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Association of Breakfast Skipping with Academic Performance among Undergraduate Students

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ABSTRACT

Breakfast is said to be the most essential meal of the day for circadian rhythm and physiological metabolism. Breakfast is broadly acknowledged as a key element of a healthy lifestyle, providing essential nutrients for individuals of all age groups, including children, adolescents, and adults. Consumption of a healthy breakfast plays an essential role in various aspects of health and well-being, including academic performance. This study aims to evaluate the association of breakfast skipping with academic performance among undergraduate students. The study was conducted at the Liaquat University of Medical & Health Science (LUMHS), Jamshoro. A comparative cross-sectional study design was used and the study was conducted among Undergraduate students of 2nd year to 4th year of BS Nursing (Generic), Doctor of Pharmacy, and Doctor of Physiotherapy degree programs. A sample size of 345n was used. A stratified random sampling technique was employed. Students from Students of 2nd year to 4th year of BS Nursing (Generic), Doctor of Pharmacy, and Doctor of Physiotherapy were included whereas Students studying in 1st year were excluded. In this study, The Academic Performance Scale (APS) was used Along with the student's last semester's Cumulative grade point average (CGPA). Breakfast skipping was measured using questions about breakfast eating like "Do you eat breakfast". The findings from the current study revealed a significant association was found between breakfast skipping and academic performance. Students who regularly consumed breakfast demonstrated higher academic performance However; breakfast skipping did not significantly affect cumulative GPA, indicating that while daily breakfast consumption may contribute to better academic engagement, it may not be the sole determinant of long-term academic outcomes.

INTRODUCTION

Breakfast is said to be the most essential meal of the day for circadian rhythm and physiological metabolism.[1] Breakfast is broadly acknowledged as a key element of a healthy lifestyle, providing essential nutrients for individuals of all age groups, including children, adolescents, and adults. Regular breakfast consumption is associated with higher daily nutrient intake such as carbohydrates, calories, dietary fiber, and micronutrients, better diet quality, and a reduced risk of chronic diseases.[2–5] Consumption of a healthy breakfast plays an essential role in various aspects of health and well-being, including academic performance. Breakfast frequently is associated with improved cognitive functioning, attentiveness, and alertness among adolescents and young adults, leading to better learning outcomes.[6,7] Academic performance refers to the achievement and success of students in

their educational endeavors.[8] Academic performance is a crucial determinant of students' current and future life outcomes, influencing their educational experiences and career trajectories. High levels of engagement correlate positively with academic achievement, as demonstrated in a study where student engagement was identified as a strong predictor of performance.[9] Cognitive abilities such as critical thinking, problem-solving, and memory skills are foundational for academic success, particularly in demanding fields like nursing. [10] Intelligence and academic skills are significant predictors of performance, highlighting the importance of tailored educational strategies to enhance these abilities. [11] Achievement motivation plays a vital role, with studies showing a significant positive relationship between motivation and academic performance, moderated by factors such as relationship satisfaction.[12]

Motivation, emotional intelligence, and resilience are vital non-cognitive factors that shape students' learning experiences and coping mechanisms. [10] Effective communication and social skills also contribute to academic success, albeit to a lesser extent compared to engagement and general knowledge.[9] Family background, including economic and cultural contexts, significantly influences academic success.[11] Factors such as home education background significantly impact academic performance, suggesting that personal circumstances play a crucial role.[13] Goal-directed rumination and psychological distress have been shown to affect academic performance. Students who engage in constructive rumination tend to perform better academically, while high levels of distress can hinder performance. [14]

