



Dietary Practices and Classroom Performance among University Students: A Study of Healthcare Behaviors

Museera Farooq¹, Amina Alamgir², Rimsha Shabbir Zia³

¹ MPhil Education, Institute of Education & Research, University of Punjab, Pakistan

Email: museerafarooq555@gmail.com, ORCID ID: 0009-0009-8881-9427

² PhD Student, Department of Economics, The Islamia University of Bahawalpur, Pakistan.

Email: aminaalamgir786@gmail.com, ORCID ID: <https://orcid.org/0009-0002-9433-3764>

³ Intern EPA (Environment protection agency) Lodhran, Email: rimshashabbir@gmail.com

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ABSTRACT

The dietary habits of students are being considered an academic issue as these habits of students have the potential to affect energy, attention, attendance, and learning outcome levels. This paper explored the interaction between dietary habits and academic performance in the classroom of Pakistani university students. The quantitative and cross-sectional survey was done among 300 students of selected institutions of higher education in the public sector in Pakistan. The instrument was inclusive of poor dietary habits, food-related knowledge, perceived health outcomes, classroom attendance, school attendance, fatigue, and post-breakfast sleepiness, homework, and school grades. Descriptive results indicated that there was a common preference in fast food, fried snacks, sweet foods, and flavour-based food preferences despite that a considerable proportion of the students were aware of the negative health impacts of junk food. Classroom indicators were mostly favorable, specifically attendance, homework, engagement, and alertness but skipped meals, exhaustion, and sleepiness were also significant classroom issues. The relationship between the health-practice score and the grades was weak and statistically significant. The results suggest that universities must consider the incorporation of nutrition education, healthier campus food choices, breakfast-friendly practices, and student wellness services into academic support policies.



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Corresponding Author's Email: museerafarooq555@gmail.com

1. Introduction

The health of students is no longer a peripheral welfare concerns in post-secondary education; it is becoming more and more recognized as a component of the learning experience that determines perseverance, involvement and academic success. The health-promotion viewpoint highlights the fact that people are in the environments where they learn, practice and engage in social life and this makes universities viable places to implement preventive and educational health programs (World Health, 1986). Universities can also use education-oriented and technology-supported approaches to improve student awareness and learning outcomes (Alemán de la Garza et al., 2019). In this more general context, dietary health practices play a pivotal role since the food preferences determine the energy intake and regulation, focus, sleep quality, and cognitive activity during studying activities (Burkhalter & Hillman, 2011; Heller et al., 2024). This problem is particularly pertinent to university students who usually gain some freedom with meals, abnormal schedules, peer

pressure, lack of finances and increased reliance on ready to eat foods with transition to higher education.

Dietary environment of university students has been altered significantly. Fast food, fried foods, sweetened beverages made with sugar and packaged food are more likely to be available on campus than balanced meals. Studies of the food environment of universities indicate that taste, availability, convenience, and price are powerful determinants of student food preferences, and students might even accept and even normalize unhealthy food as a component of campus life (Deliens et al., 2014; Li et al., 2022). Similar findings in South Asia also indicate that taste, price, access and location are key determinants of fast-food consumption among college students (Saha et al., 2022). These trends are significant as a high consumption of energy-dense and ultra-processed foods has been associated with negative health effects, such as metabolic, cardiometabolic, and mental-health issues (Ghosh & Muley, 2025; Lane et al., 2024).

Meanwhile, classroom achievement does not only come in the form of final grades. It involves attending classes regularly, being active, attentive, completing homework on time, prepared to give or listen to presentations and staying alert during classes. These behaviours are closely related to the academic performance since regularly attending classes and engaging in them raises the chances of staying academically active in students (Kassarnig et al., 2017). In the same way, these classroom behaviours are also linked with broader 21st-century learning skills such as participation, problem-solving, self-management, and active engagement (Basnal, 2022). The recent studies in the field of higher education additionally indicate that academic performance is linked to health behaviours and the nature and magnitude of such relationship might differ depending on the context and the health indicator (Heller et al., 2024; Lederer et al., 2025; Zhang et al., 2025). Thus, context-specific analysis is required to comprehend whether the dietary habits of students are only lifestyle choices or they are also associated with the functioning in the classroom.

