Correlation of Breakfast Consumption Frequency and Grade Point Average in Preclinical Medical Students

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Abstract:
Background: Due to its nutritious, metabolic, and overall energy-providing benefits, studies have emphasized the value of breakfast, resulting in support of breakfast as “the most important meal of the day,” and subsequently, essential for academic success. However, limited research exists on the impact of habitual breakfast consumption on medical students. How does eating breakfast contribute to the academic success and well-being of medical students?

Methods: A voluntary survey was distributed to preclinical medical students to gather information on their breakfast-eating habits as well as other indicators of well-being, including mental health, physical health, and stress. Participants indicated the average number of times per week they consumed breakfast. They also recorded the likelihood of eating breakfast on the day of an exam and various components of well-being on a five-point Likert scale. Subjects also provided student identification (ID) numbers. To measure academic success, grade point averages (GPAs) were then extracted using each student’s ID number. A correlation analysis was performed between the breakfast-eating habits of medical students and their GPA.

Results: 121 surveys met the inclusion criteria. A correlation analysis showed that frequency of eating breakfast was positively correlated with GPA (r=0.35, p<0.001). Eating breakfast on the day of an exam was also positively correlated with GPA (r=0.32, p<0.001). Eating breakfast had no significant correlation with indices of well-being.

Conclusion: Consistently eating breakfast may contribute to greater academic performance among medical students. However, eating breakfast appears to have no impact on well-being. Based on this research, eating breakfast regularly may help preclinical medical students boost their academic performance.

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Introduction:
Breakfast is frequently regarded as the most important meal of the day. American schoolchildren are taught that breakfast is an integral component of a healthy lifestyle. Eating breakfast is known to contribute significantly to dietary nutrition adequacy1 and micronutrient intake.2 Children and adolescents have been the focus of the vast majority of studies on breakfast consumption and academic performance. Of this research, the bulk has found that breakfast consumption is positively correlated with cognitive function and academic performance.2-5 Additionally, breakfast consumption has been associated with higher standardized test scores among elementary school students.6 Schoolchildren who eat breakfast have been shown to have a superior ability to focus and maintain attention than those who do not.7,8

That said, there is little information regarding the breakfast-eating habits of adult graduate students. Specifically, the authors could not find any studies in the scientific literature on breakfast consumption among United States (US) medical students. One study from Ghana reported that medical students often skipped breakfast at the detriment to their
medical studies. However, this study did not measure any quantitative markers for academic performance. Many other studies have shown that non-US medical students frequently skip breakfast. The prevalence of breakfast consumption among US medical students has not been reported previously in the literature. Do US medical students similarly frequently skip breakfast? If so, what effect does this have on their academic performance? This study seeks to answer those two questions.

In addition, there is a poor understanding of the effect of breakfast consumption on medical student well-being. One study found that skipping breakfast was associated with fatigue in medical students. Another study demonstrated that subjective chronic fatigue was associated with poorer academic performance in schoolchildren. Sajjad et al found that medical student breakfast consumers had a lower BMI than those who skipped breakfast, whereas another study found that skipping breakfast was not associated with a difference in BMI. Clearly, there exists scattered data on the effect of breakfast consumption on some indices of medical student well-being, but there is no clear consensus on the role of breakfast consumption on the physical health, mental health, and stress levels of medical students.

In summary, there is a dearth of research on the effect of regular breakfast consumption on academic success and well-being of medical students. In this study, a questionnaire was utilized to assess first- and second-year preclinical medical students’ breakfast-eating habits, academic success, and various aspects of their well-being, including physical health, mental health, and stress. This study sought to identify the relationship, if any, between breakfast consumption and academic performance and overall well-being among US medical students. We hypothesized that regular breakfast consumption is positively correlated with academic performance, mental health, physical health and negatively correlated with stress.

Methods:
The design of this study was carried out from August to September of 2018. The study subsequently received institutional review board (IRB) approval on October 30th, 2018. First- and second-year medical students completed the survey form in November of 2019. The data was later compiled on January 17th, 2019, after the completion of the Fall semester of classes. Shortly thereafter, data analysis began on February 1st, 2019.

