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The Impact of Eating Habits on Health Outcomes and Academic Performance among Female University Students

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Abstract

Dietary habits formed during university years can have lasting effects on both physical health and cognitive ability. In Pakistan, female university students are particularly vulnerable to nutritional challenges due to limited financial resources, poor hostel meal quality, and the widespread availability of fast food near campuses. This study examines how eating habits relate to health outcomes and academic performance (as measured by CGPA) among female university students in District Faisalabad, using a socio-nutritional lens that considers both health and educational dimensions. Data were gathered through structured interviews with 160 female students across four universities. Univariate and bivariate statistical analyses were carried out using SPSS, with the chi-square test and Gamma statistic applied to assess associations. The univariate analysis showed that 44.4% of students consumed junk food three to four times per week, and 27.5% reported ongoing health problems. Bivariate analysis revealed a highly significant association between monthly family income and CGPA ($\chi^2 = 24.503$, df = 6, $p < .01$, $\gamma = -0.208$), pointing to complex, non-linear socioeconomic effects on academic achievement. Unhealthy eating habits appear to play a mediating role in the relationship between socioeconomic status, health, and academic success. There is a pressing need for university-level nutrition programs and policies that make healthy food more affordable and accessible.

Keywords: *Eating Habits; Academic Performance; CGPA; Health Outcomes; Junk Food; Female Students; Socioeconomic Status; Pakistan; University Nutrition*

Introduction

The connection between nutrition, health, and academic achievement has become an increasingly important area of inquiry in the social and health sciences. University students are a group that faces considerable nutritional risk. When young people move from home to campus, they often leave behind familiar eating routines, lose the daily guidance of family members, and encounter new economic, social, and psychological pressures that can lead to unhealthy food choices (Sogari et al., 2018). These changes have real consequences, not just for physical health but also for how effectively students can engage with their studies. In Pakistan, these challenges are further shaped by social and structural conditions unique to the country. Over the past two decades, university enrollment has grown rapidly, bringing large numbers of young women from rural and semi-urban areas into city-based campuses. Many of these students live in university hostels, where the food provided is often nutritionally inadequate, repetitive, and insufficient for the energy and micronutrient needs of adult learners (Siddiqui et al., 2020). At the same time, fast-food restaurants

have multiplied near and within university campuses, making calorie-dense, low-nutrient foods easier and sometimes cheaper to access than fresh, balanced meals (Deliens et al., 2014).

The consequences of poor campus nutrition operate through two main pathways. First, unhealthy eating is a well-documented risk factor for conditions such as obesity, gastrointestinal problems, anaemia, and weakened immunity, all of which can reduce students' physical stamina and attendance (Taras & Potts-Datema, 2005). Second, inadequate nutrition affects the brain's capacity for learning. Deficiencies in nutrients such as iron, zinc, omega-3 fatty acids, and B vitamins reduce neurotransmitter production, weaken synaptic function, and diminish mental endurance, ultimately lowering academic performance (Adan et al., 2019; Parletta et al., 2013). Through both physical and cognitive pathways, eating habits emerge as a significant and underexplored factor in the academic outcomes of Pakistani university students. Research from South Asia and other parts of the world supports this general picture. Peltzer and Pengpid (2017) studied students across 26 countries and found that irregular meals and poor dietary quality were linked to lower academic results. Burrows et al. (2017), in a systematic review, showed that better dietary quality scores consistently correlated with higher self-reported academic performance. Whatnall et al. (2019) similarly reviewed 26 studies and found that fast-food consumption was a reliable predictor of poorer academic outcomes, with family income playing an important moderating role. Despite this growing body of international evidence, there is still a shortage of context-specific studies from Pakistan, a country marked by rapid urbanization, ongoing food insecurity, and significant gender disparities in health. This study aims to address that gap by examining the eating habits, health status, and academic performance of 160 female university students at four institutions in Faisalabad, Pakistan's third-largest city and one of the main educational centers in Punjab province. Rather than treating dietary behavior as a matter of individual choice, the study draws on a socio-nutritional framework that recognizes food practices as shaped by income, family background, institutional conditions, and cultural expectations. By combining descriptive analysis of junk food consumption with inferential analysis of the income and CGPA relationship, the study seeks to shed light on how structural inequalities translate into eating habits that affect both health and academic outcomes.

Research Objectives

This study pursues four closely related objectives: (i) to describe junk food consumption patterns among female university students in Faisalabad; (ii) to document the prevalence of self-reported health problems and their connection to dietary behavior; (iii) to examine the association between monthly family income, as a structural indicator of food access, and academic performance as measured by CGPA; and (iv) to offer practical, policy-relevant recommendations for improving the nutritional environment in Pakistani universities.

