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Breakfast Habit and its Relationship with Academic Performance among School Students in Kabul City of Afghanistan

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ABSTRACT

Background: Breakfast meals replenish body nutrients after prolonged fasting during the night. Several studies in nearly all countries have reported positive correlation between breakfast and child's cognitive and academic performance. However, little is known about the positive correlation in Afghanistan. The country has a highly unique culture and economic activity, which might have a strong influence on the nature of diet especially in children. We aimed to investigate the association between breakfast and academic performance.

Methods: A cross-sectional study including 376 male secondary and high school students from one public and one private school in Kabul Afghanistan (Oct–Nov 2023). The students were enrolled based on a systematic random sampling and were duly proportionally distributed to the population of each school. Academic achievement was measured by a 5-point Likert scale for academic achievement questionnaire (range 0–40) and school achievement calculated on the basis of the 4.5-month average (school records). Breakfast patterns (frequency, amount, and reasons for skipping) were measured using a validated questionnaire that was adopted from previous research.

Results: 68.2% of students ate breakfast daily/sometimes, and 3.3% never ate breakfast. The most frequently reported reasons for not eating were a lack of time (53%) and a lack of hunger (32%). A small positive relationship was recorded for breakfast frequency and teacher-rated performance (r=0.140, *P*=0.03), but no association was found with grade point average) GPA) (r = 0.05, *P*=0.21).

Conclusion: This study revealed a weak positive correlation between academic performance and breakfast habits. However, no significant correlation was observed between breakfast habits and average grade scores as another proxy of academic performance.

Keywords: Breakfast, Academic performance, Average grade scores, Economic status, Students

Introduction

Diet has a pervasive and extreme impact on human health. Nutrient inadequacy during childhood and school age can affect brain development and have a lifelong effect on

health, including cognitive effects (1). Breakfast is defined a first and important meal of the day after long fasting time moreover, breakfast make a large contribution to daily micronutrient (1,2). The impact of breakfast on different aspects of learning outcomes has been investigated for decades, and the quality and quantity of this research are improving. The researchers are discussing many of the various effects of breakfast on school students, for instance, cognitive, absenteeism, and quality of learning, attention and school performance (3,4). The prevalence of breakfast skipping among children and abducents considerably more increased. A recent systematic review of 33 countries reported that 10%-30% of children and adolescents are skipping breakfast (5), and in Australia, 17.4% sometimes skipped breakfast, 18% often skipped, and 9.5% always skipped breakfast (6). In the United States, the CDC conducted a school-based survey with a representative sample from private and public schools across all 50 U.S states. More than half of the students (51.8%) consumed breakfast on three or fewer days per week, and 17.9% of students skipped breakfast every day (7).

Academic performance/achievement, is how well a student, teacher of educational institution has accomplished their short-term or long-term educational objectives (8). Academic performance is important because it shows the degree to which students acquire the knowledge and skills expected of students at a specific level or stage of education. Academic performance also has implications for future prosperity. A true instrument for the development of a country has been thought to be education. It makes a country's social, political, and economic life significantly different and promotes widespread reading and enlightenment. National development also depends on high-quality education (9,10). Academic performance can be measure through ongoing assessments or cumulative grade average point (CGPA) (8). According to the Organization for Economic Co-operation and Development (OECD), the average score for 15-year-olds in reading, mathematics and science in 79 countries was 487 in 2018. However, there were significant differences between countries, with some countries scoring above 550 and others below 400. In addition, in each country there are also differences between students based on gender, socioeconomic background, immigration status and status (11). Breakfast is not the only factor that affects the school performance, there are many things including, education, socioeconomic, personal characteristic, activities, emotional status and etc. (12,13).