Participants:
Study participants included first- and second-year (preclinical) medical students at the campus of an urban osteopathic medical school in the USA. The survey was issued in November 2018 as the end of the Fall semester approached. At that time in the academic year, first-year students were on the cusp of completing one semester of medical school and second-year students had completed over three semesters of medical school. The survey employed a convenience sampling protocol to maximize the participation rate from students present on campus. Informed consent was provided verbally and with a cover letter stating that survey participation was both voluntary and anonymous. Student identification (ID) numbers were recorded. However, student researchers did not gather student names and could not associate student ID numbers to the corresponding student. The principal investigator (PI) was the only person with the ability to correlate student IDs, names, and GPAs. The PI was a full-time medical school faculty member who had completed the Collaborative Institutional Training Initiative (CITI) Program. The Institutional Review Board for the Protection of Human Subjects approved this study (HSIRB #. 1798E_). Between both class years, 130 surveys were completed. Of these surveys, 121 met the inclusion criteria as nine (9) surveys were incomplete and not included in the data analysis.

Measures:
This was a descriptive cross-sectional study. An original survey was created to determine both breakfast habits of medical students and their overall well-being. Students were asked to rate the number of times they ate breakfast per week (0-7). Additionally, a five-point Likert scale rating (1-5) was created specifically to measure other parameters of their diet and well-being. To get a better understanding of students’ breakfast-eating habits, they were asked to rate their likelihood of eating breakfast on the day of an exam. To measure well-being, students were asked to rate their mental health, physical health, stress, and focus. The rating scale
employed the following categories: 1) worst, 2) below average, 3) average, 4) above average, 5) best. For clarity, the scales were worded slightly differently between categories. The survey was handed out on paper in English.

Data Collection:

The survey was issued before the start of lecture at the urban campus of an osteopathic medical school in the USA; students were allowed ten (10) minutes to complete the survey. The survey was administered on two separate occasions, once to the first-year class and a second time to the second-year class. The entire group of first- and second-year medical students that were present at the scheduled lecture were invited to participate (n=162). Second-year students took the survey on November 8th, 2018 (n=59) and first-year students completed the survey on the following day, November 9th, 2018 (n=71). Some students chose not to participate and some were absent from lecture. These students were thus not included. No financial compensation nor other incentive was provided, and the survey was completely voluntary.

Data Analysis:

Data from the survey were manually entered into an electronic spreadsheet using a licensed version of Microsoft Excel, version 2016 (Microsoft Corporation, Redmond, WA, USA). The principal investigator added each student’s GPA into a column adjacent to their ID number. This data was used to calculate the frequency of breakfast consumption and perform regression analysis. The data was then transferred to a trial version of GraphPad Prism 8 (GraphPad Software, Inc., San Diego, CA, USA) for correlation analysis and graph creation.

Results:

The average number of breakfasts per week were similar between both first- and second-year students, 4.54 days of the week and 4.29 days of the week, respectively; the likelihood of eating breakfast on the day of an exam also were similar between both first- and second-year students, 3.98 and 3.76, respectively, on a scale of 1-5. The averages for each parameter measured are shown in Table 1.

![Table 1: Averages of the first-year, second-year, and combined survey results and GPAs.](image)

| Survey Results          | 1st year | 2nd year | Combined: |
|-------------------------|----------|----------|-----------|
| Number of Breakfasts Per Week: | 4.54     | 4.29     | 4.43      |
| Likelihood of Eating Breakfast on the Day of an Exam: | 3.98     | 3.76     | 3.85      |
| GPA:                    | 3.23     | 3.26     | 3.24      |
| Physical Health:        | 3.49     | 3.41     | 3.45      |
| Mental Health:          | 3.53     | 3.41     | 3.48      |
| Stress:                 | 3.73     | 3.45     | 3.61      |
| Focus:                  | 3.24     | 3.22     | 3.23      |
| n                       | 70       | 51       | 121       |

Breakfast number of times per week is out of 7; all others are out of 5.

