Research Article

ASSESSING THE FOOD HABITS AMONG UNDER GRADUATE AND POST GRADUATE STUDENTS OF MAHATMA GANDHI RURAL DEVELOPMENT AND PANCHAYAT RAJ UNIVERSITY, GADAG

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ABSTRACT

Background: The World Health Organization (WHO) suggests eating fruits, vegetables, legumes, nuts, and whole grains while reducing sweets, sodium, and harmful fats. A well-balanced diet, tailored to each individual's needs and cultural environment, is critical for reducing malnutrition and non-communicable illnesses. The National Institute of Nutrition (NIN) sets dietary advice for Indians, stressing a balanced diet that includes diverse food categories in proper quantities. Key suggestions include eating enough of vegetables and legumes, utilizing oils/fats sparingly, receiving high-quality proteins, and leading a healthy lifestyle through physical activity. NIN also promotes eating a variety of foods to maintain a balanced diet and offers advice on particular dietary groups such as grains, legumes, milk, fruits, and vegetables. **Objective:** To assess the different food habits among undergraduate and postgraduate students of Mahatma Gandhi Rural Development and Panchayat Raj University. **Materials and Methods:** A Descriptive Cross-Sectional study was conducted among 853 students enrolled at Mahatma Gandhi Rural Development and Panchayat Raj University. The study utilized a universal sampling method, targeting students who are currently pursuing undergraduate and postgraduate courses. Data collection was carried out using a semi-structured questionnaire, which gathered information on participant's dietary habits. The collected data were entered into Microsoft Excel and analyzed using SPSS software. The findings were summarized and presented in the form of frequencies and percentages. **Results:** Among 853 participants, 54.5% were aged 18–22 years of age, 57.2% were male, and 93.4% were Hindu. A large majority (96.5%) were unmarried, 51.9% were undergraduates, and 42.7% were in their 2nd year. Fathers were reported as family heads by 85% of participants, and 23.8% of parents were illiterate. Nearly half (46.3%) stayed in hostels. Most students (over 50%) consumed three meals daily and rarely skipped meals. Fruit and vegetable intake was moderate, with 28.7% rarely/never consuming them. Water intake was generally good, with 36.7% drinking 3–4 litres and 33.3% more than 4lts daily. Dietary preference was highest for non-vegetarian food (42.91%), followed by vegetarian (31.31%) and mixed diets (25.79%), with females showing more diverse preferences. **Conclusion:** Indian eating habits are diverse and constantly evolving, reflecting the country's distinct cultural and geographical tapestry. While traditional, plant-based diets remain popular, there is a substantial shift toward increased consumption of processed foods, fueled by factors like as urbanization and availability. This shift creates both opportunities and challenges for health and sustainability.

KEYWORDS: Food Habits; Diet Diversity; Food stuffs; Eating habits; Food Culture; Traditional foods.

INTRODUCTION

According to the World Health Organization (WHO), consuming a healthy diet throughout life is essential to prevent all forms of malnutrition and a wide range of non-communicable diseases (NCDs), such as diabetes, hypertension, and obesity. However, the increased availability of processed food, rapid urbanization, and evolving lifestyle patterns have led to major shifts in dietary behavior. People are now consuming more high- energy, high-fat, high-sugar, and high-sodium foods, while neglecting fruits, vegetables, and fiber-rich whole grains.[1] Food choices and eating behaviors have changed significantly over the past few decades. Technological advancements, global trade, and migration have influenced how food is produced, distributed, and consumed. Urbanization and media exposure have also altered traditional dietary practices, especially among the younger population.[2] To combat this, WHO introduced

