

Study Habits and Academic Performance Among 2nd Year Medical Students

Israt Jahan Chowdhury^{1*}, Munmun Hossain², Swarna Paul³

ARTICLE INFO

Received: 4 May 2026

Accepted: 10 May 2026

Published Online: 18 May 2026

DOI: 10.5281/zenodo.20263008

Volume: 9, Number: 3, Page: 87-92

e-ISSN: 2789-5912

ISSN: 2617-0817

*Corresponding author



ABSTRACT

Background: Medical students' academic performance is greatly influenced by study habits, but a comprehensive understanding of some behavioral trends and their implications on examination performance is limited. This study aimed to explore the relationship between various study habits and academic performance among second-year medical students. **Methods & Materials:** A prospective study was conducted from October to December 2024 at Shahabuddin Medical College and Hospital, Dhaka, Bangladesh. Seventy-three second-year medical students were enrolled through convenience sampling. Structured questionnaires were used to collect data on demographic information, study habits (everyday study time, frequency of study, time of day for study, approach to study, revision process, degree of distraction, and rating of concentration), and recent exam results. Statistical analysis was conducted on SPSS version 26, using chi-square tests, Pearson's correlation, and multivariable logistic regression. **Results:** 73.8% of 73 participants (mean age 20.93±1.48 years, 69.9% female) had passed their recent exams. Concentration level had a moderate positive correlation with exam performance ($r=0.34$, $p=0.004$), whereas frequency of distraction had a significant negative correlation ($r=-0.27$, $p=0.023$). Multivariable analysis had significant predictors: >2 hours of daily study ($OR=1.45$, $p=0.032$), frequency of ≥5 days/week study ($OR=1.72$, $p=0.041$), high concentration ($OR=3.25$, $p=0.016$), low distraction ($OR=0.48$, $p=0.029$), and reading textbooks ($OR=2.10$, $p=0.021$). **Conclusion:** Concentration level, distraction management, effective study time, consistency in studying, and reading textbooks are very significant predictors of academic

performance in medical students. These findings provide evidence-based recommendations for the development of good study habits and academic support programs in medical school.

Keywords: Study habits, Academic performance, Medical students, Concentration & distraction

1. Assistant Professor, Department of Physiology, Ad-din Women's Medical College, Dhaka, Bangladesh (ORCID: 0009-0006-4580-045X)
2. Associate Professor (C.C.), Department of Physiology, Shahabuddin Medical College, Dhaka, Bangladesh
3. Medical Officer, Department of Microbiology, Chittagong Medical College, Chattogram, Bangladesh

INTRODUCTION

Medical school involves rigorous mental preparation and effective study methods to ensure successful learning outcomes and professional proficiency. Academic adjustment in medical school presents particular challenges, since students must recreate study habits in a way that accommodates massive amounts of complex information into compressed time frames^[1]. The association between study habits and academic achievement is central to students and educators in optimizing learning approaches and educational performance. Study habits consist of a broad array of behaviors, including time management, study frequency, method of learning, setting conditions, and cognitive strategy during learning^[2]. Past studies have indicated that study habits are the most significant predictor of academic performance and have a unique contribution to students' academic success^[3]. The complexity of medical curricula demands that it be imperative to extensively examine what specific study behavior is most significantly related to academic success. Attention control and focus are integral components of effective study skills. It is quite a common grievance of medical students to get distracted during prolonged study hours, particularly when faced with challenging theoretical topics and clinical knowledge^[4]. Students perceived that the