Eighty-four of 121 students (69.42%) reported skipping breakfast at least once per week, and 37 of 121 students (30.58%) reported eating breakfast seven days per week. 65 of 121 students (53.72%) stated they always eat breakfast on the day of an exam. 43 out of 121 students (35.55%) skip breakfast most days of the week (4-7 breakfast skips per week). Data is in Table 2.

![Table 2: Breakfast habits of medical students.](image)

| Number of Breakfasts/ week | n | %    | Likelihood of eating breakfast on the day of an exam | n | %    |
|----------------------------|---|------|-----------------------------------------------------|---|------|
| 0                          | 11| 9.09 | 1/5                                                 | 15| 12.40|
| 1                          | 7 | 7.59 | 2/5                                                 | 14| 11.57|
| 2                          | 12| 9.92 | 3/5                                                 | 10| 8.26 |
| 3                          | 13| 10.74| 4/5                                                 | 17| 14.05|
| 4                          | 13| 10.74| 5/5                                                 | 65| 53.72|
| 5                          | 13| 10.74| Total                                               | 121| 100  |
| 6                          | 15| 12.40|                                                     |    |      |
| 7                          | 37| 30.58|                                                     |    |      |
| Total                      | 121| 100 |                                                     |    |      |

Correlation analysis between the number of breakfasts per week and other parameters for all respondents was performed. Predictably, the number of breakfasts per week is correlated with likelihood of...
eating breakfast on the day of an exam ($r=0.57$, $p<0.001$). Also, correlation analysis demonstrated that the number of breakfasts per week and GPA are positively correlated ($r=0.32$, $p<0.001$). The correlation between number of breakfasts per week and physical health, mental health, stress, and focus does not show a significant difference. See Table 3.

### Table 3: Correlation analysis between the number of breakfasts per week and other survey responses

| Correlation Analysis of the number of breakfasts per week | $r$  | $p$   |
|---------------------------------------------------------|-----|------|
| Likelihood of eating breakfast on the day of an exam    | 0.57| <0.001|
| GPA                                                     | 0.35| <0.001|
| Physical health                                         | 0.06| 0.53 |
| Mental health                                           | -0.02| 0.86 |
| Stress                                                  | 0.09| 0.34 |
| Focus                                                   | 0.02| 0.85 |
| $n$                                                     | 121 |      |

Correlation analysis demonstrated that the likelihood of eating breakfast on the day of an exam is positively correlated with GPA ($r=0.35$, $p<0.001$). The likelihood of eating breakfast on the day of the exam is not significantly correlated with physical health, mental health, stress, or focus. See Table 4.

### Table 4: Correlation analysis between likelihood of eating breakfast on the day of an exam with other survey responses.

| Correlation Analysis of the likelihood of eating breakfast on the day of the exam | $r$  | $p$   |
|-----------------------------------------------------------------------------------|-----|------|
| Average number of breakfasts per week                                             | 0.57| <0.001|
| GPA                                                                                | 0.32| <0.001|
| Physical health                                                                    | 0.01| 0.93 |
| Mental health                                                                      | 0.05| 0.56 |
| Stress                                                                             | 0.03| 0.76 |
| Focus                                                                              | 0.08| 0.39 |
| $n$                                                                                | 121 |      |

The cumulative impact of both number of breakfasts per week and likelihood of eating breakfast on the day of the exam had the largest effect on GPA ($R^2=.15$, $p<.001$). Simple linear regression analysis demonstrated that 12% of the variation in GPA was explained by the effect of eating breakfast ($R^2=.12$, $p<.001$). The likelihood of eating breakfast on the day of an exam was also positively related to GPA ($R^2=.10$, $p<.001$). Other linear regression analyses were not statistically significant.

**Discussion:**

This study is one of the first observational cross-sectional surveys of the breakfast consumption habits of US medical students. A significant finding was the positive correlation between correlation between the regularity of breakfast consumption and GPA. Although the scientific literature on the subject of breakfast consumption among medical students is sparse, this finding is consistent with a few international studies. For example, Rehman et al found a positive association between regular breakfast consumption and academic performance among Pakistani university students. Ackuaku-Dogbe similarly found that Ghanaian medical students who skipped breakfast performed poorer academically. In addition, our data is consistent with previous studies on school children, which have shown that breakfast consumption has a positive effect on cognitive and academic performance. Nevertheless, there is little information in the literature on the effect of eating breakfast on the academic success of adult learners, such as graduate and medical students. Further research should be done in this area to determine the impact of breakfast consumption on academic performance among adults.

