

Food Consumption Patterns and Their Association with Body Mass Index Among Medical Students Residing in Hostels and Private Accommodations

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Abstract

Background: Medical students frequently face rigorous academic schedules and lifestyle constraints that impact their dietary habits and nutritional status. Variations in living arrangements, particularly between hostel residences and private accommodations, can further influence food choices and overall energy intake. These factors may significantly affect body mass index (BMI) and long-term health outcomes. This study aimed to investigate food consumption patterns and their association with BMI among medical students in different residential settings.

Methodology: A cross-sectional study was conducted at Lahore Medical and Dental College, Pakistan, from August to October 2024. Utilizing convenience sampling, 115 fourth- and final-year MBBS students participated. Data were gathered using a structured self-reported questionnaire, covering background information, food consumption patterns, and anthropometric measurements. BMI was categorized as underweight, normal, overweight, or obese. Statistical analysis was performed using SPSS version 22, with significance set at $p \leq 0.05$.

Results: The majority of participants (65.2%) were aged 23-24 years, with 57.4% males and 42.6% females. Most students (80.9%) resided in hostels. Normal BMI was recorded in 69.6% of students, while 28.7% were classified as overweight or obese. Significant dissatisfaction was noted concerning food variety and cleanliness of dining areas. Social factors significantly influenced eating behaviours, particularly among hostel residents.

Conclusion: A significant relationship exists between food consumption patterns and BMI among medical students. Dissatisfaction with hostel food quality may lead to unhealthy eating habits. Interventions should focus on improving food quality and promoting nutritional education, healthy food access, and physical activity.

Keywords: Dietary Habits, nutritional status; Body Mass Index; medical students; eating behaviour; food quality

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Introduction

The link between nutrition and overall health has been acknowledged for centuries. Hippocrates, often regarded as the father of modern medicine, famously emphasized the therapeutic potential of food, asserting, "Let food be thy medicine and medicine be thy food." In modern times, the increasing burden of non-communicable diseases (NCDs) including obesity, cardiovascular diseases, and type 2 diabetes, has further highlighted the crucial role dietary patterns play in shaping health outcomes (1,2,3).

Healthcare professionals are widely perceived as role models for healthy living, bearing the implicit responsibility to represent the principles of wellness they advocate. It is frequently assumed that students pursuing medical and allied health sciences possess enhanced awareness of nutritional guidelines and are more inclined to adopt health-promoting behaviours compared to their non-medical peers (3). This expectation is particularly significant given that these students will serve as future healthcare providers whose personal actions may influence their clinical practice and patient counselling (4).

However, emerging evidence suggests a disconnect between knowledge and practice among medical students, especially those residing in hostels or living independently away from parental supervision. Studies have shown that such students often adopt suboptimal lifestyle behaviors,



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including irregular meal patterns, high consumption of fast food, reduced intake of fruits and vegetables, and decreased physical activity levels (5,6). These habits may be exacerbated by stress, academic pressures, time constraints, and limited access to nutritious food options in hostel environments (7). In Pakistan specifically, where rapid urbanization and Western dietary influences are prevalent, medical students exhibit overweight and obesity rates ranging from 18-33%, often linked to sedentary lifestyles, irregular eating schedules, and reliance on processed foods. For instance, cross-sectional studies in Lahore and Karachi have reported 21-33% prevalence of overweight/obesity among medical students, with males more affected than females and central obesity noted in up to 46% of cases (25,26). These regional trends underscore the need for localized research to address cultural and environmental factors contributing to poor nutritional outcomes.

Frequent intake of calorie-dense, nutrient-poor foods, such as sugar-sweetened beverages, fried snacks, and ultra-processed meals, has been associated with increased body weight and elevated body mass index (BMI), a known risk factor for several chronic diseases. Conversely, restrictive eating behaviors or meal skipping, often observed among students facing academic or social stressors, may lead to nutritional deficiencies and underweight status (8). Social dynamics within hostel settings, including peer influence and communal dining, further modulate dietary behaviors. While some peer groups may encourage healthy habits, others may inadvertently normalize unhealthy eating patterns and sedentary lifestyles (9).

Understanding the relationship between dietary habits and BMI among medical students, particularly in different residential settings, is essential for guiding targeted interventions. By identifying modifiable risk factors, universities and health authorities can develop tailored educational strategies, promote healthier food environments, and provide necessary support to encourage balanced eating patterns. Such measures are critical not only for the personal well-being of medical students but also for equipping them to become credible advocates of health-promoting behaviours in their future professional roles (10).