In Afghanistan, where Poverty impacts more than 90%-95% of the country's population and socioeconomic have a significant impact on the learning outcomes, which is the quality of diet related to the economic status of families and students(14–16). Years of conflict, political turmoil, and climate-related crises (e.g., droughts) have deepened the burden of malnutrition in the country, where 41% of children under 5 yr of age are stunted from chronic malnutrition (17,18). Classical diets are heavily based on staples such as naan (bread), rice, and tea, and frequently lack diversity of micronutrient-dense foods (19). Based on our understanding, despite the significance of this topic, there is currently no published research on it in Afghanistan. The curiosity of understanding the diet pattern and specially breakfast in this specific culture and norms needs to be study.

We aimed to survey the breakfast and its relationship with academic performance among secondary and high school students.

Materials and Methods

This study was conducted among one public school (Abdul Rahim Shaheed school), and

one private School (Marefat school), in Kabul's 13th district, Afghanistan. These two schools were chosen at random from a list of all the schools in the 13th area. This study was conducted in Oct and Nov, 2023.

This study included all male secondary and high school students, The total population of Marefat private school (n=564) and Abdul Raheem Shaheed public school (n=4510) was considered. The sample size, calculated at 358 by sample size calculator with a 95% confidence interval and a 5% margin error. The final sample size was 376 to allow for a 5% non-respondent rate. A systematic random sampling method was used to choose participants. The process of systematic random sampling was beginning by proportion of each school, and this ensured that this sample can represent of overall population of Marefat private school (564 students), and Abdul Rahim Shaheed school (4510 students).

Data Source and Measurement

Two questionnaires and school records were used to gather data. The first is Academic performance questionnaire, which used eight items that were categorized into five groups: excellent, good, moderate, poor, and failed. The items were scored on a five-point Likert scale. The range of the scores was 0–40 (20). The second questionnaire evaluated breakfast intake by looking at breakfast quantity and quality, different study was used these questions for surveying the breakfast (12,21). Student self-reports and academic records were used to calculate the average score over a 4.5-month period, used to assess academic progress.

Statistics

SPSS version 26 (IBM Corp., Armonk, NY, USA) used for analyzing the data of questionnaires and assessing the correlation between habits of breakfast and school performance, Microsoft Excel for drawing the tables and for random numbers. Descriptive statistics were used in the compilation of pertinent variables and participant attributes. The Spearman correlation coefficient was utilized to investigate the relationship between breakfast eating and academic attainment. The level of significance was set at 0.05.

Ethics approval

The present study was conducted with official permission from Afghanistan's government authorities and participating schools; special attention was given to ethical considerations concerning minors, as the research involved secondary and high school students. Permission was obtained from school administrators. All necessary precautions were taken to protect students' privacy and confidentiality.

Results

Information was gathered from 376 male pupils. 361 questionnaires were left for analysis after data collection, with 15 being rejected for having insufficient answers. The participants were between the ages of 12 and 19 year. Secondary school students, ages 12 to 15 yr, and high school students, ages 16 to 19 yr, made up the two groups of students. According to student reports, 11% of students reported a good economic status, 9% reported a very poor status, and 18% considered their status to be weak. Furthermore, 62% of students belonged to the medium-income group. The frequency at which students consume breakfast is categorized into five distinct groups: daily, most days, occasionally, seldom, and never. 68.2% of the students reported having breakfast either daily or occasionally, whereas 3.3% indicated they never ate breakfast. The distribution of the remaining students across the other frequency categories is detailed in Figure 1.