Conceptual Framework

The study is guided by a socio-ecological model of dietary behavior, which holds that food choices are not simply personal decisions but are shaped by factors at multiple levels: interpersonal, institutional, community, and policy (Sogari et al., 2018). Within this framework, monthly family income serves as a broad structural determinant of food access and dietary quality. Junk food consumption and meal frequency, meanwhile, represent the behavioral expressions of that structural reality. Health outcomes and academic performance, captured here as physical wellbeing and CGPA respectively, are treated as related outcomes that both depend on dietary quality. This framing allows the study to move beyond a narrow view of academic achievement as purely a matter of intellectual ability and instead situate it within the material and physical conditions of students' everyday lives.

Review of Literature

Nutrition and Cognitive Function

There is a well-established biological basis for the relationship between what people eat and how well they think. The brain depends heavily on nutritional status to function: glucose from carbohydrates powers neuronal activity, while amino acids from dietary protein serve as the building blocks for neurotransmitters (Adan et al., 2019). Iron deficiency limits the supply of oxygen to the brain and interferes with dopamine pathways, producing difficulties with attention and decision-making (Parletta et al., 2013). Insufficient omega-3 fatty acid intake weakens the structural integrity of neuronal membranes and reduces synaptic efficiency, impairing working memory and the ability to learn new material (Parletta et al., 2013). These biological mechanisms establish a direct link between inadequate nutrition and poor academic performance, independent of socioeconomic or motivational factors. Edefonti et al. (2014) reviewed studies on breakfast composition and found that eating a nutritionally complete morning meal, including complex carbohydrates, protein, and key micronutrients, was associated with better performance on memory, attention, and executive function tests compared to skipping breakfast or eating a nutritionally poor one. Kim et al. (2019) extended this line of evidence to the school context, demonstrating that eating breakfast regularly was a meaningful predictor of academic grades among a large sample of Korean adolescents. These findings are directly relevant to the current study, where a notable proportion of respondents reported skipping breakfast or eating nutritionally inadequate morning meals.

Junk Food Consumption and Student Health

Junk food, broadly understood as energy-dense, nutrient-poor processed food high in saturated fats, added sugars, and sodium, has become a dominant part of what university students eat around the world. Whatnall et al. (2019) reviewed 26 studies and found that high fast-food intake was the most consistent dietary predictor of poor academic performance across different student populations. The reasons are multiple: calorie-heavy fast foods tend to cause post-meal drowsiness and reduce the ability to sustain attention; their low fiber content leads to unstable blood sugar and energy swings; and their sodium and trans-fat content contributes to cardiovascular and metabolic health risks over time (Nouri et al., 2021). In the Pakistani context specifically, Siddiqui et al. (2020) found that junk food consumption was virtually universal among university students, with hostel residents being considerably more likely to eat it daily than students who lived off campus, largely because hostel meal facilities were inadequate. Rasheed et al. (2021) added a qualitative dimension to this picture, finding that female students in Pakistani hostels often turned to fast food as a way of coping with stress and homesickness, layering psychological needs on top of structural food access problems. Taken together, these findings suggest that junk food consumption among Pakistani university students is driven by a combination of economic necessity, institutional failure, and emotional coping, making it difficult to address through information campaigns alone.

Socioeconomic Status, Diet, and Academic Achievement

The role of socioeconomic status in shaping both diet and academic outcomes is well-documented. Deliens et al. (2014) found that cost was the single most important factor determining food choices among university students in Belgium, with lower-income students eating fewer fruits, vegetables, and dairy products and relying more on cheap, processed foods. Rubin (2012) showed that economic disadvantage affects not just what students eat but also their broader psychological resources, including study habits, time management, and willingness to seek help, all of which feed into academic performance and create compounding disadvantages for students from lower-income backgrounds. In Pakistan, the relationship between income and academic achievement becomes more complicated when educational aspiration is factored in. Work by Siddiqui et al.

(2020) and Rasheed et al. (2021) suggests that economically disadvantaged students frequently show strong academic motivation because they see education as one of their most reliable paths to improving their family's circumstances. This drive can partially compensate for the cognitive disadvantages brought on by poor nutrition, which may help explain the non-linear pattern between income and CGPA observed in this study. Recognizing this complexity is important for designing interventions that go beyond material food access and also attend to the psychosocial dimensions of student life.