There is a noticeable gap in research concentrating on the nutritional status and dietary practices of undergraduate students residing in medical college hostels. Despite the growing concerns about lifestyle-related health issues among young adults, limited data are available on this subject within the context of private medical institutions. This study aims to determine the BMI of medical students, assess their food consumption patterns, and evaluate the association between BMI and food consumption patterns among those residing in hostels and private accommodations. This study addresses the gap in the available literature by evaluating the dietary habits of undergraduate students at a private medical college, intending to inform future health promotion strategies targeted at this population.

Methodology

This cross-sectional study was conducted at Lahore Medical and Dental College (LM&DC), Lahore, Pakistan, over three months from August to October 2024, following approval from the Institutional Review Board (IRB) and Ethical Committee. The study population comprised fourth- and final-year MBBS students enrolled in 2024, including those residing in university hostels and those in privately arranged accommodations outside the campus. A total of 115 consenting students were recruited. The sample size was calculated based on an estimated target population of approximately 150 students across both academic years; using a 95% confidence level and 5% margin of error, the minimum required sample was 109 participants, which was increased to 115 to account for potential non-responses or incomplete questionnaires. Convenience sampling was employed due to practical constraints such as time limitations, participant accessibility, and the exploratory nature of the study. Fourth- and final-year students were specifically targeted, as they had sufficient exposure to hostel life and medical education, enabling more stable dietary patterns; inclusion of both residential groups (hostel and private) facilitated comparative analysis of food consumption patterns across living arrangements.

Inclusion criteria required participants to be enrolled in fourth or final-year MBBS during the study period, to have resided in their current accommodation (hostel or private) for at least three months, to provide informed verbal consent, and to be physically present during data collection. Exclusion criteria encompassed students on medical leave or absent during data collection, those with known medical conditions substantially affecting dietary intake or body weight (e.g., thyroid disorders, diabetes mellitus, or eating disorders), those declining participation or providing incomplete responses, and those who had changed accommodation status within the preceding three months.

Data were collected using a self-reported structured questionnaire developed specifically for this study, informed by relevant literature on dietary assessment tools and nutritional surveys. The questionnaire was pilot-tested with 10 medical students (excluded from the final sample) to evaluate clarity, comprehension, and completion time; minor revisions were made based on feedback to enhance question clarity and response options. The finalized instrument comprised three sections: Section 1 gathered demographic and baseline information, including age, gender, year of study, residential status, duration of stay in current accommodation, nationality, and any pre-existing medical conditions influencing diet or weight. Section 2 evaluated dietary habits, eating patterns, and satisfaction with hostel food services, covering aspects such as food variety, quality, cleanliness, ambiance, staff behavior, taste, freshness, presentation, temperature, portion size, perceived nutritional value, overall satisfaction, meal frequency, snacking behaviors, frequency of eating out, daily water intake, consumption of fruits and vegetables, and intake of fast/processed foods. Section 3 recorded anthropometric measurements for BMI calculation, with height measured in centimeters and weight in kilograms using calibrated

instruments; BMI was computed as weight (kg) divided by height squared (m^2) and classified according to WHO standards: underweight ($<18.5 \text{ kg/m}^2$), normal weight ($18.5\text{--}24.9 \text{ kg/m}^2$), overweight ($25.0\text{--}29.9 \text{ kg/m}^2$), obese Class I ($30.0\text{--}34.9 \text{ kg/m}^2$), obese Class II ($35.0\text{--}39.9 \text{ kg/m}^2$), and morbid obesity Class III ($\geq 40.0 \text{ kg/m}^2$).

Before data collection, permissions were secured from the college administration and hostel authorities. Eligible students were approached during free periods between lectures and clinical rotations; the study purpose and procedures were explained, verbal informed consent was obtained with assurances of confidentiality and anonymity, and participants were given 15–20 minutes to complete the questionnaire in a quiet, comfortable setting. The principal investigator was available to address queries. Anthropometric measurements were performed privately, with height and weight recorded twice per participant (average used) to minimize error, using a regularly calibrated stadiometer and weighing scale. Completed questionnaires were reviewed immediately for completeness, with participants prompted to fill any missing items. Data collection extended over three months to accommodate student schedules and achieve the target sample.

