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# Socio-Demographic Determinants of Junk Food Consumption Among University Students: A Cross-Sectional Study in Central Department of Education, TU

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**Keywords**

*Empty calorie food, health education and promotion interventions, higher education students, junk foods, processed foods, Tribhuvan University, packaged foods*

**Abstract**

*College life is a critical period during which students are particularly vulnerable to developing unhealthy dietary behaviors. This study assessed the socio-demographic determinants of junk food consumption (JFC) among higher education students. A quantitative cross-sectional study was conducted using a self-administered survey questionnaire among 272 university students studying at the Central Department of Education, TU. The findings revealed that although only six percent of students preferred to consume junk food, a surprisingly high proportion (83.5%) reported consuming it. Peer pressure was mentioned by nearly half of them (47.8%) as the main cause of JFC. Bivariate analysis showed a significant relationship between JFC and selected socio-demographic variables, including sex ($p<0.05$), subject specialization ($p<0.001$), and caste/ethnicity ($p<0.05$). The results indicate a high prevalence of JFC among university students, with socio-demographic factors such as sex, subject specialization, and caste/ethnicity being significantly associated with JFC. To lower the frequency of JFC among university students, the study emphasizes the urgent need for university-based health promotion and education initiatives.*

## Introduction

Junk food refers to industrially processed readymade packaged foods. The term 'junk food' was coined by Michael Jacobson; director of the Center for Science, Washington D.C. in 1972 (Bhaskar & Monika, 2012). It is popularly known as empty calorie food which contains high refined sugar, white processed flour, trans fat, polyunsaturated fat, dense salt, and/or numerous food additives

such as monosodium glutamate (MSG) and tartrazine, but it lacks essential nutrients such as proteins, vitamins, minerals, and fiber (Arya & Mishra, 2013; Ashakiran & Deepthi, 2012; Kaushik et al., 2011). This study's classification of junk food has been adopted following the NOVA food classification (Monteiro et al., 2019; Monteiro et al., 2018). Junk food, to this study, refers to sweets like candy, chocolate, cookies, biscuits, and cakes; sweet beverages like soda, cola, and juicy; fast foods like *Samosa, Pakauda, Chowmin*; and salty snacks like noodles, chips, popcorn, and cheese balls sold in the University canteen (Upreti et al., 2021).

Over the past decades, the proportion of calorie intake in the human diet has come from highly processed and/or ultra-processed food (Monteiro et al., 2013). A growing body of evidence also shows that premature deaths and preventable illnesses resulting from diet-related non-communicable diseases (NCDs); such as overweight and obesity have also increased substantially (Micha et al., 2017). Being overweight and obese are the leading risk factors for NCDs and comorbidities. The alarming rise of unhealthy dietary behaviors such as junk food consumption (JFC) has become the biggest cause of increased overweight and obesity among school and college-going students (Nipun et al., 2017; Upreti et al., 2022; Vignola et al., 2021; WHO, 2023). Easy access to the transport system, innovation in food science and technology, and increased modern lifestyle have increased demand for quickly served snacks. This trend is more common among college students (Shubham & Shah, 2023).

There is mounting evidence that JFC has become more popular among college and university students; mostly due to peer pressure, self-reliant decision-making processes, and increased fast food accessibility (Poudel et al., 2018; Sajjad et al., 2023). A cross-sectional study conducted in Bangladesh demonstrates that near to two-thirds (64 %) of college students consumed junk food frequently and found a significant association with obesity. The study also reveals that gender, parental education, and socio-economic status were the detrimental factors for junk food consumption (Banik et al., 2020). A systematic review study on JFC among school and college students indicates that though JFC is influenced by multilevel factors extending from individual to environment, the socio-demographic information such as age, sex, family income, caste/ethnicity, level of study remained instrumental (Upreti et al., 2022). Similarly, a review study indicates that even though most college students were aware of the negative consequences of JFC, they favored consuming unhealthy snacks at college due to various factors that include economic, physical, biological, psychological, and social factors (Shubham & Shah, 2023). A study conducted in the selected colleges of Banke district, Nepal demonstrates that JFC among students is common, where more than four-fifths (83.4%) of students consumed junk food. The study also demonstrates that socio-demographic information such as age, religion, and parental (father and mother) educational background was a significant factor in JFC (Baraldi et al., 2018; Sharma & Pangeni, 2024). This escalating trend has created a substantial concern among health professionals and health educators in their related fields.