Health Outcomes as Mediators of Academic Performance

Physical health often acts as an important bridge between dietary habits and academic performance, though it tends to be overlooked in studies that focus purely on nutrition. Poor eating contributes to a range of health problems, including gastrointestinal disorders, fatigue, anaemia, and greater vulnerability to infection, all of which reduce students' ability to attend classes, concentrate, and remain productive (Taras & Potts-Datema, 2005). Peltzer and Pengpid (2017) found that self-reported poor health was one of the strongest predictors of underperformance across their 26-country university study, accounting for roughly 30% of the link between dietary quality and academic outcomes. Incorporating health status as both a consequence of eating habits and a pathway to academic performance is therefore essential for a thorough socio-nutritional analysis.

Materials and Methods

Research Design and Setting

This study used a cross-sectional descriptive survey design, combining quantitative and qualitative data collection to build a detailed picture of eating habits, health status, and academic performance among female university students in District Faisalabad, Punjab, Pakistan. Four institutions were selected: the University of Agriculture Faisalabad, the University of Faisalabad, Government College University Faisalabad, and Government College Women University Faisalabad. These were chosen to reflect a range of institutional types, including agricultural, general, and women-specific universities, as well as a variety of student socioeconomic backgrounds. Faisalabad was selected as the study location because it is Pakistan's third-largest city, a significant industrial and educational center, and an environment where rapid urbanization and the growth of the fast-food industry have substantially changed what and how students eat over the past decade.

Sampling Procedure

A total of 160 female university students participated in the study, recruited through simple random sampling. Forty respondents were selected from each of the four institutions, with four departments sampled per university at ten students per department, ensuring disciplinary diversity across the sample. Students were eligible to participate if they were currently enrolled in an undergraduate or postgraduate degree program (B.Sc., BS Hons., MPhil, or Ph.D.) and provided informed consent. Male students and non-enrolled individuals were excluded. The sample was intentionally limited to female students because of the distinct nutritional challenges they face in the Pakistani university context, including concerns related to body image, dieting culture, and the specific conditions of women's hostel facilities.

Data Collection Instrument

A structured interview schedule was designed by the researcher based on the study's objectives and informed by a review of the existing literature. The instrument was piloted with ten students outside the main study group, and adjustments were made to improve clarity and consistency. The final schedule covered four main areas: (i) sociodemographic characteristics, including age, level of education, marital status, family structure, parental education and occupation, family income,

and area of residence; (ii) dietary behaviors, including how often and when meals were eaten, food preferences at each meal, frequency and type of junk food consumed, water intake, and vitamin or mineral supplementation; (iii) health status, including whether the student had any active health problems and whether she had consulted a doctor; and (iv) academic performance, including CGPA and personal views on the relationship between diet and academic outcomes. Each interview lasted between 25 and 35 minutes and was conducted privately by the researcher to protect confidentiality.

Statistical Analysis

Data were coded, entered, and analyzed using IBM SPSS Statistics Version 23. Univariate analysis used frequency distributions and percentages to describe eating behavior patterns. Bivariate analysis used the Pearson chi-square test to identify statistically significant associations between categorical variables, and the Gamma statistic to assess the direction and strength of ordinal relationships. The threshold for statistical significance was set at $p \leq .05$, with $p \leq .01$ treated as indicating a highly significant association.

Ethical Considerations

All participants gave verbal informed consent before taking part. They were assured that their responses would remain anonymous and would be used solely for research purposes. Participation was entirely voluntary, and no incentives were provided. The study protocol was reviewed and approved by the departmental research committee of the University of Faisalabad.

Results

Sociodemographic Profile of Respondents

The majority of participants were young adults: 64.4% were between 18 and 21 years old, 30.6% were between 22 and 25, and 5.0% were between 26 and 30. Most students (63.1%) were enrolled in BS (Hons.) programs, followed by MPhil students (30.0%), PhD students (5.0%), and BSc students (1.9%). Almost all respondents (95.6%) were unmarried. Regarding family structure, 48.8% came from nuclear families, 43.8% from joint families, and 7.5% from extended family arrangements. Monthly family income fell into four groups: 20.6% earned between PKR 10,000 and 30,000, 38.1% between PKR 31,000 and 60,000, 25.6% between PKR 61,000 and 100,000, and 15.6% above PKR 100,000. In terms of residential background, 61.9% came from urban areas and 38.1% from rural communities.