presence of laptops and mobile phones in the classroom can affect their concentration and learning^[5]. The impact of distraction on learning has been more urgent with the advent of the digital age, when a number of sources of disruption compete for student attention. Gender differences in the practice of learning and performance have been identified in numerous varied educational contexts. There is evidence that women medical students learn in other ways compared to men, with subsequent implications for academic performance^[6]. A need exists to have insight into these differences to construct inclusive education strategies to meet the needs of all learners. Study duration and frequency are important aspects of study preparation. While some students require intense, long-duration study sessions, others require distributed learning modes in the form of more frequent, yet shorter study sessions^[7]. The right trade-off between study frequency and intensity is an ongoing area of research, particularly within the pressure cooker environment of medical school. Study method preferences of medical students are very varied, ranging from the traditional textbook reading to multimedia, group discussions, and problem-based learning approach^[8]. Highest-performing students in the third-third were less likely to utilize them at all in the case of study aids^[9]. The effectiveness of different study methods can

be based on the learning styles of the individuals, the curriculum, and the assessment types. The relationship between study skills and examination performance has been investigated extensively, and results remain inconsistent by level of education and student group^[10]. Some have demonstrated strong relationships between particular study activities and grades, while others suggest more intricate relationships mediated by setting-specific variables^[11]. This incoherence highlights the need for institution-specific studies informing evidence-based practice. Since there is very little research work conducted on the study habits of medical students in Bangladesh, and optimizing academic performance has major importance in medical education, the study aimed to determine the correlation between various study habits and academic performance of second-year medical students. The findings will guide the development of evidence-based study strategies and academic aid programs that are directly applicable to the interests of medical students in the same academic settings.

METHODS & MATERIALS

This prospective study was conducted at Shahabuddin Medical College and Hospital, Dhaka, Bangladesh, during the period of October 2024 to December 2024. A total of 73 second-year medical students were

enrolled using a convenience sampling technique. Informed consent was obtained from all participants before data collection. Data were gathered through a structured questionnaire that included demographic information (age, sex, religion, and ethnicity), study-related habits (daily study hours, study days per week, preferred time, place, and methods of study, revision practices, fixed schedule, distraction frequency, and concentration level), and their most recent examination results (pass/fail). The questionnaire was pre-tested for clarity and consistency before administration.

Statistical analysis

All collected data were entered and analyzed using SPSS version 26. Continuous variables such as age were expressed as mean ± standard deviation (SD), while categorical variables such as

sex, religion, ethnicity, study hours, study days, study methods, revision practice, distraction, and concentration were presented as frequencies and percentages. Associations between categorical variables and examination results were evaluated using the chi-square test. Pearson’s correlation coefficient was applied to measure the strength of association between study habits and exam performance. To identify independent predictors of academic performance, binary logistic regression was performed. Univariate analyses were conducted for each variable, followed by a multivariable logistic regression model adjusting for potential confounders. Odds ratios (OR) with 95% confidence intervals (CI) were calculated, and a p-value of <0.05 was considered statistically significant. Results were illustrated using tabular presentations, a forest plot for regression findings, and graphical representations such

as bar charts, boxplots, and a correlation matrix.

RESULTS

Table I represents the demographic distribution of the study participants. The mean age was 20.93 ± 1.48 years, a fairly homogeneous age group of second-year medical students. There were 69.9% female students, indicating that higher female enrollments are common in medical schools. The religious composition was dominated by Muslim students (82.2%), followed by Hindu (13.7%), Christian (2.7%), and Buddhist (1.4%) students. In terms of ethnicity, 72.6% were Bangladeshi, 20.5% Indian, and 6.8% Kashmiri, indicating the multicultural profile of the students. The population diversity provides a good sample to establish study habits among different cultural and religious groups of medical students.

Table I
Distribution of Study Population Based on Basic Characteristics (n=73).