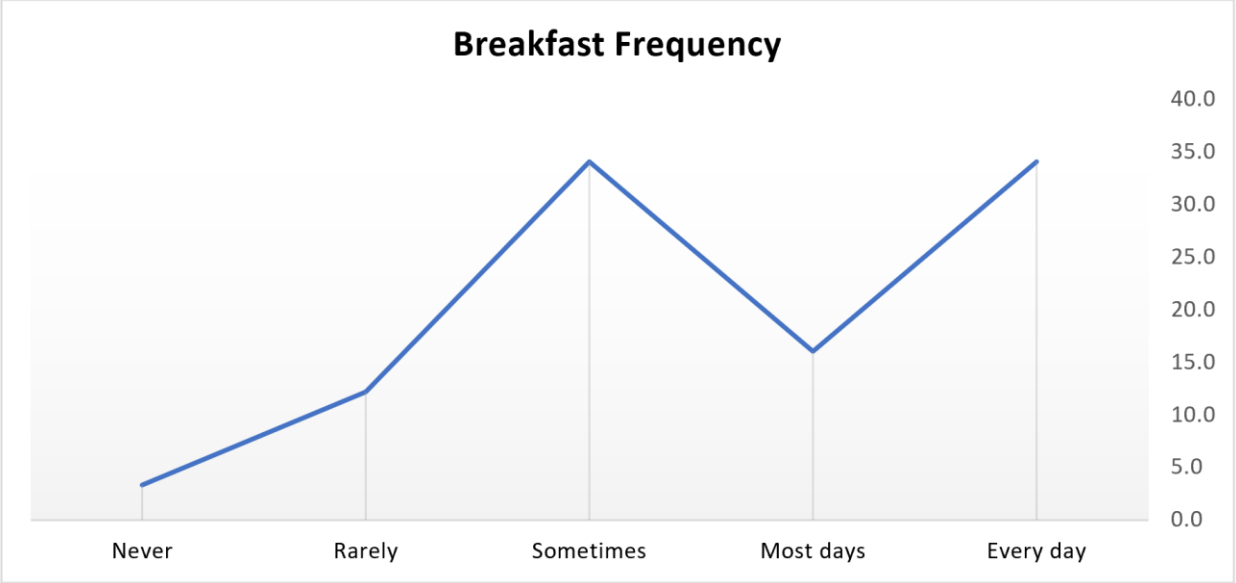

Figure 1: Breakfast frequecy among school students

The Figure 2 is the review of the reasons why students skip breakfast showed that 53% of students said they didn't have enough time, 32% said they were not hungry, and 10% said their families couldn't afford breakfast.