We also found a moderate positive correlation between the likelihood of eating breakfast on the day of an exam and GPA. Just above half of the students (53.72%) surveyed stated that they always eat breakfast before an exam. We could not find other studies on the effect of eating breakfast before an exam among adult learners with which we could compare this data. It is unclear whether this positive correlation is related to the regularity of breakfast consumption or the actual effects of eating before an exam. With that in mind, previous studies have shown that children who have eaten breakfast tend to score higher on standardized exams. Additionally, Galioto, et al found that eating...
breakfast slightly improves memory, especially delayed recall. Wesnes et al had similar findings in children. Further investigation is required to confidently establish the relationship between eating breakfast prior to an exam and academic performance among medical students.

In our study we found many similarities between the prevalence of breakfast skipping in our study on US medical students compared to results of other studies in other countries. We found that about two-thirds (69.42%) of students skip breakfast at least once a week. This number is consistent with Akuaku-Dogbe et al’s finding that 71.92% of Ghanian medical students skipped breakfast at least once during the school week. In our study 35.54% of students skipped breakfast most days (4-7) of the week, which is similar with another study’s finding that 42% of Saudi Arabian medical students skipped breakfast most days of the week. Also, in the United Kingdom (UK) Sprake et al found that approximately 30% of UK university students skipped breakfast most days of the week. Sun et al found that 28.9% of Mongolian Chinese medical students skipped breakfast five or more days a week and we found a similar prevalence of 24.79%. The similarity of breakfast skipping prevalence across various different cultures is noteworthy. Perhaps it relates to the universality of the increased workload and stress of medical education.

Our study did not find any correlation between regular consumption of breakfast and reported mental health, physical health, and stress. This finding was somewhat unexpected as we hypothesized that regular breakfast consumption would be an indicator of a healthy lifestyle. Research has shown that regular breakfast consumption decreases likelihood of type 2 diabetes and is associated with decreased BMI. Lesani, et al showed that breakfast frequency and happiness are positively correlated in college students. Many studies have shown that medical students have poor diets despite awareness of the importance of healthy eating habits. Despite this, there is very little research on the effect of diet on the well-being of medical students. Furthermore, there is less research on the role of breakfast on medical student well-being.

There are some limitations to this study. The first limitation is we did not include breakfast content in our study design. Some studies have found that breakfast composition has an impact on academic performance and lower glycemic index foods may be better for cognition. Secondly, we did not explore differences in breakfast skipping between sexes. Fiore, et al found that males skipped breakfast more often than females among Italian medical students. Given this difference, we hope to perform further testing regarding the differences in breakfast-eating habits between male and female medical students. Finally, this is a descriptive cross-sectional study. We were able to identify prevalence and correlation, but unable to control for confounding variables and demonstrate causality. For example, perhaps consistently eating breakfast is a reflection of better organization, time-management, socioeconomic status, or overall dietary status. Based on the results of this study, further studies should be designed in a more comprehensive fashion with the inclusion of third- and fourth-year medical students, and a control group of non-medical students.

Table 1 demonstrates declining numbers of breakfast per week, likelihood of eating breakfast on the day of an exam, physical health, mental health, and focus between first- and second-years. Although none of these changes are statistically significant, it is possible that these differences could represent the first inkling of burnout during medical education.

Medical student burnout is a significant issue as it is highly prevalent during medical training. Future studies may explore the differences in breakfast consumption and well-being across all four years of medical school for signs of burnout.

Overall, we found that frequency of breakfast consumption is positively correlated with GPA among first- and second-year medical students. It appears that breakfast consumption contributes to the academic performance of medical students. Eating breakfast may constitute part of an overall healthy lifestyle regimen that medical schools can recommend to students for academic success. However, much more research is required to identify the lifestyle habits that contribute to well-being and academic performance in medical school.