Basic Characteristics	Category	Frequency (n)/Mean±SD	Percentage (%)
Age group	Mean±SD	20.93 ± 1.48	
Sex	Male	21	28.8
	Female	51	69.9
Religion	Muslim	60	82.20
	Hindu	10	13.70
	Christian	2	2.73
	Buddhist	1	1.36
Ethnicity	Bangladeshi	53	72.60
	Indian	15	20.54
	Kashmir	5	6.84

Table II demonstrates participants' study habits across different dimensions. 60.3% of the students studied for 3-4 hours a day, 52.1% of whom studied 5-6 days a week, indicating moderate but consistent study habits. Evening (38.4%) and late night (37.0%) were the most common times for study, and home (67.1%) was the most

common location for study. Reading textbooks was the most frequent mode of choice (86.3%), followed by discussion groups (50.7%). Strikingly, 98.6% reported frequent revision before exams, and regular fixed study schedules were followed by all the students. In the presence of distractions, 37.0% perceived this to happen at times, and

34.2% reported frequent distractions. Self-reported levels of concentration were largely poor (43.8%) or good (46.6%), while only 5.5% rated themselves excellent. Academic performance showed a 73.8% pass rate in recent exams.

Table II
Distribution of Study Population Based on Study Habits (n=73).

Study Habits	Category	Frequency (n)	Percentage (%)
Study hours per day	<1 hour	5	6.8
	1-2 hours	13	17.8
	3-4 hours	44	60.3
	>4 hours	11	15.1
	1-2 days	3	4.1
	3-4 days	9	12.3
	5-6 days	38	52.1
	everyday	23	31.5
Time generally likes to study	Early morning	11	15.1
	Afternoon	1	1.4
	Evening	28	38.4
	Late night	27	37.0
Place of Study	Library	15	20.5
	Home	49	67.1
	Hostel	25	34.2

	Coffee shop/Other	2	2.7
Preferred study method	Reading textbooks	63	86.3
	Watching videos	24	32.9
	Group discussion	37	50.7
	Solving practice questions	14	19.2
Revise regularly before exams.	-	72	98.6
Fixed study schedule	-	73	100.0
Distraction while studying	Rare	7	9.6
	Sometimes	27	37.0
	Often	25	34.2
	Always	12	16.4
Self-rating of concentration level during study	Very Poor	3	4.1
	Poor	32	43.8
	Good	34	46.6
	Excellent	4	5.5
Result of the most recent result	Pass	54	73.80
	Fail	30	41.10

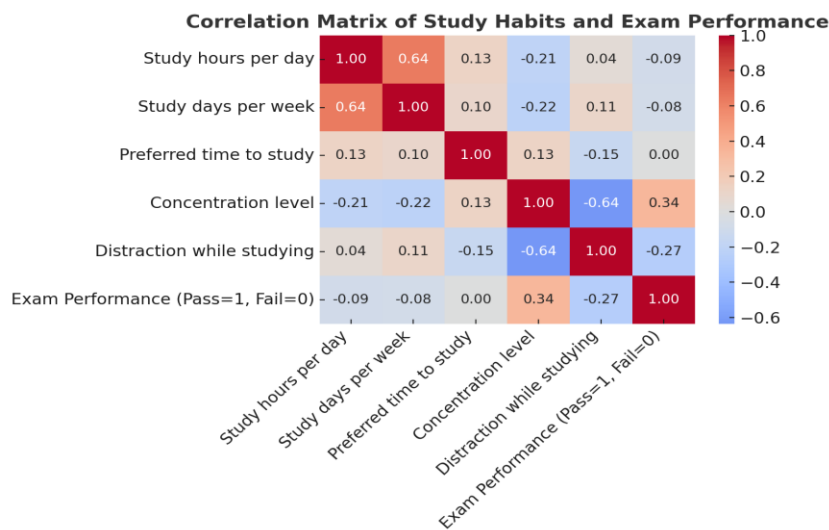


Figure I Correlation Matrix of Study Habits and Exam Performance.

The heatmap illustrates Pearson’s correlation coefficients between study habits and exam results (Pass = 1, Fail = 0). Positive correlations are shown in blue and negative correlations in red, with the intensity reflecting the strength of association. It demonstrates that concentration level has a moderate positive correlation ($r = 0.34$, $p = 0.004$) with exam performance, indicating students with higher self-rated concentration were more likely to pass. Conversely, distraction while studying showed a significant negative correlation ($r = -0.27$, $p = 0.023$),

suggesting frequent distractions impaired academic performance. Other factors, such as study hours, study days, and preferred study time, exhibited minimal or no meaningful correlation with exam outcomes (Figure I).