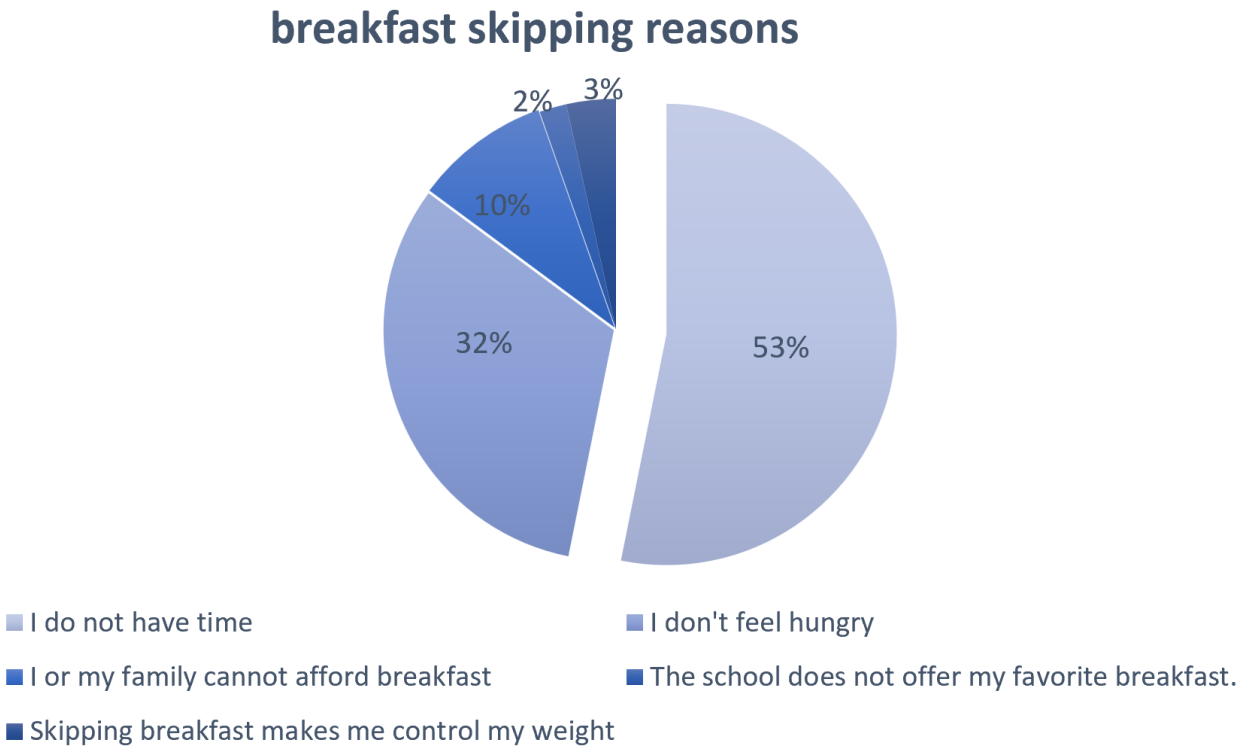

Figure 2: Breakfast skipping reasons among students

A substantial majority of students, 77%, said they ate breakfast at home, according to the survey. Just 4% of respondents ate their breakfast on school grounds, while 5% did so on the way to school. According to the survey results, students' breakfast eating habits are clear, showing a preference for particular food groups. A significant majority of students, 71.8%, reported eating basic cereals, especially bread, on a regular basis, highlighting their importance in the students' diet. Additionally, tea is an essential item with a considerably daily rate. In contrast, students' preference for leftover food with 33.2% was considerably low. Additional information from the study in (Table 1) showed that eggs, sugar of honey, fresh fruit of juice, and other sweets were occasionally included.

Table 1: Different Types of Breakfast Food

Type of breakfast food	***Everyday***	***Most days***	***Sometimes***	***Rarely***	***Never***
	N (%)	N (%)	N (%)	N (%)	N (%)
Plain Cereals and Bread	254(71.8)	59(16.7)	22(6.2)	12(3.4)	7(2.0)
Sugar or Honey	116(33.3)	58(16.7)	91(26.1)	31(8.9)	52(14.9)
Eggs (Boiled or Oiled)	21(6.1)	37(10.7)	140(40.3)	84(24.2)	65(18.7)
Fresh Fruit or Juice	22(6.5)	37(10.9)	100(29.4)	73(21.5)	105(30.9)
Confectionery (Chocolate, Cake, Jalibi, Jam)	17(5.0)	36(10.5)	121(35.3)	97(28.3)	68(19.8)
Dairy	45(13.1)	55(16.0)	120(34.9)	61(17.7)	59(17.2)
Leftover Food	35(10.1)	45(13.0)	87(25.1)	62(17.9)	115(33.2)
Tea or Coffee	209(60.9)	53(15.5)	38(11.1)	18(5.2)	25(7.3)
Chip, Boiled Potatoes, Bolani and Soup	28(8.0)	32(9.1)	118(33.5)	91(25.9)	80(22.7)
Water	181(52.3)	72(20.8)	35(10.1)	28(8.1)	27(7.8)
Other items	29(21.8)	22(16.5)	21(15.8)	12(9.0)	9(6.8)

In the study, students rated their breakfast food preferences based on five criteria: healthiness, affordability, preparation time, taste, and portability. And the scoring system from 1 to 5 used. The results showed a strong preference for healthy breakfast, which received 56.4% of rating 1. Affordability and preparation time are also important for students; it indicates that students have a need for cost-effective meal. Students rating for the importance of quickly prepared breakfast are influenced by morning constraints. On the other hand, students gave a rating of 5 for eating something on the way to school (43.6%). These insights into students' breakfast choices can help develop targeted nutritional programs and more details in Figure 3.