The research problem of this paper is due to the situation of an overlap of two trends: on the one hand, university students can eat junk food, as it is tasty, cheap and readily accessible; on the other hand, the same students have to remain concentrated over an extended period of time, physically active, and engaged at the classroom. The current international evidence supports the connection between a better quality of diet and positive academic results (Burrows et al., 2017; Whatnall et al., 2019), but recent studies suggest that diet is just one component of a larger set of health behaviours and that the relation between diet and grades could be insignificant when other aspects, including sleep, stress, and behavioural routines, are taken into account (Heller et al., 2024; Reuter et al., 2021). This inconclusive evidence introduces the necessity to study the problem of Pakistani higher education, and campus food conditions and student habits might not be the same as in the Western ones.

In this regard, this paper will set out to discuss dietary health behaviors among university students, measure their classroom performance indicators and determine the correlation between health-practice scores and academic grades. This research has three contributions to the body of research. First, it changes the discourse on healthy students in general to the educational applicability of junk-food consumption, skipping breakfast, feeling tired, and classroom interactions. Second, it presents empirical data of Pakistani higher education, which has been underrepresented in recent global debates on diet and academic achievement. Third, it generalizes the student-level results to institutional implications of nutrition education, campus food policy, and academic support services. The rest of the paper will review the literature on the topic and build on the research gap, describe the data and methodology, discuss findings and results and wrap up with policy implications, limitations and future research directions.

2. Literature Review

Modern learning environments require students to develop digital, cognitive, and engagement-related skills that support academic performance (Chakravarti & Stevenson, 2022). The evidence of dietary health and academic performance is based on the premise that cognitive and behavioural states determine learning. Nutrition can influence the cognitive

functioning in terms of energy availability, micronutrient intake, and physiological regulation, and classroom performance in terms of attention, attendance, motivation, and persistence. Previous data indicate that healthier diets are linked with enhanced academic achievement, which implies that nutrition can be considered one of the factors of academic achievement as opposed to a health-related issue (Florence et al., 2008). Another study reviewing college-students also reported small to moderate positive correlations between dietary intake and academic success, specifically breakfast consumption, regular meals, and consumption of fruits (Burrows et al., 2017).

The regularity of breakfast and meals is especially significant in the literature of student-learning. Breakfast is linked to cognitive performance and behaviour related to school since it helps to maintain energy after the overnight fasting and could help to eliminate fatigue in morning school work (Adolphus et al., 2013). A more generalized examination also reveals that breakfast habits, nutrition status, body weight, and academic performance are interrelated but the evidence is inconsistent across age, socioeconomic background and study design (Rampersaud et al., 2005). This research area is applicable to university students since missing meals can influence the level of concentration in lectures, presentation vigor, and the capacity to maintain learning in a number of classes.

A second body of literature concentrates on fast food, sugar-sweetened beverages and ultra-processed food. The students of the university usually prefer these foods due to their convenience, affordability, high flavour intensity, and social acceptance on campus (Deliens et al., 2014; Li et al., 2022). The consumption of fast-food among college students in South Asia is influenced by taste, price, accessibility, location, brand reputation, and nutrition knowledge (Saha et al., 2022). This type of evidence is directly applicable to this study since the enjoyment of fast food, strong flavour and perceptions of affordability, as reported by students, might not be influenced by individual preference but instead by environmental and behavioural forces.

The health effects of high consumption of junk-food and ultra-processed-food have also been well-documented. A meta-analysis of epidemiological meta-analyses found that increased exposure to ultra-processed foods is linked to increased risks of adverse health outcomes, particularly cardiometabolic and common mental-disorder outcomes (Lane et al., 2024). College students have also shown evidence that an increase in the consumption of ultra-processed-foods can be linked to body composition indicators and markers of metabolic risk (Ghosh & Muley, 2025). Even though these studies are not direct evidence that junk food lowers the academic performance, they contribute to the argument that the improper eating habits can affect the physical and mental states needed to conduct successful learning. Despite the fact, student mental health and kindness-based educational support have also been emphasized as important for sustaining learning during stressful academic conditions (Chakravarti, 2020).

The third literature stream connects student health behaviours and student academic achievement. Reuter and Forster (2021) established a correlation between health behaviours and academic performance of university students, whereas Reuter et al. (2021) established that healthy eating had a positive impact on academic performance of students, but other behaviours, including sleep, might be as important or more so. Evidence is more recent and gives a more detailed picture. On the one hand, Heller et al. (2024) examined various health behaviours at the same time and discovered that sleep and fruit and vegetable intake were more closely related to academic performance compared to a number of other health behaviours. Likewise, Lederer et al. (2025) demonstrated that students who had better grades indicated more positive cumulative health behaviours, which backs up an integrated student-wellness approach.