Typically, we eat three meals a day: breakfast, lunch, and dinner. Breakfast plays a crucial role in the proper functioning of the brain by supplying it with essential nutrients.[15] Studies suggest that skipping breakfast leads to prolonged fasting and lower morning glucose levels, reducing energy availability for the brain during critical morning hours. This can impair cognitive functions, including memory, attention, and executive function, essential for academic performance and daily activities.[16] Skipping breakfast can have a huge impact on students' academic performance. Hence, having a stomach intact or eating while studying serves as a way of learning for others and learning is an important aspect in education.[17-18] In a study of university students, 62.4% reported skipping breakfast, often due to time constraints and lack of appetite, which correlates with lower academic grades.[19] A study in Ethiopia found that breakfast skipping was significantly associated with poorer academic performance, particularly in mathematics and English, with an odds ratio indicating a strong correlation.[20] Students who skip breakfast report lower academic performance, with studies showing a direct association between breakfast habits and grades. Those who miss breakfast tend to experience fatigue and difficulty concentrating, which adversely affects their learning capabilities.[19] University students are at a critical life stage where lifestyle habits, including dietary patterns, are often formed. Examining breakfast skipping as a behavioral trend can highlight broader lifestyle choices that might influence academic performance. While much research exists on the links between diet and academic performance, studies specifically focusing on the undergraduate population are limited. Therefore this study is designed to fill the gap.

Aim of the Study

- The study aims to evaluate the association of breakfast skipping with academic performance among undergraduate students.

Research Question

- Is there any association between breakfast skipping with academic performance among undergraduate students?

RESEARCH METHODOLOGY

Study setting: The study was conducted at the Liaquat University of Medical & Health Science (LUMHS), Jamshoro.

Study design: A comparative cross-sectional study design was used to seek the association of breakfast skipping with academic performance among undergraduate students.

Study population: Undergraduate students of 2nd year to 4th year of BS Nursing (Generic), Doctor of Pharmacy and Doctor of Physiotherapy degree programs

Sample Size: The sample size of 345n was used, The estimated sample size was calculated with Past study Prevalence of breakfast kipping: 66%.[21]

- Margin of Error: 5% or 0.05
- Confidence Level: 95%, which corresponds to a Z-score of 1.96 (from standard Z-tables)

Sampling Technique: A stratified random sampling technique was employed to select participants for this study.

Inclusion Criteria

1. Students of 2nd year to 4th year of BS Nursing (Generic), Doctor of Pharmacy and Doctor of Physiotherapy
2. Those who are willing to participate in the study
3. Male and Female.

Exclusion Criteria

- Students studying 1st year BS Nursing (Generic), Doctor of Pharmacy, and Doctor of Physiotherapy students were excluded to ensure that participants had a minimum level of academic experience.
- Non consenting participants

Data Collection Procedure

After obtaining approval from the Ethical Review Committee (ERC), the researcher contacted each student. The questionnaires were distributed face-to-face to participants. Participants were assigned informed consent, which was on the first page of the questionnaire.

Data Collection Tool

In this study, a Questionnaire was used to gather information; The data collection tool asks for demographic variables like age, gender, education level, and socioeconomic status whereas The Academic Performance was measured using the Academic Performance Scale (APS) that is developed by Carson Birchmeier, Emily Grattan, Sarah Hornbacher, and Christopher McGregory of Saginaw Valley State University. With an internal consistency of 0.89 and a test-retest Reliability of 0.85. This Scale (APS) consists of 8 items. Five responses from strongly agree to strongly disagree are presented against each question. Along with that, the student's last semester's Cumulative grade point average (CGPA) was used to evaluate their academic performance. Breakfast skipping was measured using questions about breakfast eating like "Do you eat breakfast", for breakfast skipping participants were categorized into three groups: skipper (skip breakfast 6-7 days/week), irregular skipper (4-5 days/week), and non-skipper (1-3 days/week).

RESULTS

Table 1

Socio-demographic profile of study subjects

Gender Distribution		
	Frequency	**Percentage**
Male	137	39.7
Female	208	60.3
Total	345	100
Age Distribution		
17 – 20	119	34.5
21 – 24	214	62
>25	12	3.5
Total	345	100
Discipline Distribution		
BS Nursing	92	26.7
Doctor of Pharmacy	114	33
Doctor of Physiotherapy	139	40.3
Total	345	100

The above table presents the socio-demographic characteristics of the study participants. Out of 345 students, 60.3% were female, and 39.7% were male. The age distribution shows that the majority (62%) were between 21-24 years, followed by 34.5% in the 17-20 age range, and 3.5% were above 25 years. In terms of discipline, 40.3% were from Doctor of Physiotherapy, 33% from Doctor of Pharmacy, and 26.7% from BS Nursing.