This global trend underscores the pressing need for enhanced focus on healthy dietary practices among higher education students. Alarming diet trends demand urgent strategies for healthy eating and reducing non-communicable diseases. The

responsibility of reducing junk food intake and increasing healthy food consumption rests on multilevel factors including socio-demographic factors (Upreti et al., 2022). Although higher education students are aware of the negative consequences of JFC, they continue to consume. The above evidence highlights the importance of exploring more about the factors pursuing higher education students to consume junk foods at their colleges/campuses. Given the gap, the present study aimed to determine the association between socio-demographic factors and JFC in higher education students, particularly Master in Education (MEd) students, Central Department of Education, Tribhuvan University (TU).

## Study Methods and Procedures

### Study Design and Site

A cross-sectional quantitative study was conducted among 272 higher education students studying at the Central Department of Education, University Campus. The study was conducted during 2022 A.D.

## Study Population and Sample

In the academic year of 2022/23, 935 students from the second, third, and fourth semesters were enrolled, as per the Central Department of Education's records. Applying the Rao soft online sample size calculator, 273 was the calculated sample size following the 95 % confidence level with a 5 % margin of error and 50 % response distribution. The respondents were conveniently selected based on their availability on the survey day. In so doing, the first author, who undertook his thesis under the supervision of the second author, visited the department to get the respondents employed in the study. Once the respondents reached the expected number, the researcher stopped conducting surveys. Among the 273 respondents, one denied submitting the questionnaire during the survey. Hence, the final sample size of the study was 272 (n), representing 29% of the total population (Table 1).

**Table 1.**

*Study Population and Sample Size*

| Level of study | Population (N) | Sample size (n) | Sample % |
|---|---|---|---|
| Second semester | 430 | 87 | 20 |
| Third semester | 241 | 76 | 32 |
| Fourth semester | 264 | 109 | 41 |
| Total | 935 | 272 | 29 |

*Note.* The first-semester students were not included in the study since their classes had not started.

## Data Collection Tools and Procedure

A set of self-administered structured questionnaires was used to collect the data. The questionnaire allowed respondents to choose the answer based on their choices. Before we administered the questionnaire, it was pre-tested among 20 students in the department. The questionnaire was modified following the feedback received from the pre-test. The respondents with pre-tested questionnaires were not included as the sample in the study.

Final approval consent was obtained from the Department of Health and Population Education, Central Department of Education, TU before delving into the data collection. Both verbal and written consent was taken from each respondent before administering the questionnaire. We assured them about the anonymity of their responses as their names were not obtained. They were also asked to opt out of the survey if they would not like to participate in the study. The lead author himself visited each class getting permission

from the faculty teachers. He provided instructions to each respondent about how to complete the survey questionnaire. Core principles of research ethics such as respect for participants, beneficence, and justice were maintained following the ethical guidelines of the Nepal Health Research Council (Nepal Health Research Council, 2022).

## Data Analysis

After collecting the data from the self-administered questionnaire, it was checked, assigned codes, and entered the data into the Statistical Package for Social Sciences (SPSS). This software was then used to analyze the data, including data cleaning, and calculating summary statistics such as frequency, percentage, mean, and standard deviation for each variable. To interpret the data and compare the results, a chi-square test was applied. Tables (simple, custom, and cross) were also used to present the data during the analysis. The chi-square test was used to determine the association between socio-demographic information and JFC practice.

### Variables Considered

JFC was considered as the dependent variable of this study. The variable was measured based on the self-reported responses of the respondents classifying into two attributes: Yes and No, where 0 indicates 'No' and 1 for 'Yes'. Age, sex, semester, specialized subject, marital status, living arrangement, main source of income, commute to campus, caste/ethnicity, religion, and daily spent pocket money were considered as the independent variables.

## Results

This section presents the findings of the study under three subsections below.

## Socio-Demographical Profile of the Respondents

Table 2 presents the socio-demographic details of the respondents. It includes age, sex, semester, specialized subject, religion, marital status, and household income source.