a strategy promoting diverse diets rich in fruits, vegetables, whole grains, and nuts, while limiting salt, sugars, and trans fats. It also recommends integrating nutrition education into curricula to build healthier habits early.[3] Young adults, particularly university students, are vulnerable to poor eating habits due to academic pressures, time constraints, and lack of dietary awareness. This often results in irregular meal timing, frequent snacking, skipping meals, and dependence on fast foods, which increases the risk of nutritional deficiencies and lifestyle diseases.[4] Studies in Saudi Arabia show that despite awareness of nutrition, students regularly consume fast food, soft drinks, and snacks, often while multitasking, indicating a gap between knowledge and behaviour.[5] Research has shown that although global consumption of healthy foods such as fruits and vegetables has increased, this improvement is overshadowed by the rising intake of processed and unhealthy foods. This trend is especially evident in high-income nations, where dietary quality remains poor despite availability of healthier options.[6] India, being a lower-middle-income country, still faces challenges related to malnutrition. Nearly 28% of rural and 26% of urban populations are below the poverty line, which significantly impacts nutritional intake and health outcomes. Chronic undernutrition leads to stunting, wasting, reduced physical capacity, and a higher burden of disease.[7] According to the Indian Council of Medical Research (ICMR), nutrition is a key factor in physical growth, cognitive development, and disease prevention. Diets that fall short or exceed the required intake can lead to undernutrition or overnutrition, both of which have adverse health consequences.[8] Regional disparities across India show variations in nutritional patterns and status. Studies by the National Nutrition Monitoring Bureau (NNMB) indicate that Indian diets are still deficient in green leafy vegetables, animal proteins, and essential micronutrients like vitamin A, iron, and iodine. Additionally, economic status influences food availability and choices.[9] Karnataka, located along India's southwest coast, has a rich food culture shaped by geography and tradition. Though the average daily caloric requirement is about 2875 kcal, rural poor populations often fail to meet this target. Significant gaps exist between the calorie intake of the richest and poorest groups in both rural and urban regions.[10] Women's nutritional status in rural Karnataka plays a vital role in shaping family and community health. Despite their dual roles as caregivers and workers, rural women often remain marginalized in terms of food access, education, and healthcare, which affects their dietary status and that of their children.[11] Malnutrition among women, especially during key life stages such as adolescence, pregnancy, and lactation, leads to poor health outcomes for both mothers and infants. Adequate nutrition during these critical stages is essential for physical development, healthy pregnancies, and long-term well-being.[12]

A notable 24.4% of participants showed low dietary diversity, with UG students (27.5%) more affected than PG students (18.5%). This may be linked to limited cooking skills, time constraints, and poor nutritional awareness among younger students (Veena & Patel, 2020; Islam et al., 2024). Skipping meals, especially breakfast, further contributes to poor dietary diversity (Papadaki & Scott, 2002; Islam et al., 2024).[13-14]

With these concerns in mind, it becomes crucial to assess the food habits and dietary patterns of undergraduate and postgraduate students at MGRDPR University. These findings will help to identify nutritional gaps and support targeted interventions to promote health and well-being among students.

MATERIALS AND METHODS
Study Design
An Institutional-based Descriptive Cross-Sectional study was carried out.

Study Setting
The research was conducted within the premises of MGRDPR University, located in Gadag district through Universal sampling technique. The study was conducted over a one-year period, from 2024 to 2025.

Participants
The participants included both undergraduate and postgraduate students.

Variables
In socio-demographic details: Age group, Gender, Religion, Marital status, Course, Year of study, Head of family, Parents education qualification, Types of residence.

In general food habits: Number of meals per day, frequency of fruits and vegetable consumption, Frequency of dairy products, Average daily water consumption.

In dietary diversity: UG and PG males and UG and PG females.

Data sources
Primary data collected using Semi-structured questionnaire from students of MGRDPR University, Gadag.

Bias
The participants might have difficulty to remember the food consumed earlier, thus leads to recall bias.

Study size
A total of 853 students were considered.

Inclusion Criteria
All UG and PG students enrolled at MGRDPR University were eligible to participate.

EXCLUSION CRITERIA
Students were excluded if they
Had chronic health issues influencing their diet
Did not provide informed consent (either the student or their parent, if required).

Data Collection Instrument
A semi-structured questionnaire served as the main tool for gathering data.