Studies that make a simple diet-performance argument difficult are also present. (Zhang et al., 2025) discovered that academic excellence was positively correlated to lifestyle regularity, hygiene, and studying habits, whereas the strict eating schedules were not always associated with the high performance. This implies that eating patterns exist within the larger behavioural patterns and that educational performance could be influenced by a mixture of nutrition, sleep, attendance, study patterns and psychosocial variables. Research must therefore not purport an immediate causal impact of junk food on grades without putting it in the context of the student.

The setting-based health-promotion perspective and a behavioural engagement perspective inform the theoretical framework of this study. Setting-based perspective is the view that universities are settings which can either facilitate or limit healthy practices by provision of food, food prices, health education and institutional practices (World Health, 1986). Innovative educational practices can help institutions reform student learning environments and support more holistic student development (Chakravarti & Boukareva, 2022). The behavioural engagement view describes classroom performance in terms of observable learning behaviours, such as attendance, participation, attention, accomplishment of assignments and response to teacher questions. The integration of these views enables the research to discuss the coexistence of dietary health practices and classroom performance among students in their daily lives at the university.

Although there is much international literature, there are three gaps. To start with, a lot of research is done about school children or the Western university population, with little evidence about Pakistani higher education. Second, a number of studies look at either the quality of diets or academic achievement, and fewer relate particular junk-food habits to classroom-level measures like fatigue, attentiveness, participation, and sleepiness after eating breakfast. Third, recent literature indicates mixed results that dietary habits can be weakly, yet significantly related to academic performance, which needs context-specific evidence, not general causal presumptions. It is based on these gaps that this study will address three objectives: to analyze the dietary health practices of the university students, to evaluate the performance indicators of the classroom, and to establish the relationship between academic grades and the scores of health-practices.

3. Methodology

The research design employed in this study was a quantitative cross-sectional survey to investigate the dietary health practices and classroom performance among university students. The cross-sectional design suited the aim of the study since the goal was to record the reported dietary behaviours, experiences in classrooms, and academic-grade indicators among students at a single point, as opposed to testing a causal pathway over a time. The target population was a sample of students in a few public institutions of higher learning in Bahawalpur, Pakistan. The Women University, Multan and Bahauddin Zakariya University, Multan were selected to provide a sample of 300 students. A variety of departments such as Botany, Zoology, English, Computer Science, Chemistry, Physics, Psychology, Education, Islamic Studies and Urdu were also used to sample students, enhancing the diversity of disciplines represented in the sample.

A structured close-ended questionnaire was used to gather data. The instrument had 50 content items grouped into two domains. The former domain was eating health behaviours and junk-food-related behaviours, such as fast food, fried foods, sweets, sugar-sweetened drinks, skipping meals, checking food labels, taste, and perceived health consequences. The second domain entailed classroom performance measures, such as class attendance, mental relaxation, physical fitness and attention, performing assignments, co-curricular attendance, responding swiftly to teacher questions, energy in presentations, learning facilities, grades, fatigue, and sleepiness following breakfast skipping. Another correlation table indicated the association between the composite health-practice score and academic grades.

The answers were noted in a six-point frequency scale. The coding in the reported data tables was 1 = Always, 2 = Often, 3 = Sometimes, 4 = Occasionally, 5 = Rarely and 6 = Never. Thus, high mean values mean low frequency of the reported behaviour and vice versa. This coding rule is significant in the interpretation of the results since some items are unhealthy practices, like frequent consumption of fast-food, and others are positive classroom behaviours, such as regular attendance or completion of assignments on time. To enhance the presentation of the results in journal format, the item-level results were restructured into thematic tables that present the percentage of students who reported a behaviour at least sometimes, the percentage who reported always, the percentage who reported never and the mean score.

The descriptive statistics and Pearson correlation were applied to the analysis. The prevalence of key dietary and classroom behaviours could be identified using descriptive statistics. The at least sometimes percentage was obtained by adding responses to Always,

Often, and Sometimes, which gives a measure of how common a behaviour was among respondents that can be interpreted. Pearson correlation was used to assess the association between the reported health-practice score and academic grades. Due to the cross-sectional nature of the study and self-reported answers, the results can be viewed as correlations and not a sign of causality. The design is however helpful in determining student-wellness issues that can be utilized in institutional policy, future survey development, and more rigorous empirical research.