Table 2

Association of Breakfast Skipping with Academic Performance

Academic Performance	Breakfast Skipping Category			Total	Fisher exact	P-Value
	Breakfast Skipper	Irregular Skipper	Non-Skipper			
Excellent Performance	38 (11.1)	28 (8.11)	137 (39.72)	203 (58.93)	16.227	.0.006
Good Performance	38 (11.1)	23 (6.67)	64 (18.56)	125 (36.33)		
Moderate Performance	6 (1.8)	5 (1.45)	5 (1.45)	16 (4.7)		
Failing Performance	0 (0)	0 (0)	1 (0.3)	1 (0.3)		
Total	82 (24)	56 (16.23)	207 (60.03)	345 (100)		

The relationship between breakfast skipping and academic performance is presented in this table. A significant association was found, with a Fisher exact test result of p = 0.006, suggesting that breakfast skipping is associated with differences in academic performance.

Table 3

Association of Breakfast Skipping with CGPA

Academic Performance	Breakfast Skipping Category			Total	χ2	df	P-Value
	Breakfast Skipper	Irregular Skipper	Non-Skipper				
Excellent Performance (3.5 – 4.00)	50 (14.49)	41 (11.85)	131 (37.98)	222 (64.32)	2.427	2	.297
Good Performance (2.5 – 3.49)	32 (9.27)	15 (4.35)	76 (22.03)	123 (35.65)			
Satisfactory performance (<2.49)	0 (0)	0 (0)	0 (0)	0			
Total	82 (23.76)	56 (16.2)	207 (60.01)	345 (100)			

This table examines the association between breakfast skipping and CGPA. The chi-square test produced a p-value of 0.297, indicating no statistically significant relationship between breakfast-skipping habits and students' CGPA.

DISCUSSION

The current study socio-demographic profile of study subjects revealed that the study had 60.3% female and 39.7% male participants. The majority of participants (62%) were aged 21-24, Similar gender distribution was noted in a study where 409 (93.6%) of the 305 (69.8%) students were female and the bulk of the students belonged to the 17–21 age group.[22] likely reflects higher enrollment rates in certain disciplines such as nursing and pharmacy. As the first meal of the day, breakfast maintains blood sugar levels and provides the energy required for mental functions including longer attention, memory recall, and problem-solving. Skipping breakfast has been linked to the brain having less energy available in the morning, which can impair cognitive function and lower academic engagement. The findings of the current study showed this, where a significant link between breakfast habits and academic performance (Fisher exact = 16.227, p = 0.006). Students who regularly ate breakfast (non-skippers) were more likely to achieve excellent performance (39.72%) compared to those who skipped breakfast (11.1%) or had irregular habits (8.11%). This result aligns with some of the studies where Skipping breakfast is significantly associated with lower academic performance.[23,10] The current study showed no statistically significant relationship between breakfast skipping and CGPA, as indicated by the χ2 value of 2.427 with a p-value of 0.297. in contrast to the current finding, a study reported a statistically significant negative relationship between breakfast skipping and CGPA, emphasizing that students who skipped breakfast had poorer academic outcomes.[25]

CONCLUSION

The findings from the current study indicate that breakfast skipping has a notable impact on academic performance. Current study revealed a significant association was found between breakfast skipping and academic performance. Students who regularly consumed breakfast demonstrated higher academic performance, with a larger proportion achieving excellent performance

compared to those who skipped breakfast. However, breakfast skipping did not significantly affect cumulative GPA, indicating that while daily breakfast consumption may contribute to better academic engagement, it may not be the sole determinant of long-term academic outcomes.

Limitations

The study uses a cross-sectional design because of a shortage of time, which limits its ability to establish causality between breakfast skipping and academic performance. Much of the data, particularly regarding breakfast habits and academic performance were self-reported by participants. This introduces the potential for response bias, as students may over or under-report their breakfast consumption.

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