03$, $t = 0.28$, and $p = 0.92$, confirming

that there was no significant association between awareness and junk food consumption. Power BI dashboards were used for descriptive analytics and visualization of additional analysis questions. Refer (2A) for detailed hypothesis.

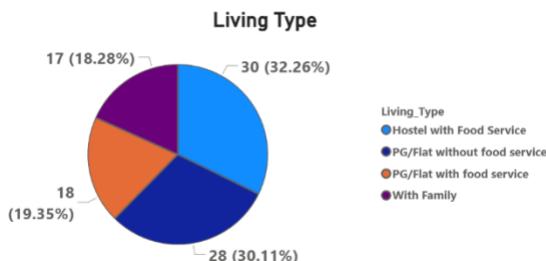
4 Results:

A. Demographics

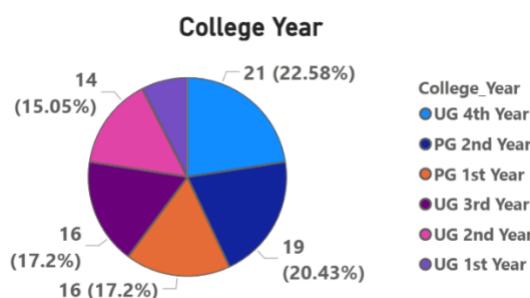
- Gender: Female = 54 (58.06%), Male = 39 (41.94%).



- Living Type: Hostel with food service (32.26%), PG without food (30.11%), PG with food (19.35%), With family (18.28%).



- College Year: UG 1st–4th year and PG 1st–2nd year, roughly evenly distributed.



B. Nutritional Awareness and Age

Average awareness scores showed an upward trend with age: older students, particularly postgraduate

respondents, demonstrated higher nutritional awareness than undergraduates. This suggests that exposure, maturity, and education contribute to awareness gains.

C. Fruit/Vegetable Intake

Only 29.03% of students reported consuming five or more servings per day, consistent with NHS recommendations. A concerning 17.2% consumed none. This confirms prior findings that students fail to meet international dietary guidelines [2], [3], [13].

D. Junk Food Consumption and Living Type

Junk food scores were highest among pg/flat residents who lived without food service (mean approx..70.0) and lowest among students living with family (mean approx. 38.0). Environmental context appears to influence diet strongly.

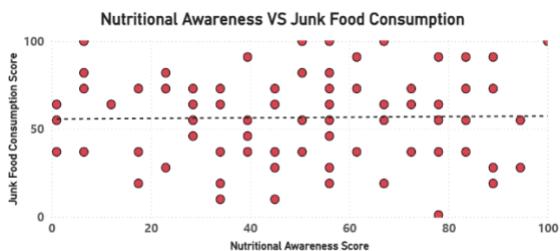
E. Nutritional Awareness Score Components Correlation

Correlation analysis revealed that several individual awareness items were strongly associated with the composite nutritional awareness score. The highest correlations were observed for Calorie_Consumption_Awareness ($r = 0.66$), Vitamins_Minerals_Consumption_Awareness ($r = 0.65$), and Maintains_Balanced_Diet? ($r = 0.64$). Other items, such as Reads_Product_Nutritional_Info? ($r = 0.58$) and Tracks_Protein_Intake? ($r = 0.59$), also demonstrated substantial positive alignment. In contrast, Understands_Nutritional_Needs? ($r = 0.49$), while still positively correlated, showed a comparatively weaker relationship with the composite score. These results suggest that applied practices—such as monitoring calorie intake or maintaining dietary balance—are stronger determinants of overall awareness than abstract knowledge alone.

E. Hypothesis Test

- Correlation coefficient: $r = 0.03$
- t-statistic = 0.28, df = 91
- p-value = 0.92 (two-tailed)
- 95% CI for $r = [-0.19, 0.21]$

Result: Fail to reject H_0 . There is no significant relationship between awareness and junk food consumption in this sample.



5. Discussion:

This study found no significant correlation between nutritional awareness and junk food consumption, reinforcing the “knowledge–behaviour gap” noted in another research [4], [6], [11]. Students may understand healthy practices yet fail to apply them due to convenience, cost, peer influence, or institutional food environments. This suggests that interventions limited to nutrition education are unlikely to achieve substantial behavioural change unless accompanied by environmental and behavioural support strategies.

The observation that awareness scores increase with age suggests that education and maturity improve knowledge but do not necessarily reduce unhealthy behaviours. Similar trends have been reported internationally, where older students and postgraduates display stronger knowledge yet continue to engage in unhealthy practices under time and social pressures [3]. This highlights the importance of embedding structured nutrition education earlier in academic programs, potentially at the undergraduate entry level, to establish stronger foundations for lifelong dietary habits.

Similarly, the finding that only 29.03% of students meet the 5-a-day recommendation aligns with global data showing insufficient fruit/vegetable intake in young adults [2]. This is concerning given the well-documented role of fruits and vegetables in reducing long-term risk for obesity, diabetes, and cardiovascular disease. Comparative studies in South Asian populations reveal similar deficits, pointing to cultural and institutional challenges in promoting fruit and vegetable intake among student communities [6], [10].