Health Status

Among the 160 participants, 27.5% (n = 44) reported having active health problems, while 72.5% (n = 116) reported no current health concerns. Despite this, only 4.4% of respondents sought medical advice when they felt unwell, pointing to a substantial gap between health needs and health-seeking behavior on campus. The vast majority of students (98.8%) acknowledged that their eating habits had a significant impact on their health, and 96.3% believed that an unbalanced diet negatively affected their academic performance. This suggests students are well aware of the dietary-health-academic connection, even as they continue engaging in unhealthy eating patterns.

Univariate Analysis: Junk Food Consumption Frequency

Table 1 presents the distribution of respondents by how often they consumed junk food each week. This variable was chosen as the main univariate indicator because it provides the clearest, most measurable picture of unhealthy eating in this sample, and because the nutrition literature most directly links fast-food consumption to adverse health outcomes and reduced academic performance.

Table 1: Distribution of Respondents According to Weekly Junk Food Consumption Frequency

Categories (Days/Week)	Frequency (n)	Percent (%)
1 to 2 days	68	42.5
3 to 4 days	71	44.4
5 to 7 days	21	13.1
Total	**160**	**100.0**

Source: Primary survey data, District Faisalabad, Pakistan (n = 160)

The data in Table 1 show that junk food consumption was widespread across the entire sample: not a single respondent reported avoiding junk food altogether. The largest group, 44.4%, ate junk food three to four times per week, effectively making fast food a near-daily habit. A further 42.5% consumed it one to two times per week, and 13.1% ate it five to seven days a week, a frequency that amounts to daily consumption. Adding the latter two categories together, 57.5% of respondents ate junk food three or more times per week, indicating that the majority of these students have come to rely on nutritionally poor fast food as a regular part of their diet.

These results align with patterns documented by Siddiqui et al. (2020) among Pakistani university students and reflect global trends reviewed by Whatnall et al. (2019). The high levels of junk food consumption likely reflect a set of structural conditions: limited access to healthy food on campus, the relatively lower cost of fast food compared to nutritious alternatives, and peer norms that make eating fast food feel like a normal part of university life. Given that 27.5% of respondents also reported active health complaints, the overlap between high junk food intake and health problems in this group is notable and suggests that diet may be contributing to poorer health outcomes, which in turn could affect academic performance.

Bivariate Analysis: Association between Monthly Family Income and CGPA

Table 2 presents a cross-tabulation of monthly family income against CGPA, along with chi-square and Gamma statistics. This analysis tests the study's central proposition that socioeconomic status, operating through dietary access and health outcomes, is meaningfully related to academic achievement.

Table 2: Association between Monthly Family Income and CGPA among Female Students

Monthly Family Income	CGPA 2.50 to 3.00 n (%)	CGPA 3.01 to 3.50 n (%)	CGPA 3.51 to 4.00 n (%)	Row Total n (%)
PKR 10,000 to 30,000 (Low)	5 (15.2%)	12 (36.4%)	16 (48.5%)	33 (100%)
PKR 31,000 to 60,000 (Lower-Middle)	3 (4.9%)	36 (59.0%)	22 (36.1%)	61 (100%)
PKR 61,000 to 100,000 (Upper-Middle)	2 (4.9%)	19 (46.3%)	20 (48.8%)	41 (100%)
PKR >100,000 (High)	2 (8.0%)	23 (92.0%)	0 (0.0%)	25 (100%)
Column Total	**12 (7.5%)**	**90 (56.3%)**	**58 (36.3%)**	**160 (100%)**

$\chi^2 = 24.503$ df = 6 p = .000 Gamma (γ) = −0.208 p ≤ .01 (Highly Significant)

Source: Primary survey data, District Faisalabad, Pakistan (n = 160)

The chi-square value of 24.503 (df = 6, p = .000) confirms a highly significant association between family income and CGPA at the $p < .01$ level, supporting the study's core hypothesis. However, the nature of this association is notably non-linear and deserves careful consideration. Students from the lowest income bracket (PKR 10,000 to 30,000) showed the most spread-out CGPA distribution: while 15.2% scored in the lowest CGPA range (2.50 to 3.00), nearly half (48.5%) achieved the highest CGPA range (3.51 to 4.00), a larger proportion than in any other income group. This unexpected finding suggests that financial hardship does not simply suppress academic achievement. Instead, it may activate a compensatory drive to succeed. Rubin (2012) argued that first-generation and low-income university students often show stronger academic commitment because of the high personal and financial stakes involved in their education, effectively transforming financial pressure into academic motivation.