Steps Followed in Data Collection
Permission and informed consent was obtained from university authorities, students, and parents (if necessary).

Questionnaires were distributed and filled out by the participants.

Information on different food habits was gathered

The collected data was entered and analyzed using Microsoft Excel and SPSS software.

Pilot Study
A preliminary study was conducted before initiating the full-scale data collection to test the reliability and usability of the semi-structured questionnaire. This pilot study involved 30 students (15 UG and 15 PG) from departments that were excluded from the main research sample. Selection was done using the universal sampling method. Participants completed the questionnaire after giving written informed consent. Feedback indicated the tool was easy to understand and culturally appropriate.

The average time to complete the survey was 15–20 minutes. Minor revisions were made based on the responses to improve question clarity and structure. No major challenges were observed during the pilot process.

Data Collection Process
The actual data collection spanned a defined timeframe. After receiving formal approval from university authorities and collecting consent from all participants, researchers approached students in classrooms and common areas. A semi-structured questionnaire was administered, covering aspects such as dietary habits. To ensure data quality, spot verifications and follow-up interactions were carried out.

Data Analysis
All collected responses were organized and coded in Microsoft Excel. Statistical analysis was performed using SPSS software. Descriptive statistics like frequencies, percentages, were used to summarize the data. Demographic characteristics (like age, gender, and academic level) and food-related behaviors were presented in cross-tabulation.

Ethical   Clearance:
Ref.No:RDPRU/SEP/04/MPH/2024/17
Ethical clearance was obtained from the Institutional Ethics Committee of MGRDPR University before the study commenced. Confidentiality and voluntary participation were key ethical priorities. Informed consent was obtained from all respondents. No identifying information was collected, and all data were used strictly for academic research purposes.

RESULTS
Table No. 1: Distribution of Socio-demographic characteristics of the study participants (n = 853).

VARIABLE	CATEGORY	FREQUENCIES	PERCENTAGES (%)
Age group	18-22 years	465	54.6
	23-27 years	368	43.1
	28-33 years	14	1.6
	34-37years	6	0.7
Gender	Male	488	57.2
	Female	365	42.8
Religion	Hindu	797	93.4
	Muslim	49	5.7
	Jain	4	0.5
	Christian	3	0.4
Marital status	Unmarried	823	96.5
	Married	30	3.5
Course	Undergraduate	460	52.8
	Postgraduate	393	48.6
Head of the family	Mother	128	15.0
	Father	725	85.0
Parents education qualification	SSLC	213	25.0
	PUC	163	19.1
	Diploma	64	7.5
	Graduate	94	11.0
	Postgraduate	116	13.6
	Illiterate	203	23.8

Type of residence	Hostler	395	46.3
	Day Scholar	276	32.3
	Private accommodation	182	21.3

Among the 853 participants, a majority (54.5%) were aged 18–22 years, followed by 43.1% aged 23–27, and 2.3% above 28 years, indicating a predominantly young population. Males accounted for 57.2%, and females 42.8%. Most participants were Hindu (93.4%), with small representations of Muslims (5.7%), Jains (0.5%), and Christians (0.4%). A majority (96.5%) were unmarried. Academically, 51.9% were undergraduates,

46.1% postgraduates. Interestingly, 85.0% reported their fathers as the head of the family. Parental education showed that 23.8% were illiterate, while others had SSLC (25.0%), PUC (19.1%), graduate (11.0%), or postgraduate (13.6%) qualifications. In terms of residence, 46.3% stayed in hostels, 32.3% were day scholars, 21.3% lived in private accommodations.

Table No. 2: Distribution of General food habits (n=853).