Table III unveils the outcome of a multivariable logistic regression analysis on independent predictors of passing an examination. Students with more than 2 hours of study per day had 45% higher chances of passing ($OR=1.45$, $p=0.032$), and students with ≥ 5 hours of study per

week had 72% higher chances of success ($OR=1.72$, $p=0.041$). High concentration levels were associated with more than three-fold increased chances of passing ($OR=3.25$, $p=0.016$), which is the highest predictor identified. Conversely, high levels of distraction significantly reduced success probability ($OR=0.48$, $p=0.029$), which reduces by 52% to chances of passing. Reading textbooks as a mode of study doubled the chances of success in exams ($OR=2.10$, $p=0.021$).

Table III
Multivariable Logistic Regression for Predictors of Exam Performance.

Variable	OR	95% CI	p-value
Study hours (>2 vs ≤2)	1.45	1.05 – 2.86	0.032
Study days (≥5 vs ≤4)	1.72	1.08 – 3.14	0.041
Concentration (High vs Low)	3.25	1.25 – 8.47	0.016
Distraction (High vs Low)	0.48	0.24 – 0.92	0.029
Reading textbooks (Yes)	2.10	1.12 – 3.94	0.021

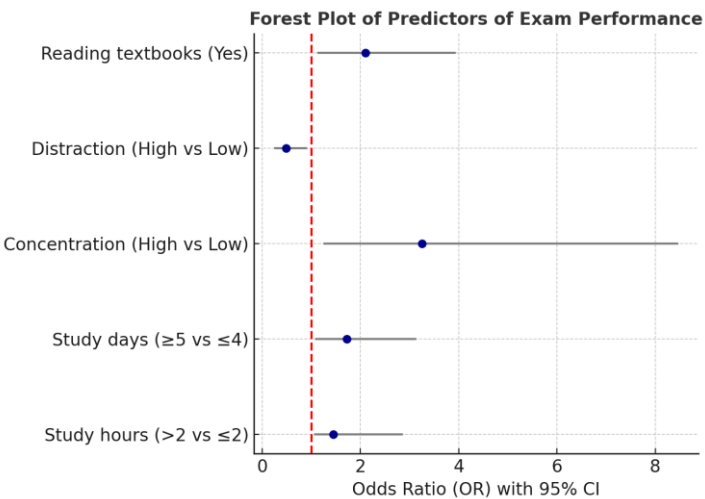


Figure 2 Forest Plot Showing Adjusted Odds Ratios of Study Habits and Reading Textbooks on Exam Performance.

The heatmap illustrates Pearson’s correlation coefficients between study habits and exam results (Pass = 1, Fail = 0). Positive correlations are shown in blue and negative correlations in red, with the intensity reflecting the strength of association. It demonstrates that concentration level has a moderate positive correlation ($r = 0.34$, $p = 0.004$) with exam performance, indicating students with

higher self-rated concentration were more likely to pass (Figure 2).

Table IV examines the independent correlation between diverse study methods and performance during examinations by univariate analysis. Reading textbooks emerged as the single study habit with a significant association ($OR=2.45$, $p=0.017$), and it was found that students who read

textbooks predominantly had approximately 2.5 times higher odds of passing examinations. Practices including watching videos ($OR=0.92$, $p=0.851$), group discussion ($OR=1.31$, $p=0.553$), and solving practice questions ($OR=1.42$, $p=0.415$) did not have statistically significant correlations with exam performance.

Table IV
Univariate Logistic Regression for Study Methods.