Students from the lower-middle income group (PKR 31,000 to 60,000) were concentrated mainly in the middle CGPA range (3.01 to 3.50), with 59.0% falling there. This clustering in the middle may reflect a situation where income is sufficient to avoid the worst nutritional deficiencies but not high enough to consistently support strong academic performance through good nutrition, reliable study materials, and other resources. Students in the upper-middle income range (PKR 61,000 to 100,000) showed a pattern closer to the lowest income group, with 48.8% reaching the highest CGPA bracket, possibly because adequate financial resources allow for consistent nutrition and study material access without the distractions associated with greater affluence.

The most thought-provoking result involves the highest income group (above PKR 100,000): all 25 students in this category fell within the mid-range CGPA bracket (3.01 to 3.50), and none reached the highest CGPA level (3.51 to 4.00). This challenges the straightforward assumption that more money leads to better academic outcomes. The pattern is consistent with the 'affluence distraction' hypothesis proposed by Adan et al. (2019) and Deliens et al. (2014), which suggests that higher disposable income may enable greater engagement in leisure, consumption, and social activities that compete with study time. Moreover, Adan et al. (2019) note that diets high in fat and sugar, which students with more money can more easily afford, can directly impair hippocampal function and working memory, providing a biological mechanism through which dietary quality mediates the relationship between income and academic performance.

The Gamma value of -0.208 confirms a weak, negative directional relationship, meaning that higher income does not translate into proportionally higher CGPA. This has important practical implications: university nutrition programs should not be targeted exclusively at low-income students, since poor dietary quality and its academic consequences are visible across all income groups. A more comprehensive approach that addresses nutritional literacy, campus food environments, and eating norms for all students is warranted.

Discussion

The findings of this study point to the complex and multi-layered relationship between eating habits, health outcomes, and academic performance among female university students in Pakistan. Three major themes emerge from the data that deserve closer attention.

The Universality of Junk Food Consumption and Its Health Implications

The fact that every respondent in this study consumed junk food at least occasionally, and that more than half did so three or more times per week, reflects how deeply embedded fast food has become in the daily lives of university students in Faisalabad. This is not a matter of personal preference alone. It reflects the material realities of campus life: underfunded mess facilities, limited student budgets, easy access to fast-food restaurants nearby, and peer dynamics that associate fast food with a modern, social way of living. Rasheed et al. (2021) described similar patterns in Lahore, observing that Pakistani female students often used fast food as a form of social

bonding and emotional comfort, particularly in the unfamiliar and stressful environment of a residential campus. The fact that 27.5% of respondents were dealing with active health problems at the same time as they reported near-universal junk food consumption suggests a possible, though not causally established, dietary contribution to these health complaints. The literature synthesized by Whatnall et al. (2019) offers solid evidence for this pathway. Equally telling is the gap between awareness and behavior: 96.3% of respondents believed that poor diet damaged academic performance, yet they continued consuming junk food regularly. This awareness-action gap cannot be closed by providing more information. What is needed are structural changes that make healthy eating genuinely feasible for students.

The Non-Linear Socioeconomic Gradient in Academic Performance

The non-linear pattern between family income and CGPA is one of the most theoretically interesting findings of this study. The standard assumption, that higher income leads to better nutrition which in turn leads to higher academic achievement, does not hold up across all income levels in this dataset. Instead, motivational factors, consumption patterns, and institutional support all appear to shape how income translates into academic outcomes. This finding connects meaningfully to broader sociological work on educational resilience and aspirational mobility in South Asian contexts (Rubin, 2012; Siddiqui et al., 2020). The negative Gamma value (-0.208) indicates that across income levels, earning more does not predictably lead to higher academic performance. This may be because income affects academic outcomes through competing forces: it improves food access and nutritional quality on one hand, but also enables more leisure, consumer spending, and social activities that can crowd out study time on the other. In net terms, the motivational intensity of lower-income students partially compensates for their nutritional disadvantages, while the consumption habits of higher-income students partially undercut their material advantages.

Implications for Campus Health and Educational Policy

These findings have concrete implications for university administrators, health professionals, and policymakers across Pakistan. To begin with, poor campus food environments are a systemic problem that cannot be solved through individual behavior change alone. Universities need to invest in affordable, nutritious cafeteria options, regulate on-campus fast-food outlets, and create food support programs for students with limited financial means. Nouri et al. (2021) found that subsidized healthy meal programs in Iranian universities meaningfully improved dietary quality among lower-income students without simply displacing unhealthy eating among wealthier students, suggesting that food environment interventions need to be paired with targeted support.