Conclusion:

Both the frequency of breakfast consumption and likelihood of consuming breakfast on the day of an exam were positively correlated with GPA among preclinical US medical students. Consistent with the
academic literature on children, eating breakfast may play an important role in the academic performance of adult learners. Eating breakfast did not have any correlation with the students’ mental health, physical health, or well-being. Further studies are required to determine a causal effect between effective dietary habits of medical students and academic performance.

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References:
1. Rampsaud, G. C., Pereira, M. A., Girard, B. L., Adams, J., & Metzl, J. D. (2005). Breakfast Habits, Nutritional Status, Body Weight, and Academic Performance in Children and Adolescents. Journal of the American Dietetic Association, 105(5), 743–760. Available from DOI: 10.1016/j.jada.2005.02.007
2. Adolphus, K., Lawton, C. L., & Dye, L. (2019). Associations Between Habitual School-Day Breakfast Consumption Frequency and Academic Performance in British Adolescents. Frontiers in Public Health, 7. Available from DOI: 10.3389/fpubh.2019.00283
3. Burrows, T., Goldman, S., Pursey, K., & Lim, R. (2016). Is there an association between dietary intake and academic achievement: a systematic review. Journal of Human Nutrition and Dietetics, 30(2), 117–140. Available from DOI: 10.1111/jhn.12407
4. Gajre, N. S., Fernandez, S., Balakrishna, N., & Vazir, S. (2008). Breakfast Eating Habit and its Influence on Attention-concentration, Immediate Memory and School Achievement. Indian Pediatrics, 45(10), 824–828. Retrieved from https://www.indianpediatrics.net/
5. Littlecott, H. J., Moore, G. F., Moore, L., Lyons, R. A., & Murphy, S. (2015). Association between breakfast consumption and educational outcomes in 9–11-year-old children. Public Health Nutrition, 19(9), 1575–1582. Available from DOI: 10.1017/s1368980015002669
6. Prome, L. T., Steger, F. L., Schubert, M. M., Lee, J., Willis, E. A., Sullivan, D. K., … Donnelly, J. E. (2015). Breakfast Intake and Composition Is Associated with Superior Academic Achievement in Elementary Schoolchildren. Journal of the American College of Nutrition, 34(3), 326–333. Available from DOI: 10.1080/07315724.2015.1048381
7. Wesnes, K. A., Pincock, C., Richardson, D., Helm, G., & Hails, S. (2003). Breakfast reduces declines in attention and memory over the morning in schoolchildren. Appetite, 41(3), 329–331. Available from DOI: 10.1016/j.appet.2003.08.009
8. Wesnes, K. A., Pincock, C., & Scholey, A. (2012). Breakfast is associated with enhanced cognitive function in schoolchildren. An internet based study. Appetite, 59(3), 646–649. Available from DOI: 10.1016/j.appet.2012.08.008
9. Akuaku-Dogbe, E., Abialudo, B. (2014). Breakfast Eating Habits among Medical Students. Ghana Medical Journal, 48(2), 66. Available from DOI: 10.4314/gmj.v48i2.2
10. Gawlikowska-Sroka, A., Dziołowski-Baran, E., Szczerowski, J., & Szałowska-Bojarun, M. (2019). An evaluation of the dietary habits of English programme medical students in their first year of studies. Pomeranian Journal of Life Sciences, 65(4). Available from DOI: 10.21164/pomjlife.634
11. Mirghani, H. O., Albalawi, K. S., Alali, O. Y., Albalawi, W. M., Albalawi, K. M., Aljohani, T. R., & Albalawi, W. S. (2019). Breakfast skipping, late dinner intake and chronotype (eveningness-morningness) among medical students in Tabuk City, Saudi Arabia. Pan African Medical Journal, 34. Available from DOI: 10.11604/pamj.2019.34.178.16250
12. Sajjad, A., Anwer, M., Anwer, S., & Zaidi, S., Hasan, A. (2014). Missing Breakfast, Sleep and Exercise: Are You Skipping Out Years of Life. Journal of Nutrition and Health Sciences, 1(3). Available from DOI: 10.15744/2393-9060.1.308
13. Sun, J., Yi, H., Liu, Z., Wu, Y., Bian, J., Wu, Y., … Yang, Y. (2013). Factors associated with skipping breakfast among Inner Mongolia Medical students in China. BMC Public Health, 13(1). Available from DOI: 10.1186/1471-2458-13-42
14. Lee, S. M., Lee, S. G., Lee, J. E., Kong, E. H., & Choi, J. S. (2009). Complaints of Fatigue and Dietary Life in Medical Students. Korean Journal of Family Medicine, 30(11), 880. Available from DOI: 10.4082/kjfm.2009.30.11.880
15. Tanaka, M., Mizuno, K., Fukuda, S., Shiughara, Y., & Watanabe, Y. (2008). Relationships between dietary habits and the prevalence of fatigue in medical students. *Nutrition*, 24(10), 985–989. Available from DOI: 10.1016/j.nut.2008.05.003