The strong differences across living type underline the importance of environmental interventions. Hostel residents had the highest junk food consumption, echoing prior evidence that institutional food access drives behaviour [5]. In this context, it may be useful for universities and hostel management to consider revising food service options, providing affordable healthier alternatives, or limiting availability of energy-dense snacks.

In addition, correlation analysis revealed that practical dietary behaviours—such as calorie awareness, vitamins/minerals awareness, and maintaining a balanced diet—showed the strongest alignment with the composite awareness score. This indicates that applied, practice-oriented knowledge is more predictive of overall nutritional literacy than abstract understanding. Prior

studies have similarly reported that dietary self-regulation, label reading, and micronutrient monitoring are reliable markers of higher nutritional awareness and better diet quality [7], [14]. This finding suggests that fostering applied nutritional practices may be a more effective target for interventions than general theoretical education alone.

Taken together, these findings highlight a layered challenge: while students are aware of healthy dietary principles and some display high nutritional literacy, structural and behavioural barriers prevent translation into practice. Addressing this gap requires not only curriculum-level changes but also institutional support, peer-driven initiatives, and policy interventions tailored to the student population.

6. Implications:

The findings of this study hold several practical implications for institutions, policymakers, and health educators. First, the negligible relationship between awareness and junk food consumption highlights that interventions cannot rely solely on increasing knowledge. Universities should pair awareness programs with behavioural nudges, such as structured meal planning support, healthier canteen options, and campaigns that address convenience and peer influences. Second, the higher junk food consumption among hostel residents emphasizes the need for improving the nutritional quality of institutional food services, possibly by subsidizing fruit and vegetable intake or limiting the availability of high-sugar snacks. Third, the age-related improvement in awareness suggests that nutritional literacy may benefit from earlier and more structured integration into undergraduate curricula. Finally, the correlation analysis showed that applied practices—such as calorie monitoring, balanced diet maintenance, and awareness of vitamins and minerals—are the strongest indicators of overall nutritional literacy. This suggests that interventions should prioritize fostering practical dietary behaviours rather than focusing exclusively on theoretical knowledge.

7. Limitations:

- Sample size (**n = 93**) is modest and may not represent the larger student population.
- Convenience **sampling** from specific colleges limits generalizability.
- Self-report **bias** could influence accuracy of dietary claims.
- Cross-sectional design prevents causal inferences.

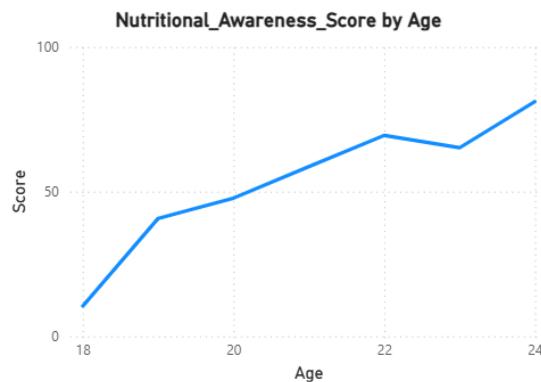
8. Conclusion and Future Work:

This study shows that among Indian college students, nutritional awareness and junk food consumption are not significantly correlated, underscoring a knowledge-behaviour gap. Awareness scores increased with age, yet dietary behaviour remained largely unchanged; only 29.03% of students met fruit and vegetable intake recommendations, and hostel residents reported the highest junk food consumption. Correlation analysis further indicated that practical behaviours—such as calorie monitoring, balanced diet maintenance, and micronutrient awareness—were the strongest predictors of overall nutritional literacy.

Future work should expand to larger and more diverse samples, apply reliability testing, and use longitudinal designs to assess behavioural change over time [15]. Incorporating socioeconomic and lifestyle factors, alongside technology-driven interventions such as mobile diet tracking, could provide more effective strategies to bridge the gap between nutritional knowledge and actual practice.

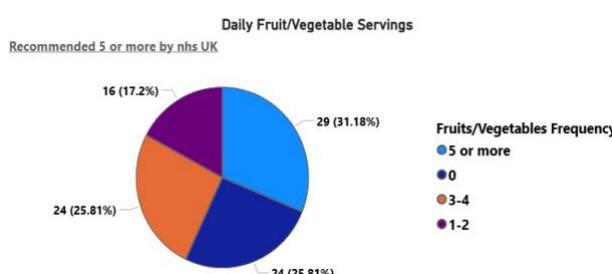
Figures / Visuals:

- Does nutritional awareness increase with age?
Yes, nutritional awareness does increase with age.



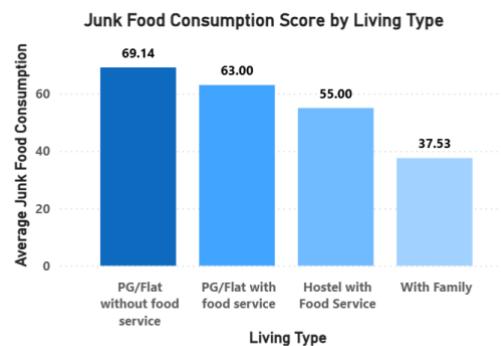
- What proportion of students meet the recommended intake of 5 or more fruit/vegetable servings per day (NHS guideline)?