Table 1: Analytical structure of the study

Domain	Item coverage	Analytical focus
Dietary health practices and junk-food behaviours	Items 1-31	Fast food, fried snacks, sweets, beverages, meal skipping, taste, affordability, food-label awareness, and perceived health effects
Classroom performance indicators	Items 32-50	Class participation, attention, attendance, assignments, grades, fatigue, sleepiness, presentation energy, and learning activities
Relationship analysis	Correlation table	Pearson correlation between health-practice score and academic grades

Note: The table summarizes how the survey results were reorganized for journal-style reporting.

4. Results and Discussion

4.1 Dietary and junk-food consumption patterns

The initial group of findings indicates that fast food and fried snacks were apparent components of student eating habits. Almost three-quarters of the respondents said they liked fast food at least occasionally, and over one-third said they liked it always. Traveling Pizza, fried foods like French fries, chaat and samosa, sweets and fast food were also common. The results are in line with the literature that suggests that palatability, convenience, social routine, availability, and price influence the food preferences of students (Deliens et al., 2014; Li et al., 2022; Saha et al., 2022). The findings also indicate that most respondents did not necessarily eat junk food on a daily basis but the occasional and situational eating was prevalent to the extent that it could be categorized as a significant campus-health concern.

Table 2: Selected dietary and junk-food consumption indicators

Item	Indicator	At least sometimes (%)	Always (%)	Never (%)	Mean
12	Enjoy eating fast food	74.8	36.7	14.0	2.73
7	Take pizza	65.6	12.0	13.7	3.35
9	Eat French fries, chaat and samosa	65.7	14.0	17.3	3.32
15	Eat fast food during travelling	61.7	23.7	25.0	3.37
13	Feel satisfied after eating fast food	62.0	28.0	21.0	3.24
5	Eat sweets daily	56.3	12.3	22.7	3.60
14	Feel less energy after eating fast food	53.9	14.3	28.3	3.72

Note. At least sometimes combines Always, Often, and Sometimes responses. Lower means indicate higher reported frequency because 1 = Always and 6 = Never.

The tendency indicates that there is a twofold truth, students are drawn to fast food and snacks, yet others also complain of a decrease in energy after taking them. This result aligns with prior findings that the quality of diet and academic functioning are interrelated, yet the association might be indirect and mediated by energy, concentration, and other health behaviours (Burrows et al., 2017; Whatnall et al., 2019). Meanwhile, the descriptive findings do not mean that all students who consume fast food get poor results; instead, the results reveal general trends that can be problematic when recurrent and in combination with missed meals, or integrated in the low-quality dietary habits.

4.2 Awareness, affordability, taste and perceived health effects

The second set of findings is associated with the awareness and perceptions of the students towards junk food. Over half of the respondents said that they had some knowledge of chemicals or additives in junk food, and almost two-thirds said that junk food influences their health. Nevertheless, less than half of them said they checked nutrition labels at least occasionally. This discrepancy between awareness and label-checking shows that knowledge itself might not be enough in order to change behaviour. The finding can be explained by the fact that campus-food-environment literature indicates that students tend to rely on taste, availability, and price when making their food choices even when they are informed about the existence of healthier options (Deliens et al., 2014; Li et al., 2022).

Table 3: Awareness, affordability, taste and perceived health effects

Item	Indicator	At least sometimes (%)	Always (%)	Never (%)	Mean
20	Check nutrition facts label before eating junk food	46.7	15.3	36.0	3.93
24	Junk food is cheap and affordable	52.7	14.0	26.3	3.70
25	Aware of chemicals present in junk food	57.0	27.0	23.7	3.36
26	Love junk food because of strong flavour	59.6	23.3	20.7	3.32
29	Junk food affects my health	64.7	26.3	17.3	3.15
30	Feel sick after eating junk food	53.7	16.0	30.0	3.72
31	Junk food affects heart and blood pressure	60.4	27.0	23.3	3.26

Note. Percentages are based on the reported frequency distribution of 300 respondents.