16. Nagane, M. (2004). Relationship of Subjective Chronic Fatigue to Academic Performance. *Psychological Reports*, 95(1), 48–52. Available from DOI: 10.2466/pr0.95.1.48-52

17. Liyanage, G., Hl, S., Ca, W., Mkhn, K., & Tki, N. (2017). Breakfast Habits and Its Relationship to Body Mass Index, Cognitive Function among Final Year Medical Students. *Journal of General Practice, 05*(03). Available from DOI: 10.4172/2329-9126.1000311

18. Rehman, R., Zafar, A., Mohib, A., Hussain, M., & Ali, R. (2018). Self-reported academic performance in relation to health behaviours among Bahria University students. *Journal of the Pakistan Medical Association, 68*(2), 195–199. Retrieved from https://www.ipma.org.pk/

19. Galioto, R., & Spitznagel, M. B. (2016). The Effects of Breakfast and Breakfast Composition on Cognition in Adults. *Advances in Nutrition, 7*(3). Available from DOI: 10.3945/an.115.010231

20. Sprake, E. F., Russell, J. M., Cecil, J. E., Cooper, R. J., Grabowski, P., Pourshahidi, L. K., & Barker, M. E. (2018). Dietary patterns of university students in the UK: a cross-sectional study. *Nutrition Journal, 17*(1). Available from DOI: 10.1186/s12937-018-0398-y

21. Dyrbye, L. N., Harper, W., Durning, S. J., Moutier, C., Thomas, M. R., Massie, F. S., … Shanafelt, T. D. (2011). Patterns of distress in US medical students. *Medical Teacher*, 33(10), 834–839. Available from DOI: 10.3109/0142159x.2010.531158

22. Bi, H., Gan, Y., Yang, C., Chen, Y., Tong, X., & Lu, Z. (2015). Breakfast skipping and the risk of type 2 diabetes: a meta-analysis of observational studies. *Public Health Nutrition, 18*(16), 3013–3019. Available from DOI: 10.1017/s1368946215000327

23. Ba, T., Liu, Z., Guo, W., Eshita, Y., & Sun, J. (2013). Comparison of breakfast consumption in rural and urban among Inner Mongolia Medical University students. *Open Journal of Preventive Medicine, 03*(04), 342–346. Available from DOI: 10.4236/ojpm.2013.34046

24. Lesani, A., Mohammadpourasl, A., Javadi, M., Esfeh, J. M., & Fakhari, A. (2016). Eating breakfast, fruit and vegetable intake and their relation with happiness in college students. *Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity, 21*(4), 645–651. Available from DOI: 10.1007/s40519-016-0261-0

25. Al-Qahtani, M. H. (2016). Dietary Habits of Saudi Medical Students at University of Dammam. *International Journal of Health Sciences, 10*(3), 335–344. Available from DOI: 10.12816/0048729

26. Alexandra Nola, I., Jelinic, J. D., Matinic, D., Pucarkin-Cvetkovic, J., Bergman Markovic, B., & Senta, A. (2010). Differences in Eating and Lifestyle Habits