**Table 2.**

*Socio-Demographic Characteristics of Respondents (n = 272)*

| Description | Responses | Number (N) | Percent (%) |
|---|---|---|---|
| Age group | 20-25 | 216 | 79.4 |
| | 25-30 | 51 | 18.8 |
| | 30-35 | 5 | 1.8 |
| Sex | Male | 109 | 40.1 |
| | Female | 163 | 59.9 |
| Semester | Second | 87 | 32.0 |
| | Third | 76 | 27.9 |
| | Fourth | 109 | 40.1 |
| Specialized subjects | English education | 79 | 29.0 |
| | Nepali education | 79 | 29.0 |
| | Mathematic education | 73 | 26.8 |
| | Health education | 11 | 4.0 |
| | Science education | 6 | 2.2 |
| | ICT education | 10 | 3.7 |
| | Population education | 7 | 2.6 |
| | Other subjects | 7 | 2.5 |

| | | | |
|---|---|---|---|
| Religion | Hindu | 240 | 88.2 |
| | Christian | 16 | 5.9 |
| | Buddhist | 6 | 2.2 |
| | Islam | 6 | 2.2 |
| | Kirant | 4 | 2.2 |
| Caste/Ethnicity | Brahmin and Chhetri | 175 | 64.4 |
| | Aadhibasi and Janajati | 39 | 14.4 |
| | Dalit | 32 | 11.8 |
| | Terai Madhesi | 14 | 5.1 |
| | Islam | 9 | 3.3 |
| | Not mentioned | 3 | 1.1 |
| Marital status | Single | 206 | 75.7 |
| | Married | 64 | 23.5 |
| | Divorced | 2 | 0.7 |
| Family's source of income | Business | 27 | 9.9 |
| | Service | 53 | 19.5 |
| | Agriculture | 109 | 40.1 |
| | Foreign employment | 38 | 14.0 |
| | Self-employment | 10 | 3.7 |
| | No job currently | 35 | 12.9 |
| Living with | Alone | 106 | 39.0 |
| | Family and relatives | 166 | 61.0 |
| Commute to campus | Walking | 181 | 66.5 |
| | Public vehicle (Bus) | 69 | 25.4 |
| | Motorbike/cycling | 22 | 8.1 |
| Time consumes for using social media | Up to one hour | 60 | 22.1 |
| | More than one hour | 167 | 61.4 |
| | No response | 45 | 16.5 |

Among the 272 participants, over three-fourths (79.4%) were aged between 20-25 years, followed by 25 - 30 years; and the rest were 30 and above. Regarding gender, 59.9% were female. In terms of the level of study, 40.1% belonged to the 4$^{th}$ semester, followed by the 2$^{nd}$ semester (32%), and 3$^{rd}$ semester (27.9%). Students majoring in English and Nepali subjects were highest in percentage, which accounts for 29%, whilst students specialized in Science Education subjects were the lowest. Most students were found Hindu (88.2%), followed by Christians (5.9%), Buddhists (2.2%), Islams (2.2%), and Kirant (2.2%). The Brahmin and Chhetri caste students were found highest (64.4%) followed by Adibasi and Janajati (14.4%), Dalit (11.8%), Terai/Madhesi (5.1%), and Muslim (3.3%).

According to the marital status of the respondents, three-fourths (75.7%) were single, followed by married (23.5 %) and divorced (0.7 %). Finally, regarding the family's source of income, 40.1% depended on agriculture, 19.5% on jobs, 14% on foreign employment, 9.9 involved in businesses, 3.7 self-employed, and the rest were unemployed (currently no work at the time of study). Three-fifths of students (61%) resided with family and relatives, while others lived alone. In terms of commuting, more than three-fifths (66.5%) walked to campus, one-fourth (25.4%) used public buses, and 8.1% opted

for motorbikes or bicycles. The study shows that nearly three-fourths of students (73.6%) spent more than one hour on social media.

**Junk Food Consumption (JFC)**

Table 3 presents the prevalence of JFC practices including snack regularity, snack preference, daily pocket money spent for snacks, and friends' pressure among the respondents.