Study Method	OR	95% CI	p-value
Reading textbooks	2.45	1.18 – 5.06	0.017
Watching videos	0.92	0.38 – 2.21	0.851
Group discussion	1.31	0.54 – 3.16	0.553
Solving questions	1.42	0.61 – 3.29	0.415

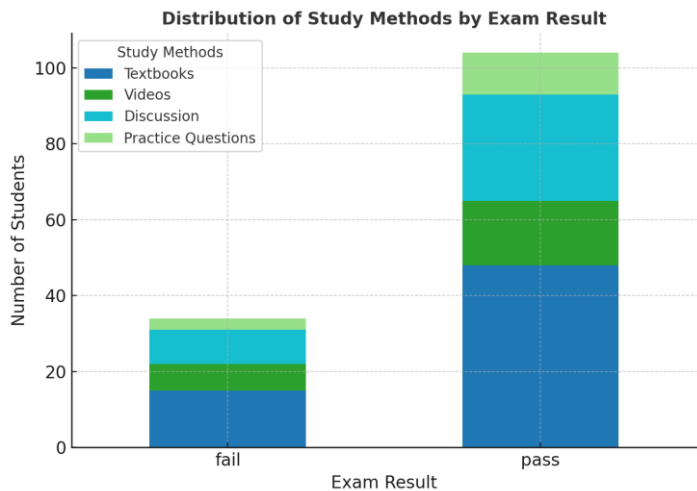


Figure 3 Distribution of Study Methods by Exam Result.

The bar chart illustrates the use frequency of different study approaches stratified by performance in an examination (pass/fail). The chart evidently demonstrates that

textbook reading usage is more frequent among pass students than among fail students, supporting the statistical proof of its favorable relationship with academic

performance. Group discussions reveal fairly comparable usage patterns between both groups (Figure 3).

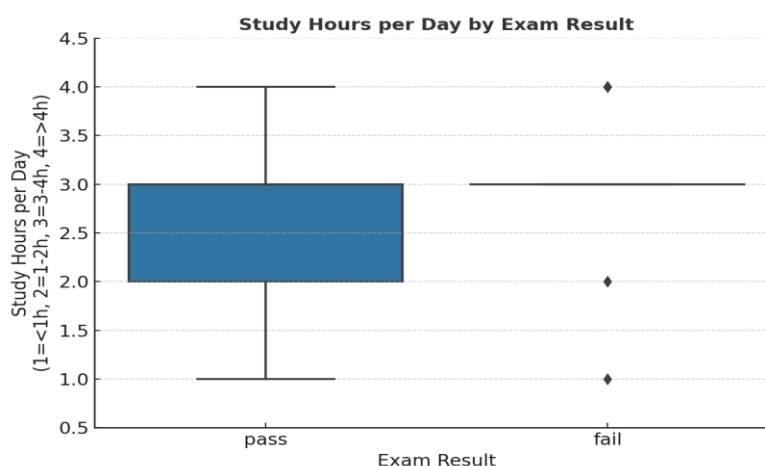


Figure 4 Boxplot of study hours by exam result.

The boxplot in *Figure 4* illustrates a comparison of the distribution of the study hours per day between pass and fail students. The median study hours of the passing students appear to be higher with a narrower interquartile range, suggesting consistent study habits by the passing students. Failed students have more variability in their study hours and some outliers, which suggest inconsistent study habits. The whiskers and quartile plots indicate that while both categories have students studying different hours, efficient students demonstrate more consistent study duration patterns. This plot also supports the regression analysis that adequate study time contributes to success, as well as indicates the importance of consistency in study behavior over increased study time.