VARIABLES	RESPONSES	UG STUDENTS N (%)	PG STUDENTS N (%)
Number of meals per day	One time	19 (4.1)	17 (4.3)
	Two times	63 (13.7)	56 (14.2)
	Three times	334 (72.6)	284 (72.3)
	More than three times	44 (9.6)	36 (9.2)
Do you skip meals?	Never	105 (22.8)	93 (23.7)
	Rarely (1-2 times per week)	241 (52.4)	211(53.7)
	Occasionally (3-4 times per week)	69 (15.0)	61 (15.5)
	Frequently (almost daily)	40 (8.7)	33 (8.4)
Frequency of fruit and vegetable consumption	Daily	105 (22.8)	94(29.9)
	3-5 times per week	130(28.3)	116 (29.5)
	Less than 3 times per week	123(26.7)	110(28.0)
	Rarely/Never	95(20.7)	80 (20.4)
Frequency of Dairy Product Consumption	3–5 times per week	114 (24.8)	101 (25.7)
	Less than 3 times per week	107 (23.3)	95(24.2)
	Rarely/Never)	99 (21.5)	84 (21.4)
Type of Cooking Oil Used	Vegetable oil	165 (35.9)	147 (37.4)
	Olive oil	80 (17.4)	71(18.1)
	Butter/Ghee	55(12.0)	49(12.5)
	Palm oil/Other	160 (34.8)	126(32.0)
Frequency of Sugary Snack Consumption	Daily	52 (11.3)	46 (11.7)
	3-4 times per week	159 (34.6)	142 (36.1)
	1-3 times per week	110 (23.9)	99 (25.3)
	Rarely/Never	132 (28.7)	112 (28.5)
Average Daily Water Consumption	1-2 litres	2 (0.4)	1 (0.3)
	2-3 litres	136 (29,6)	121 (30.8)
	3-4 litres	169 (36.7)	150 (38.2)
	More than 4 litres	153 (33.3)	121 (30.8)

Among undergraduate and postgraduate students, most reported consuming three meals per day (UG-76.2% and PG 72.3%) indicating regular eating patterns. A smaller group had more than three meals daily (UG- 9.6% and PG-9.2%), while a few had only once (UG-4.1% and PG-4.3%) and few had only twice (UG-13.7% and PG-14.2%). Over half rarely skipped meals; fewer occasionally skipped and very few did so frequently. Fruit and vegetable intake varied: some consumed them daily, others three to five times weekly or less than three times, while a notable proportion rarely or never included them. Dairy products were consumed daily or three to five times a week by most, while fewer had them less often.

Vegetable oil was the most commonly used cooking oil, followed by palm oil and others; olive oil and ghee were less common. Sugary snacks were mostly consumed three to four times a week (UG-29.6% and PG-30.8%)followed by rare/never (UG-28.7% and PG-28.5%), and a smaller number consumed daily (UG-11.3% and PG-11.7%).

Water intake was generally good, with most students drinking 2–4 litres daily (29.6% UG, 30.8% PG for 2–3L; 36.7% UG, 38.2% PG for 3–4L), and many consuming more than 4 litres (33.3% UG, 30.8% PG). Very few reported drinking only 1–2 litres (0.4% UG, 0.3% PG).

Table No. 3: Distribution of Dietary diversity (n=853)

PARTICIPANTS	VEGETARIAN n (%)	NON-VEGETARIAN n (%)	MIXED FOOD n (%)
UG Male	80 (9.38)	100 (11.72)	90 (10.5)
UG Female	120 (14.07)	150 (17.59)	67 (7.85)
PG Male	29 (3.40)	54 (6.33)	26 (3.05)
PG Female	38 (4.45)	62 (7.27)	37 (4.34)
Total (n=853)	267 (31.31)	366 (42.91)	220 (25.79)

Among the 853 participants, non-vegetarian food was the most preferred (42.91%), followed by vegetarian (31.31%) and mixed diets (25.79%). Undergraduate students formed the majority and contributed more to all categories. Female students, both UG and PG, showed higher representation in vegetarian and non-vegetarian groups. UG females accounted for 17.59% of non-vegetarian and 14.07% of vegetarian consumers. Among PGs, non-vegetarian food was also most preferred, particularly among females (7.27%). Mixed diets were least preferred overall, though more common among PG females (4.34%) than PG males (3.05%). Overall, non-vegetarian food was the dominant preference, with females showing more diverse dietary choice