**Table 3.**

*Junk Food Consumption Practice (n = 272)*

| Description | Responses | Number (N) | Percent (%) |
|---|---|---|---|
| Regularity of snack consumption | No | 144 | 52.9 |
| | Yes | 128 | 47.1 |
| Junk food consumption | No | 45 | 16.5 |
| | Yes | 227 | 83.5 |
| Snacks preference | Junk food | 17 | 6.3 |
| | Homemade food | 33 | 12.1 |
| | Canteen prepared food | 222 | 81.6 |
| Pocket money spent for snacks (Daily) (n = 221) | Less than NRs. 50 | 151 | 68.3 |
| | NRs 50-100 | 62 | 28.1 |
| | More than NRs.100 | 08 | 3.6 |
| Friends' pressure to consume junk food (n = 228) | Yes | 119 | 52.2 |
| | No | 109 | 47.8 |

Table 3 shows that nearly half of the students (47.1 %) regularly consumed snacks. The respondents reported that only 6.3% preferred to consume junk food, 12.1% opted for homemade food, and more than four-fifths of them (81.6%) preferred to eat canteen-prepared foods. However, the results show that more than four-fifths (83.5 %) of them consumed junk food for their snacks on the survey day. Regarding the money spent on buying snacks, more than two-thirds (68.3%) spent less than NRs. 50 daily, followed by 28.1% spent NRs. 50-100, and 3.6% spent more than NRs. 100. Besides, the study demonstrated that more than half of the respondents (52.2%) experienced peer pressure for JFC.

**Association between Socio-Demographic Factors and Junk Food Consumption**

Table 4 presents a bivariate analysis examining the association between socio-demographic factors and JFC among university students.

**Table 4.**

*Association between Socio-Demographic Factors and JFC*

| Description | Responses | Junk Food Consumption | | P-value |
|---|---|---|---|---|
| | | No (%) | Yes (%) | |
| Age group | 20-25 | 16.7 | 83.3 | 0.964 |
| | 25-30 | 15.7 | 84.3 | |
| | 30-35 | 20 | 80 | |
| Sex | Male | 9.2 | 90.8 | 0.007* |
| | Female | 21.5 | 78.5 | |

| | | | | |
|---|---|---|---|---|
| Semester | Second | 19.5 | 80.5 | 0.398 |
| | Third | 18.4 | 81.6 | |
| | Fourth | 12.8 | 87.2 | |
| Specialized subject | Health education | 54.5 | 45.5 | 0.001** |
| | Non-health education | 14.9 | 85.1 | |
| Religion | Hindu | 17.5 | 82.5 | 0.245 |
| | Non-Hindu | 9.4 | 90.6 | |
| Caste/ethnicity | Brahmin and Chhetri | 13.1 | 86.9 | 0.043* |
| | Others | 22.7 | 77.3 | |
| Marital status | Unmarried | 16.5 | 83.5 | 0.975 |
| | Married and divorced | 16.7 | 83.3 | |
| Living arrangements | Alone | 15.1 | 84.9 | 0.607 |
| | With relatives and living | 17.5 | 82.5 | |
| Source of income at household | Agriculture | 18.3 | 81.7 | 0.512 |
| | Non-agriculture | 15.3 | 84.7 | |
| Commuting to school | On foot | 17.1 | 82.9 | |
| | By vehicles | 15.4 | 84.6 | 0.715 |

**Note.** Significant at *p=<0.05 and **p=<0.01

Table 4 shows the statistical association between socio-demographic information and JFC among university students. Socio-demographic information such as sex (p=0.007), specialized subject (p=0.001), and caste/ethnicity (p=0.043) were significantly associated with JFC. However, factors such as: age, marital status, living arrangements, source of income at households, and commuting to school were not significantly associated with JFC.

## Discussion

The findings revealed that although only six percent of students preferred to consume junk food, a surprisingly high proportion (83.5%) reported consuming it. Several studies, conducted within and beyond the context of Nepal, support the results of this study enlightening the results of high consumption of junk food among school and college students (Banik et al., 2020; Dowarah et al., 2020; Haokip & Sonika, 2016; Mandoura et al., 2017; Nipun et al., 2017; Onurlubaş & Yılmaz, 2013; Saha et al., 2021; Sharma & Pangeni, 2024; Upreti et al., 2021). A study conducted in Pokhara demonstrated that 60.3% of students consumed junk food (Bohara et al., 2021). Likewise, a study, in Chennai, also found that 70% of college students consumed junk food (Kallivayalil et al., 2021), while a study conducted at Turkish University showed the overwhelming proportion of students (97.4%) consumed junk food (Onurlubaş & Yılmaz, 2013). Moreover, a study conducted among university students in Bangladesh found that an overwhelming of them (98.5%) consumed junk food (Nipun et al., 2017). The results indicate that JFC among university students has become common among college/campus students.