DISCUSSION

This study examines the relationship between study habits and academic performance in second-year medical students, determining the most significant predictors of examination achievement with relevance to medical education. It demonstrates that concentration level, handling distraction, studying frequency, study duration, and reading textbooks are significant predictors of academic performance, while other factors had minimal correlation. Concentration level was the strongest predictor, with students reporting high concentration having more than three times higher odds for passing examinations (OR=3.25, $p=0.016$). This is in line with a study by Polderman et al., which places attention management as a central contributor to learning achievement [12]. The modest positive correlation between concentration and exam performance ($r=0.34$, $p=0.004$) justifies the prioritization of concentration skill development in medical students' academic support initiatives, which aligns with Burgoyne et al. Distraction frequency was also a negative predictor (OR=0.48,

$p=0.029$). Students who were faced with frequent distractions had 52% lower odds of passing exams [13]. This supports the findings of Wilcox et al. on the negative effect of multitasking and environmental distractions on academic performance [14]. A study by May et al. also shows that media multitasking interferes with attention and working memory and has a negative effect on GPA and test scores [15]. The negative correlation between distraction and performance ($r=-0.27$, $p=0.023$) indicates the necessity of minimizing interruptions and having dedicated learning environments. Frequency and duration of study were also significant determinants of academic success. Students studying in excess of 2 hours daily had 45% higher odds of passing (OR=1.45, $p=0.032$), and those studying ≥ 5 days weekly had 72% higher odds of success (OR=1.72, $p=0.041$). These findings are consistent with Cepeda et al., who foresee spaced study sessions as more effective than cramming [16]. Regular study habits support not just examination success but long-term retention and clinical proficiency [17]. Reading textbooks was the only learning technique to be significantly associated with academic success (OR=2.10, $p=0.021$), with those using this traditional technique having more than double the chance of passing. This contradicts trends towards multimedia learning but agrees with evidence that deep reading enhances understanding and critical thinking that are required for the practice of medicine [18]. The lack of significant correlations with the other study methods, such as videos, group discussion, and practice questions, suggests that these serve complementary roles in preparation. The study's demographic characteristics are representative of medical school populations, with 69.9% of students being female. Study pattern gender differences have been reported, with females having more consistent study habits but perhaps more academic stress [19]. The multireligious

and multicultural backgrounds of study participants (82.2% Muslim, 13.7% Hindu, of Bangladeshi, Indian, and Kashmiri ethnicity) enhance the generalizability of findings to multicultural settings. Interestingly, the timing of the study (morning, afternoon, evening, late night) and place of study (library, home, hostel) had no significant correlations with performance. This suggests that personal circumstances and personal preference are more significant than environment in attaining academic success. This challenges general assumptions about conducive study environments, underscoring the need for evidence-based study advice. Despite 100% of students adhering to strict study schedules and 98.6% revising regularly, the relatively low pass rate (73.8%) suggests that structural factors are not enough to guarantee success. This goes to highlight the complex nature of academic success, with interventions having to address concentration, distraction, and study methods. The findings have important implications for medical education. Study support initiatives must prioritize training in focus and dealing with distractions, and not time management or environment optimization. The reading from textbooks is still of benefit, suggesting that traditional ways are still effective in medical education amidst growing possibilities presented by technology. Institutions must implement study skills workshops with emphasis on those factors identified as predictors of academic success.

LIMITATIONS

The study was conducted in a single medical college using convenience sampling, which might limit the applicability of the findings to other medical colleges or different cultural contexts. In addition, self-reported study habits and levels of concentration may be subject to recall bias and social desirability effects and, therefore, biased in assessing reported behavior.

CONCLUSION

This study reveals that concentration level, distraction management, frequency of regular study, adequate daily study time, and reading textbooks are predictors of success among medical students. The findings identify the significant role of attention management and traditional learning methods as opposed to environmental factors and study time preferences, validating evidence-based recommendations in the planning of effective academic support practices in medical studies.

RECOMMENDATIONS

Future studies should employ longitudinal designs across institutions to determine the causal relationships between study habits and academic performance. Intervention studies comparing distraction management programs and concentration training programs to assess the applicability of these findings to improving medical student academic performance are also in order.

FUNDING

No funding sources

CONFLICT OF INTEREST

None declared

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