DISCUSSION
Dietary Diversity
A substantial 24.4% of participants had low dietary diversity, with UG students (27.5%) more affected than PG students (18.5%). These findings align with previous studies indicating that younger students and those in undergraduate programs often exhibit poor dietary habits due to limited cooking skills, lack of time, and insufficient awareness of nutrition (Veena & Patel, 2020; Islam et al., 2024). Additionally, frequent meal skipping, particularly breakfast, as observed in our sample, has been widely associated with poor dietary diversity and imbalanced nutrient intake (Papadaki & Scott, 2002; Islam et al., 2024).[13]

The present study assessed the demographic characteristics and dietary habits of undergraduate and postgraduate students at MGRDPR University. The findings indicate a predominantly young population, with a majority of participants falling within the 18–22 years (54.5%) and 23–27 years (43.1%) age groups. The gender distribution revealed a higher proportion of male students (57.2%) compared to females (42.8%), and the religious composition showed limited diversity, with a dominant Hindu population (93.4%).

Interestingly, a significant proportion of the participants (96.5%) reported being married, which may reflect the cultural or social context of the student population. Academically, over half of the students were undergraduates (51.9%), and nearly half were postgraduates (46.1%), indicating a balanced representation from both academic levels. The distribution across years of study showed the highest representation in the second year (42.7%), followed by the first year (35.4%).

A notable finding was the identification of mothers as the primary heads of families (85.0%), which could reflect unique family structures or reporting tendencies. Parental education data showed educational limitations in many families, with nearly one-fourth (23.8%) of participants reporting illiterate parents, and only a minority indicating graduate or postgraduate education.

In terms of residence, nearly half of the participants lived in hostels (46.3%), while others were day scholars (27.3%) or lived in private accommodations (21.3%). Anthropometric data suggested that the majority of students had moderate height (150–159 cm) and weight (50–59 kg), indicating a largely healthy population profile, though further nutritional assessments would be necessary for confirmation.

Regarding food habits, the majority of students reported regular meal patterns, consuming three meals a day. Meal skipping was rare, with over half of the students stating they rarely skipped meals. Fruit and vegetable intake, however, was varied, with many reporting moderate to low consumption. A similar trend was seen with dairy product intake, where daily or frequent consumption was common, but not universal. Cooking oil preferences indicated a strong reliance on vegetable oil, with palm oil, butter, ghee, and olive oil used less frequently.

Water consumption patterns were generally positive, with most students drinking 2–4 litres daily. This indicates good hydration awareness among students. The consumption of sugary snacks was most common three to five times a week, though daily intake was less prevalent, highlighting a moderate inclination toward sweet foods.

Dietary preference analysis revealed that non-vegetarian food was the most preferred overall (42.91%), followed by vegetarian (31.31%) and mixed diets (25.79%). Female students, both UG and PG, had higher representation in both vegetarian and non-vegetarian groups compared to their male counterparts. Undergraduate females accounted for 17.59% of non-vegetarian and 14.07% of vegetarian consumers. Among PG students, non-vegetarian food remained the most popular, particularly among females (7.27%). Mixed diets were the least favored across all categories but showed slightly higher prevalence among PG females (4.34%) compared to PG males (3.05%). These findings suggest a clear inclination toward non-vegetarian diets, especially among female students, reflecting diverse

dietary patterns influenced by gender and academic level.

Overall, the data indicate that while students generally maintain regular eating schedules and hydration habits, there is room for improvement in fruit, vegetable, and dairy consumption. Furthermore, the dietary preferences highlight a gendered pattern that may warrant further exploration in the context of cultural and regional food practices

LIMITATIONS
- The study relied on a semi-structured questionnaire, which may be subjected to recall bias or social desirability bias.
- A more accurate measure of food intake would have strengthened the data.
- Since, the study is limited to MGRDPR, University, findings may not be generalized to all college students in Karnataka.