Out of 93 students surveyed, only 29 (31.2%) met the NHS guideline of consuming five or more servings of fruits and vegetables per day, while the majority, 64 students (68.8%), fell short of the recommended intake.



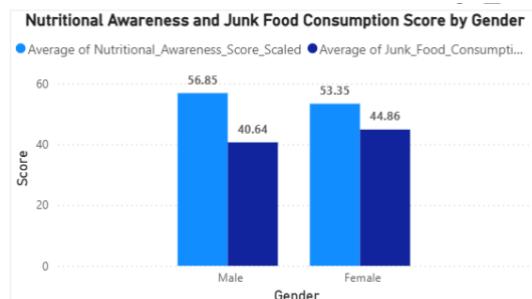
- How does living type (hostel, PG, family) affect junk food consumption? (*Visual: Junk food score by living type*).

Living arrangements significantly influence junk food consumption among students. Those residing in PGs or hostels with food services report the highest intake, while students living with their families exhibit the lowest junk food consumption.



- Are there observable gender differences in nutritional awareness and junk food consumption?

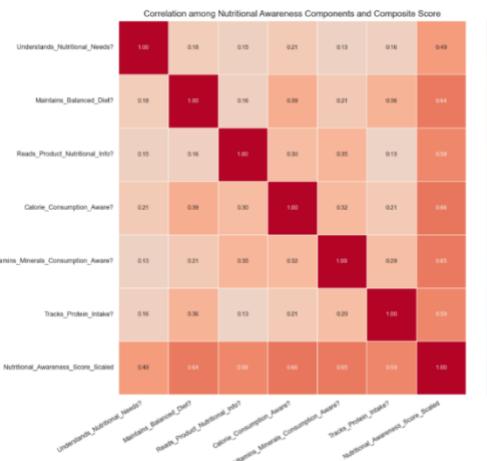
There are observable gender differences in nutritional behaviour. Males demonstrate slightly higher nutritional awareness, while females report higher junk food consumption scores.



- Which Nutritional Component contributes the most to overall nutritional awareness?

Correlation analysis revealed that practical dietary behaviours—such as calorie awareness ($r = 0.66$), vitamins/minerals awareness ($r = 0.65$), and maintaining a balanced diet ($r = 0.64$)—showed the strongest alignment with the composite awareness score. This suggests that

students who actively monitor energy and micronutrient intake demonstrate higher overall nutritional awareness compared to those relying on general knowledge alone.



References

- [1] M. Mohammadbeigi et al., “Fast food consumption and overweight/obesity prevalence,” *Public Health Nutrition*, 2018.
- [2] NHS, “Why 5 A Day?,” NHS Live Well, 2022.
- [3] M. M. Akter et al., “Food consumption patterns among students,” *J. Nutr. Health*, 2024.
- [4] S. Story et al., “Individual and environmental influences on adolescent eating behaviours,” *J. Am. Diet Assoc.*, vol. 102, no. 3, pp. S40–S51, 2002.
- [5] J. Wardle et al., “Nutrition knowledge and food intake,” *Appetite*, vol. 31, no. 2, pp. 267–284, 1998.
- [6] L. Sharma et al., “Dietary patterns of Indian college students,” *Asian J. Clin. Nutr.*, 2020.
- [7] L. Spronk, S. Kullen, A. Burdon, and H. O’Connor, “Relationship between nutrition knowledge and dietary intake,” *British Journal of Nutrition*, vol. 111, no. 10, pp. 1713–1726, 2014.
- [8] A. G. Ghosh & A. M. Muley, “Ultra-Processed Food Consumption Among College Students and Their Association with Body Composition, Bowel Movements and Menstrual Cycle, Pune, India,” *International Journal of Public Health*, 2025.
- [9] Practice of junk food consumption among college students, *Indian Journal of Community Medicine and Public Health*, 2023.
- [10] Prevalence, Determinants, and Impact of Junk Food Consumption on Body Weight

among College-going Students of Hyderabad, Telangana, India, 2025.

[11] M. Geist, L. Hildebrand, C. Keirns, & C. Emerson, “Survey of Nutrition Knowledge, Attitudes, and Preferred Informational Sources among Students at a Southwestern University in the United States,” MDPI, 2024.

[12] R. Nanjappan, S. Bhaskar, & V. Priya, “A Descriptive Study to Assess the Knowledge on Ill Effects of Junk Food among College Students,” *Asian Journal of Nursing Education and Research*, 2021.

[13] Addressing Nutritional Issues and Eating Behaviors among University Students: A Narrative Review, *Nutrition Research Reviews*, Cambridge University Press, 2023.

[14] Correlates of Nutrition Label Use among College Students and Young Adults, PMC, 2022.

[15] A Cross-Sectional Study of General Nutrition Knowledge among College Students, PMC, 2023.