Data were entered, cleaned, and analyzed using SPSS version 22. Responses were numerically coded; cleaning involved checks for out-of-range values, logical inconsistencies, and missing data. Descriptive statistics were applied: means, medians, and standard deviations for continuous variables (e.g., age, height, weight, BMI), and frequencies with percentages for categorical variables (e.g., gender, residential status, food ratings, BMI categories). BMI was presented both continuously and categorically per the WHO classification. Results were displayed in tables (showing frequencies, percentages, means, and standard deviations) and bar charts for visualization. Statistical significance was set at $p \leq 0.05$, with 95% confidence intervals.

Ethical considerations included prior IRB and Ethical Committee approval. Informed verbal consent was obtained after explaining study objectives, procedures, potential risks, and benefits; participants could withdraw at any time without consequences. Confidentiality was ensured through unique identification codes, locked storage of questionnaires (accessible only to the research team), removal of personal identifiers before analysis, and presentation of results in aggregate form only. Data were used exclusively for research purposes and will be destroyed after publication. No incentives were offered to avoid coercion, and participation had no impact on academic standing or hostel privileges.

Results

Among 115 participants, 59.1% were from the 4th year MBBS and 40.9% from the final year. The sample included 57.4% males and 42.6% females. Most were aged 23–24 years (65.2%), followed by 21–22 years (31.3%) and 25+ years (3.5%). Hostel residents comprised 80.9%, private accommodation 19.1%.

Nearly all were Pakistani (98.3%).

Of the participants, 20.9% reported dietary restrictions or allergies. Food variety was rated excellent by only 3.5%, fair by 46.1%, and poor by 33.9%. Cleanliness was average (40.0%) or needed improvement (44.3%). Ambience was fair (46.1%) or poor (27.8%). Dining staff friendliness was mostly good (47.0%) or fair (32.2%).

Most rated taste as 2 (39.1%) or 3 (30.4%) on a 1–5 scale (1=very dissatisfied, 5=very satisfied). Freshness, presentation, temperature, and nutritional value received predominantly low-to-moderate ratings. Portion sizes were more balanced. Overall satisfaction was mostly 2 (28.7%) or 3 (35.7%).

Table 1: Background information of study - Participants (N=115)

Characteristics	N	%
Year Of Study		
4 th Year MBBS	68	59.1
Final Year MBBS	47	40.9
Gender		
Male	66	57.4
Female	49	42.6
Age		
21–22	36	31.3
23–24	75	65.2
25 Above	4	3.5
Accommodation		
Living in a college hostel	93	80.9
Living in a private accommodation	22	19.1
Nationality		
Pakistani	113	98.3
Foreigners	2	1.7

Table 2: Food Consumption Pattern (N=115)

	N	%
Do you have any dietary restrictions or food allergies?		
Yes	24	20.9
No	87	75.7
Prefer not to answer	4	3.5
How would you rate the variety of food options available in the hostel?		
Excellent	4	3.5
Good	19	16.5
Fair	53	46.1
Poor	39	33.9
How would you rate the cleanliness of the dining area?		
Very Clean	2	1.7
Clean	16	13.9
Average	46	40.0
Needs Improvement	51	44.3
How would you rate the ambience and comfort of the dining area (e.g., seating, lighting, noise level)?		
Excellent	3	2.6
Good	27	23.5
Fair	53	46.1
Poor	32	27.8
How would you rate the friendliness and helpfulness of the dining staff?		
Excellent	11	9.6
Good	54	47
Fair	37	32.2
Poor	13	11.3

BMI Distribution: The BMI of participants varied widely, with the highest frequencies in the categories of 19 (7.0%) and 22 (12.2%).

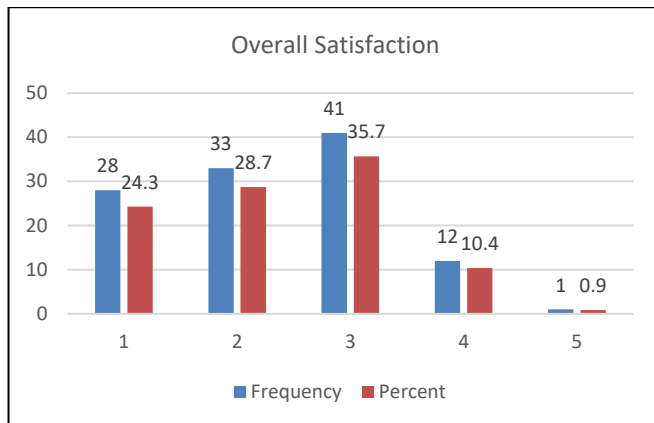


Figure 1: Distribution of overall satisfaction ratings with food quality and dining experience (scale: 1 = very dissatisfied to 5 = very satisfied). Note: Ratings reflect self-reported perceptions of hostel food services among participants.