CONCLUSION
The study provides valuable insights into the varying food habits of undergraduate and postgraduate students at MGRDPR University, Gadag. Most students reported having regular meal patterns and maintaining hydration; however, differences were observed in the frequency and type of food consumption across educational levels and gender. Intake of healthy food components such as fruits, vegetables, and dairy was irregular among many students, indicating a need for more balanced dietary practices. These findings highlight the importance of encouraging awareness about healthy food choices and implementing student-centered initiatives to support improved dietary habits within the university setting.

REFERENCES
1. Deliens T, Clarys P, De Bourdeaudhuij I, Deforche B. Determinants of eating behaviour in university students: a qualitative study using focus group discussions. BMC Public Health., Jan. 18, 2014; 14: 53.
2. G S, C VA, Mi G, C M. College Students and Eating Habits: A Study Using An Ecological Model for Healthy Behavior. Nutrients [Internet]. 2018 Nov 23 [cited 2025 Jan 8]; 10(12). Available from: https://pubmed.ncbi.nlm.nih.gov/30477101/
3. Almoraie NM, Alothmani NM, Alomari WD, Al-amoudi AH. Addressing nutritional issues and eating behaviours among university students: a narrative review. Nutr Res Rev., Feb. 15, 2024; 1–16.
4. Woodman A, Coffey M, Cooper-Ryan AM, Jaoua N. The relationship between lifestyle habits and obesity among students in the Eastern province of Saudi Arabia: using the Arab Teens Lifestyle (ATLS) questionnaire. BMC Public Health, Aug. 21, 2024; 24: 2267.
5. Mititelu M, Oancea CN, Neacşu SM, Musuc AM, Gheonea TC, Stanciu TI, et al. Evaluation of Junk Food Consumption and the Risk Related to Consumer Health among the Romanian Population. Nutrients, Aug. 16, 2023; 15(16): 3591.
6. Suman Madan, Richa Verma, Gul Mathur. Junk food Consumption Pattern by Undergraduate Students of Dayalbagh Educational Institute, Agra. Indian J Public Health Res Dev., 2021 Jun 3; 12(3): 241 6. 87728.pdf[Internet].[cited2025Jan8]. Availablefrom: https://ir.uitm.edu.my/id/eprint/87728/1/87728.pdf
7. Sequeira AH, Sowmya A, Thomas B, Mahajan C, Kumar C. A Study on Junk Food Consumption Behavior Among College Students. SSRN Electron J [Internet]. 2014 [cited 2025 Jan 9]; Available from: http://www.ssrn.com/abstract=2502101
8. View of Factors influencing fast food consumption among public university students: A case study at Universiti Utara Malaysia [Internet]. [cited 2025 Jan 9]. Available from: https://ejournal.uum.edu.my/index.php/gbmr/article/view/23402/4566
9. Food Consumption Patterns and Sedentary Behaviors Among the University Students: A Cross Sectional Study - Akter - 2024 - Health Science Reports - Wiley Online Library [Internet]. [cited 2025 Jan 9]. Available from: https://onlinelibrary.wiley.com/doi/full/10.1002/hsr2.70259
10. Tariq S, Tariq S, Tariq S, Rehman R. Relationship of BMI with Junk Food, sleep pattern, exam performance and awareness about its ill health effects in healthy teenagers. JPMA J Pak Med Assoc, Jan. 1, 2021; 71(1(A)): 59–63.
11. Frontiers for Young Minds [Internet]. [cited 2025 Mar 6]. The Impacts of Junk Food on Health. Available from: https://kids.frontiersin.org/articles/10.3389/frym.2022.694523
12. Yahia N, Wang D, Rapley M, Dey R. Assessment of weight status, dietary habits and beliefs, physical activity, and nutritional knowledge among university students. Perspect Public Health, Jul. 2016; 136(4): 231-44. doi: 10.1177/1757913915609945. Epub 2015 Oct 16. PMID: 26475773.S