Second, given the high levels of student awareness about the diet-health-academic connection (98.8% acknowledged dietary effects on health; 96.3% recognized effects on academic performance), the main barrier to healthy eating in this population is not lack of knowledge but lack of structural opportunity. Cost, availability, time pressures, and social norms are the real obstacles, and they require structural rather than informational responses. Sogari et al. (2018) recommend a systems-level approach to campus nutrition that simultaneously addresses food availability, affordability, social context, and knowledge, an approach that is consistent with the socio-ecological model applied in this study. Third, the very low rates of health-seeking behavior observed here (only 4.4% of students sought medical attention despite 27.5% reporting health problems) signal substantial unmet health needs within Pakistani universities. Accessible, low-cost campus health services staffed by nutritionists and general practitioners could help reduce diet-related health burdens that silently erode academic performance through increased absenteeism and reduced concentration.

Conclusion

This study has shown that eating habits function as a significant and socially embedded determinant of both health outcomes and academic performance among female university students in District Faisalabad, Pakistan. The near-universal prevalence of junk food consumption in this population, driven by structural conditions including constrained food access, inadequate institutional facilities, and peer norms normalizing fast food, represents a genuine public health and educational concern. The highly significant, non-linear association between monthly family income and CGPA (chi-square = 24.503, $p < .01$, Gamma = -0.208) challenges simplistic economic explanations and reveals the layered motivational and consumption dynamics that mediate the relationship between socioeconomic status and academic achievement.

The study's socio-nutritional framework moves beyond single-variable explanations by treating dietary behavior, health status, and academic performance as interconnected outcomes of broader structural conditions. This framing makes clear that individual-level behavioral change strategies are insufficient on their own and that institutional and policy-level interventions are needed to reshape the environments in which students make their daily food choices.

Future research should use longitudinal designs to establish causal pathways and understand the timing of dietary changes, health improvements, and academic gains. Mixed-method studies that combine surveys with direct observation of campus food environments would offer deeper insight into the behavioral and structural dynamics identified here. Extending the scope to include male students, students from rural universities, and institutions in other provinces would strengthen the generalizability of the findings. Intervention studies evaluating the effectiveness of subsidized healthy meal programs, campus-based nutrition education, and peer-led dietary behavior change efforts represent a critical and urgent next step in translating this evidence into real improvements in student wellbeing and educational outcomes across Pakistan's growing university sector.

Suggestions for Improvement

Based on the findings of this study, the following practical suggestions are offered for universities, health practitioners, and policymakers:

1. Establish Subsidized Healthy Meal Programs: Universities should work with their catering services to offer affordable, nutritionally balanced meal options for all students, with targeted subsidies for students from lower-income backgrounds. Experience from comparable settings, such as the subsidized meal programs studied by Nouri et al. (2021) in Iran, suggests that supply-side food interventions can meaningfully improve dietary quality without requiring changes in individual attitudes alone.
2. Regulate On-Campus Fast-Food Outlets: University administrations should develop and enforce food environment policies that limit the density of junk food vendors on and immediately around campuses, while supporting or mandating the availability of fresh and nutritious alternatives in their place.
3. Integrate Nutrition Education into the Curriculum: Short, practical nutrition modules should be embedded in orientation programs and academic courses across all departments, helping students understand the link between diet, health, and cognitive performance in ways that connect directly to their own lives and academic goals.
4. Establish On-Campus Health and Nutrition Clinics: Universities should set up accessible, low-cost or free health services staffed by registered nutritionists and general practitioners. These clinics would address the gap between the 27.5% of students reporting active health problems and the mere 4.4% who sought medical consultation, providing early intervention before health problems begin to erode academic performance.
5. Improve Hostel Mess Facilities: The quality, nutritional adequacy, and variety of hostel meal provision should be reviewed and upgraded across all four institutions studied. This

is particularly important for students living away from home who rely entirely on institutional catering and have fewer alternatives than day scholars.

6. Develop Peer-Led Dietary Behavior Change Initiatives: Student-led nutrition awareness campaigns and peer mentoring programs may be more effective than top-down informational approaches, particularly for addressing social norms around fast-food consumption. Peer influencers within campus communities are well-placed to shift eating norms in ways that formal educational programs often cannot.
7. Conduct Regular Campus Nutritional Assessments: Universities should commission periodic cross-sectional dietary surveys to monitor trends in student eating behavior, health outcomes, and academic performance over time. Such data would allow institutions to evaluate the effectiveness of interventions and adapt policies based on current evidence.

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