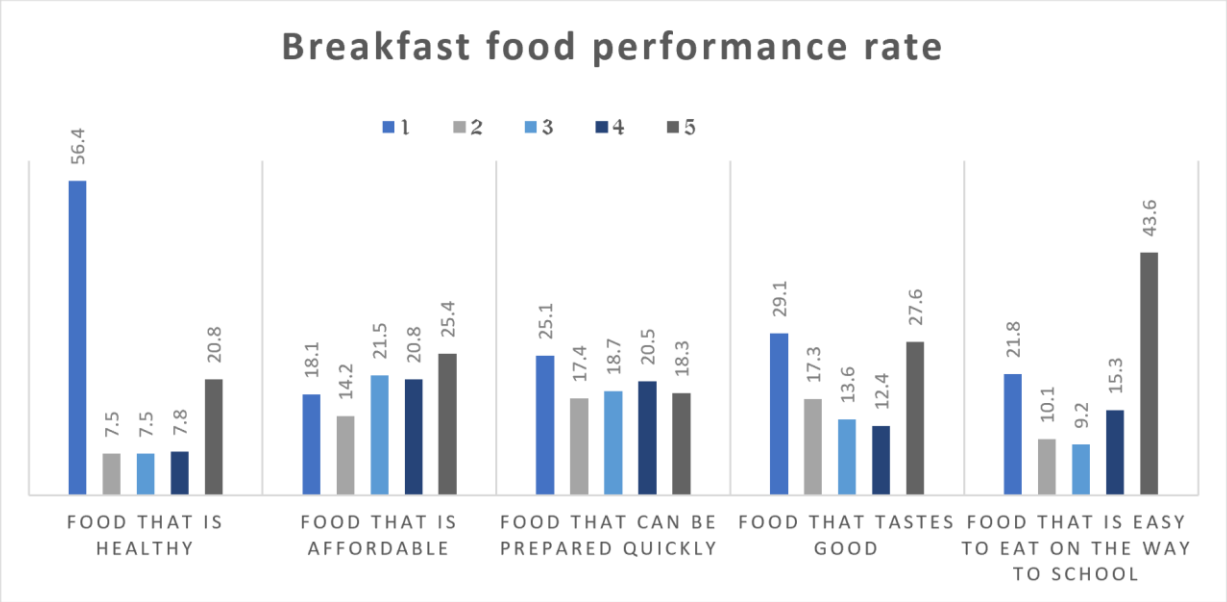

Figure 3: Breakfast food performance Rate among students

The survey of students was conducted to find out if the school could take action to encourage a healthy breakfast. Out of those who responded, 93 (25.8%) agreed that the school could support this project by holding seminars and having teachers educate students about the importance of breakfast. In contrast, 262 (72.6%) said that there was nothing the school could do to encourage students to eat a healthy breakfast. Economic factors may influence students' breakfast eating patterns, as seen by the somewhat positive correlation of 0.236 between breakfast habits and financial position.

Table 2 displays the Spearman's rho correlation coefficients, illustrating the relationship between students' breakfast habits and their academic performance. The result of the study shows a weak positive correlation (r=0.140, *P*=0.008) between breakfast habits and academic performance. Although the correlation between breakfast habits and average grade score was positive at 0.103, it was not statistically significant, indicated by a *P* level of 0.84. The economic factors may influence students' breakfast eating patterns, as indicated by the weak positive correlation (0.236) found between breakfast habits and economic status.

Table 2: Correlation between variables

Variables	***Correlation Coefficient (P)***	***P-value***	***N***
Breakfast Habit vs. Academic Performance	0.140*	0.008	360
Breakfast Habit vs. Average Grade Score	0.103	0.840	281
Economic Status vs. Breakfast Habit	0.236*	<0.001	356
Economic Status vs. Academic Performance	0.198*	<0.001	357
Economic Status vs. Average Grade Score	0.107	0.750	279

*Significant at α=0.05

Discussion

This cross-sectional analytical study aimed to investigate the relationship between breakfast consumption and academic performance among school students and there is a significant positive correlation between the regularity of breakfast consumption and the academic performance scale of school students. Students who ate breakfast consistently generally had better grades than those who ate less breakfast. The study does not a relationship the breakfast consumption frequency with the school grade, it means there that breakfast consumption is not related to the grade students are.