The policy implications of these findings are that the university students can be aware of health hazards but still make decisions based on taste and price. This has corroborated Saha et al. (2022), who discovered that taste, price, accessibility, location, and nutrition knowledge contribute to the consumption of fast-food among South Asian college students. The results are also consistent with the public-health evidence, which demonstrates that a high frequency of exposure to ultra-processed foods correlates with poor health outcomes (Lane et al., 2024). The findings, however, also indicate that a large proportion of students do not eat some junk-food items every day or regularly and this supports the more moderate perspective that the interventions should be aimed at reducing the negative frequency and improving food-related settings instead of moralizing about the occasional consumption.

4.3 Classroom engagement and academic behaviours

Classroom-performance indicators were mostly favourable. Majority of the respondents indicated that they at least sometimes attended lectures, were mentally relaxed in the classroom, attended classes regularly, were physically fit and alert, did their assignments on time, answered the questions of teachers, and used learning facilities. Regular attendance was the best indicator with 65.7% of the respondents indicating that they attended classes regularly. This finding aligns with the research that behavioural outcomes (e.g., attendance and engagement) are closely linked with academic achievement (Kassarnig et al., 2017; Zhang et al., 2025).

The good classroom outcomes imply that poor dietary habits may not necessarily translate to poor classroom behaviour among all students. This fact is significant since recent research has demonstrated that health behaviours have complex correlations with academic outcomes. An example provided by Heller et al. (2024) indicates that when multiple health behaviours were taken into account at once, sleep and fruit and vegetable consumption were more pronounced compared to other behaviours. In the same manner, Zhang et al. (2025) postulated that the regularity of lifestyles and study habits could be of significance in addition to eating patterns. Consequently, the current results are to be interpreted as supporting a health-performance relationship, which is not deterministic but significant.

Table 4: Classroom engagement and academic behaviours

Item	Indicator	At least sometimes (%)	Always (%)	Never (%)	Mean
32	Actively participate in class during lecture	75.6	44.0	9.0	2.49
33	Feel mentally relaxed in class	77.4	42.7	12.7	2.51
34	Take classes regularly	85.3	65.7	7.0	1.94
35	Feel physically fit and attentive in class	78.4	46.0	9.0	2.43
37	Complete assignments on time	81.7	52.7	7.7	2.21
38	Participate in co-curricular activities	63.7	31.7	18.3	3.09
39	Answer quickly when teacher asks questions	75.0	30.0	9.7	2.74

Note. Lower mean values indicate more frequent positive classroom behaviours.

4.4 Fatigue, skipped meals and learning energy

In spite of the good overall classroom interaction, the findings indicate that food omission and fatigue were significant issues. Over two-thirds of the respondents said they felt uncomfortable in class when they skipped food, had to eat after some lectures to enhance learning capacity, felt tired after a single class, or felt sleepy when they did not eat breakfast. These results are aligned to the breakfast literature, which suggests that breakfast may help to sustain cognition, behaviour, and performance at school, especially by influencing attention and energy regulation (Adolphus et al., 2013; Rampersaud et al., 2005).

Table 5: Fatigue, skipped meals and learning energy

Item	Indicator	At least sometimes (%)	Always (%)	Never (%)	Mean
36	Feel uncomfortable in class when food is skipped	71.3	27.3	16.0	2.98
40	Need to eat after lectures to increase learning capacity	67.0	30.0	15.7	3.02
49	Feel fatigued after attending one class	67.5	26.5	16.7	3.07
50	Feel sleepy in class whenever breakfast is skipped	68.4	34.0	17.3	2.96

Note. These items capture perceived energy and attention problems related to skipped food and fatigue.

This part presents one of the most practical contributions of the research. Although the total relationship between health practices and grades may be low, the percentage scores of fatigue, skipping breakfast, and sleepiness in the classroom reveal that there are immediate classroom problems. Such results prove the thesis that academic-support policies should not be confined to tutoring and testing in universities, but those policies should also consider the daily aspects of wellness, which influence the capacity of a student to be alert and active. The results are also in line with the findings of the studies that indicate that positive health behaviours are related to academic achievement at the student level (Lederer et al., 2025; Reuter & Forster, 2021).

4.5 Relationship between health practices and academic grades

The relationship analysis revealed that there was a statistically significant relationship between health-practice score and academic grades ($r = -.126$, $p = .030$). The size of the coefficient shows that the correlation is low. The sign of the coefficient is a sign that should be taken with care since direction of composite scores and grade coding determine whether negative values are good or poor results. Thus, the strictest of the interpretations is that student health-practice patterns and academic grades are connected, but the relationship is weak and cannot be considered causal.