The results revealed that the influence of peer pressure emerged as a significant social factor in shaping the unhealthy dietary habits of university students. A study conducted among university students (mean age 20 years) also explored that peer pressure remained an important social network to influence their eating behaviors (Deliens et al., 2014). Another study conducted among resident students on a public campus also corresponded with the above results, which concluded that peer influence determined university students' behavior and dietary intake (Kabir et al., 2018). The findings were also similar to a review-based study conducted selecting school students and adolescents, which focused on how peer pressure was influencing social networks for JFC (Upreti et al., 2022). Following the result, it can be argued that though it is a time of self-dependency, self-regulation, and autonomy period of university-level students, they still adhere to their colleagues to decide their dietary behavior. The above discussion suggests that colleagues' pressure in higher education could be a detrimental factor for JFC.

The bivariate analysis (chi-square) revealed a significant relationship between JFC and socio-demographic variables including sex ($p<0.05$), specialized subject ($p<0.001$), and caste/ethnicity ($p<0.05$). Whilst other socio-demographic factors such as marital status, living arrangements, source of income of parents, and commute to the campus did not exhibit significant associations. A study conducted in the Banke district of Nepal revealed that socio-demographic information such as age, religion, and parental (father and mother) educational background were significantly associated with JFC among university female students (Sharma & Pangeni, 2024). Another study conducted among college students disclosed that socio-demographic factors such as sex, mother's education, and socio-economic level were found to be significant predictors of health behaviors (Ulla Díez & Pérez-Fortis, 2010). A study conducted among school students in Chitwan confirmed that socio-demographic information such as age, grade, father's education, and the student's religion was significantly associated with the snacking behaviors of students (Upreti et al., 2020). The above discussion indicates that socio-demographic factors are potential variables to explain the dietary behaviors of students.

This study revealed that a higher proportion of male students (90.8%) consumed junk food than their counterparts (78.5 %). Furthermore, this relationship was significantly associated ($p<0.05$). A study conducted among Japanese adolescents also corroborates the findings of this study, demonstrating that gender differences existed in dietary behaviors, and further indicated that boys were more likely to consume unhealthy diets than girls (Otsuka et al., 2020). A review-based study also coincides with the results of the study, which indicated differences in eating behavior, food choice, and dietary behaviors between male and female students. Males were more likely to consume energy-dense, fat, and sweetened foods than females (Grzymisławska et al., 2020). From the above discussion, it can be argued that boys were less attentive towards their dietary behaviors since girls were smarter and more sensitive towards their body images, which had a close relationship with (un)healthy dietary behaviors.

The present study also revealed that students who specialized in Health Education subject consumed less junk food compared to others. The study suggested that Health Education students are more aware of the nutritional value and potential consequences of unhealthy dietary behaviors than other students, which

might lead to a preference for healthy food consumption. However, there is a need for further study to determine its causal and effect relationship. The above discussion suggests that the specialized subject of university students has a close relationship with their dietary behaviors.

The results of the present study also demonstrated that there was a significant relationship ($p<0.05$) between the caste/ethnic group of students and JFC. This might happen due to cultural food consumption practices within the ethnocultural groups since there are variations of food selection and consumption practices among the ethnic and cultural groups of Nepali people. A cross-sectional study conducted in China identified noteworthy differences in the strength and association between the demographic characteristics, dietary habits, food consumption patterns, and related health practices between Chinese ethnic groups (Halawa et al., 2017). Another study also corroborates the present study's findings, which indicated that ethnic and cultural groups had different food selection and consumption practices (Yau et al., 2020). The above discussion suggests that ethnic cultural groups and dietary preferences of university students have positive associations.

## Conclusion

The study highlights a high prevalence of JFC among university students, particularly among M.Ed. students at TU. Socio-demographic factors such as sex, specialized subjects, and caste/ethnicity are significantly associated with JFC. The results also indicate that the influence of peer pressure emerged as a significant social factor in shaping unhealthy dietary habits among university students. The findings suggest the need for university-based health education and promotion interventions, as well as a re-orientation of the canteen service system to offer healthy food choices, aiming to reduce the prevalence of JFC among university students.

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### Authors' Contribution

The article was conceived and developed by MP. YRU and BA critically reviewed and edited the manuscript rigorously to publish. All the authors read and provided consent to publish this manuscript.

### Declaration of Conflicting Interests

The authors declare no conflicts of interest to conduct the study and publish this paper.

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