In comparison, Chen et al. looked at how many times per week students in fifth and eighth grade ate breakfast and how they influenced the scores of their subjects. Frequency Analysis shows that 71.3% of fifth graders and 59.8% of eight graders eat breakfast every week. In this study students are lower than that (34.1%) had breakfast every day. Chen's study found a positive correlation between breakfast frequency and academic performance in primary and secondary school students in Yang City (22). Chen's research used a more specific method to measure breakfast habits ،e.g., how many times and days a week students had breakfast ،while in this study breakfast habits were generally evaluated. Chen and colleagues also used the average scores of students as a measure of their academic performance, have been able to collect the students' grades accurately and correctly, but in this study almost one-third of the students did not report their grades, which caused the results to be incorrectly analyzed and also showed no relationship.

The students' scores are not related to the students' breakfast habits. Students' scores were considered as representative of academic performance; it is likely that the scores in self-report form students may have. This cross-sectional descriptive study was conducted among 829 elementary school students in Iran to find the relationship between breakfast nutrition status and academic performance in this study that the average scores of students did not show any relationship (23). In contrast to the studies of Boschloo et al., which used a cross-sectional survey design to collect data from 605 adolescents aged 11 to 18 who measured their academic performance using their average grade score. Breakfast habits were positively correlated with academic performance (P<0.01)(24).

If we look at the prevalence of breakfast skipping, in this study, only 3.3% had never had breakfast and 12.2% rarely had breakfast, obtained only from the students' reports, and a cross-sectional study conducted in Ethiopia in 2020, 422 high school students aged 14-19 yr were randomly selected. The aim of this study was to evaluate breakfast and academic performance of school students in rural Hiduabu region. The prevalence of breakfast elimination was 41.5%. The results of this study summarize that skipping breakfast is directly linked to worse academic performance (2). This study also aimed to find out the prevalence of breakfast deletion ، which indicates the high prevalence of breakfast elimination in this rural area ،and the present study has been conducted among urban population and it is possible that demographic differences in the study population cause differences in results because habits and culture are different in rural and urban areas (2). The study, conducted in Ogon, Nigeria among high school students, included 800 students. This association was analyzed by Pearson correlation and the results of these findings showed a strong positive and significant relationship between breakfast habits. The results of this study have found a correlation

between breakfast and academic performance with a correlation coefficient (0.614) with a significant limit (P<0.05) which is the number of participants (25).
The results of economic status as a moderating or mediator variable on students' academic performance and breakfast habits have been studied by Gao et al. on how Chinese 15-year-olds often ate breakfast per week and how it affects the scores of some of their subjects(26). The interaction between breakfast and socioeconomic status has significant predictive effects on their academic performance (b=0.101, t=2.557, P<0.05) and this study also found that breakfast consumption has a significant effect on academic performance when their socioeconomic status is high. This study has recorded economic status in the form of self-report into four categories that correlated. It has been investigated to the independent and in independent variable of this research and found that they have a moderating relationship. Gao's study has examined the economic situation more precisely and as a moderating or genetic variable, which showed that the economic situation can be moderated.

Conclusion

There was a slight positive relationship between breakfast eating behaviors and the academic performance scale. This relation was not found in average grade scores, although it did not remain in trend. These results are derived from self-reported data that has potential for recall and social desirability bias. The socio-economic status of adolescent boys was a significant moderating variable which showed highly significant positive relationship with breakfast eating behavior and its effect on academic achievement. This issue shows the complicated relationship between socioeconomic status, diet and education.

Conflict of interest

The authors declare that there is no conflict of interests.

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