The present result aligns with research that found low-correlations between diet quality and academic performance in university students (Burrows et al., 2017; Whatnall et al., 2019). It too coincides with Heller et al. (2024), who concluded that health behaviours are important but their impact can be small when they are combined. Nonetheless, it is less

robust compared to the findings of the studies that indicate stronger correlations between healthy behaviours and GPA or academic achievement (Lederer et al., 2025; Reuter et al., 2021). This discrepancy can be explained by variations in measurement, sample, grade coding, cultural background, and that academic performance is affected by numerous factors outside of diet, such as previous performance, quality of teaching, socioeconomic status, sleep, mental health, and study behaviors.

Table 6: Correlation between health-practice score and academic grades

Variables	N	Pearson r	Sig. (2-tailed)	Interpretation
Health-practice score and academic grades	300	-.126*	.030	Weak but statistically significant association

Note. The asterisk indicates significance at the .05 level. The direction should be interpreted in light of the original coding of grade and health-practice scores.

4.6 Integrated Discussion of Findings

In general, the findings indicate that classroom performance and dietary health practices have a complex relationship. Students not only said they were exposed to fast food, fried foods, sweet and flavour-based food, but their attendance, completion of assignments, and participation in classes were also high. This ambivalent trend indicates that the consumption of junk-food cannot be considered as a single adequate factor to explain the performance in the classroom; it is a component of a more comprehensive lifestyle and learning ecology. The findings that are the most practically significant are connected with breakfast skipping, fatigue, and classroom energy as these experiences directly influence the willingness of students to learn in the lectures.

The findings are in favor of a mixed meaning. On the one hand, they supplement the body of literature that proves the relationship between healthy eating habits and positive health behaviours with academic performance (Florence et al., 2008; Lederer et al., 2025; Whatnall et al., 2019). Conversely, the weak correlation can confirm recent findings not to overestimate the impact of any particular health behaviour on academic success (Heller et al., 2024; Zhang et al., 2025). The most important implication is that the universities need to formulate and develop combined wellness and learning-supporting policies instead of one-sided campaigns against specific foods. Student advising, attendance monitoring, and academic-engagement strategies should be linked with nutrition education, campus food reform, breakfast awareness, and fatigue management.

5. Conclusion, Policy Implications

The paper has investigated the health habits of eating and classroom work of university students in Pakistan. The results indicate that students often stated that they enjoyed fast food, fried food, sweets, and food based on flavour as well as many students were aware that junk food might have an impact on their health. Classroom-performance indicators were mostly positive including attendance, completion of assignments, physical attentiveness and participation in the classes. Nevertheless, sleepiness following lack of breakfast, fatigue and discomfort in case of missing food were found to be significant academic-wellness issues. The relationship between health-practice score and academic grades was low but statistically significant meaning that dietary and health-related practices are correlated with academic outcomes, but not to make causal claims.

The implications of the policy are based on the findings. First, the universities must implement nutrition-awareness programs that go beyond general tips and target the actual student behaviours like regular breakfast, reading labels, excessive sugar consumption, fried foods, and energy expenditure throughout lengthy academic days. Second, the administrations of universities need to collaborate with the campus food vendors to offer more affordable and healthier meal options since taste, price, and accessibility have a great impact on the selection of students. Third, fatigue, missed meals and sleepiness in the classroom should be addressed as academic-support issues, rather than health issues, by student-support offices. Fourth, educators and departments can facilitate the learning of students by planning of reasonable breaks in long teaching sessions and referring students to wellness services when fatigue or unhealthy eating habits seem to impact participation.

There are a number of limitations to the study. It took a cross-sectional design and therefore, no causal relationship could be made. The data were self-reported and this could be influenced by the recall bias or social desirability bias. The researchers only used sampled institutions within a single city thereby limiting the application to all Pakistani universities. Correlation analysis was performed using reported composite scores and grade categories and the lack of modelling at the level of the raw items did not leave the opportunity of regression, mediation, or subgroup analysis. Subsequent studies must involve bigger multi-city samples, dietary-intake instruments that are validated, objective academic records and longitudinal designs. The mediating effects of sleep, stress, mental health, physical activity, and food insecurity should also be explored in future research since they may be the reasons behind the weak, yet significant relationship between dietary practices and academic performance.

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