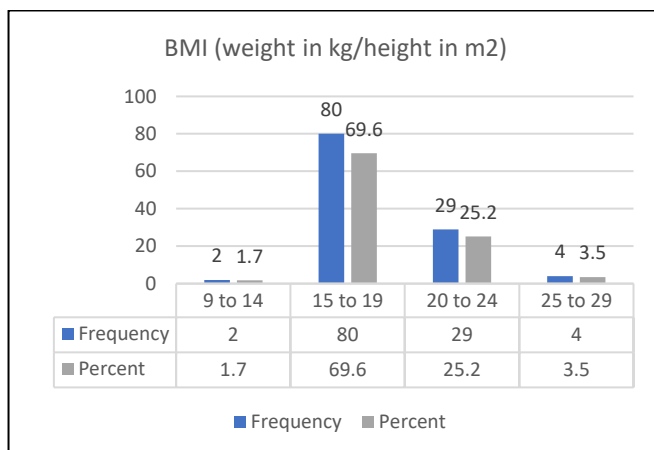


Figure 2: Distribution of BMI categories according to WHO standards (underweight: <18.5 kg/m², normal: 18.5-24.9 kg/m², overweight: 25.0-29.9 kg/m², obese: ≥30.0 kg/m²), showing 69.6% normal weight and 28.7% overweight or obese.

Discussion

The findings underscore significant associations between dietary patterns and BMI among medical students in hostels and private accommodations. While most maintained normal BMI, 28.7% were overweight or obese. These results align with literature showing medical students often exhibit dietary behaviors inconsistent with their nutritional knowledge (12,13). Widespread dissatisfaction with hostel food quality and variety was prominent; nearly half rated variety fair and one-third poor. This likely drives reliance on energy-dense alternatives like fast food, consistent with Salameh et al. (14). Substandard cleanliness and ambiance further deter on-campus eating, increasing off-campus unhealthy choices (15,16).

Hostel social dynamics, peer influence, and communal dining often normalize irregular meals, late snacking, and

processed foods over individual intent, aligning with social norm theory (17). The trend toward overweight/obesity among future health professionals reflects academic stress and self-care neglect (18,19).

Interventions should improve hostel food quality, variety, and conditions, enforce nutritional standards, and involve students in menu planning (20). Practical nutrition education (meal prepping, label reading) and wellness programs addressing stress and mindful eating are essential (21). Findings echo international studies on hostel students' higher fast-food intake and BMI (22-24).

In conclusion, food quality, environment, social factors, and behaviors interact to shape dietary patterns and BMI. Institutional reforms, healthier food settings, and skill-based education are vital for supporting healthier lifestyles in this population.

Conclusion

This study highlights the relationship between food consumption patterns and BMI among medical students residing in hostels and private accommodations. The majority (69.6%) maintained normal BMI, while 28.7% were overweight or obese. Widespread dissatisfaction with hostel food quality, variety (46.1% fair, 33.9% poor), and cleanliness (40.0% average, 44.3% needs improvement) was evident. These descriptive findings provide insight into the current food environment and nutritional status at the institution.

Recommendations

Assessment of Hostel Dining Facilities: Conduct a comprehensive evaluation to address poor variety and cleanliness concerns.

Student Feedback Mechanism: Establish a formal system for ongoing, data-driven improvements.

Further Research: Use inferential statistics to explore associations between dietary patterns, residential status, and BMI.

Routine Monitoring: Implement regular anthropometric assessments to track trends and support at-risk students.

Ethical Approval:

This study was approved by the Institutional Review Board (IRB) and Ethical Committee of Lahore Medical & Dental College, Lahore.

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Data Availability: Data supporting the findings are available upon reasonable request.

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Authors' Contribution:**HA:** Concept, design, analysis and drafting of the article**HM:** Concept, analysis and interpretation of data**BA, MSJK:** Data acquisition**References**

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