Original Article

Cramming, Distraction, Time Management and Procrastination Among Medical Students: Impact on Final Exam Performance

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Abstract

Objective: To investigate patterns of cramming, time management challenges, distractions, and procrastination among medical students using the Academic Procrastination Scale (APS) and their impact on academic scores.

Methodology: This cross sectional study was conducted at Liaquat National Hospital and Medical college, Karachi from October 2021 to April 2022. Undergraduate medical students from the second to final year who had recently taken professional examinations were included in the study, while students in other programs were excluded. Data was collected using the Academic Procrastination Scale (APS), a demographic profile questionnaire, and students' recent professional examination scores. While a calculated sample size of 218 was determined, 400 questionnaires were distributed to compensate for a potentially low response rate.

Results: A total of 324 students (74.4% female, 25.6% male) were enrolled. Procrastination was reported by 121 students (37.3%). First-year students exhibited the highest tendency for cramming (25.9%), distraction (27.3%), and procrastination (27.3%), whereas final-year students showed the lowest tendency for these behaviors. There was no significant difference between GPA and procrastination, distraction, and challenges of time management, although GPA showed a negative correlation with these behaviors. A statistically significant association was found between academic scores and cramming (p = 0.016). The reliability statistics (Cronbach's Alpha) for the scales assessing cramming (0.727), distraction (0.801), and time management (0.741) indicated acceptable to good internal consistency.

Conclusion: First-year students encountered more challenges, including cramming, distraction, and procrastination, in comparison to students studying in the final year, negatively impacting their academic performance.

Keywords: Academic achievement, Academic procrastination, Medical education, Medical students, Time management

Introduction

AMedical education plays a vital role in shaping the global healthcare system by preparing professionals for long-term success. Comprehensive academic training is fundamental for doctors to develop expertise.[1] Traditional teaching patterns often combine lectures with problem-based learning, requiring a balance between clinical and basic medical science knowledge. Despite time constrain, students often engage in social and extracurricular activities, which frequently leads to procrastination and cramming. Cramming, characterized by attempting to memorize exam-related content within a short time frame, often stems from procrastination.[2] Initially seen as a quick fix for short-term success by improving scores, cramming eventually becomes a barrier to grasp the essential concepts.[3] Academic procrastination, on the other hand, is the intentional delay or postponement of tasks despite awareness of its negative consequences.[4]

Temptations and distractions are prevalent in academic settings and can significantly hinder performance, especially among students with limited self-discipline. These distracted students are more prone to procrastination. Likewise, effective time management is key to academic success. Research in educational psychology highlights that the time dedicated to studying strongly predicts learning outcomes. Time management involves strategically organizing and adapting one's schedule based on varying circumstances.[5]

Grade Point Average (GPA) is a commonly used indicator of academic success, reflecting students' performance based on their grades.[6] It measures both the knowledge acquired and the depth of understanding achieved by the student.[7]

In literature, procrastination has been extensively studied across the globe, with statistics ranging from 57.2% to 87.2%, and it consistently shows a negative correlation with academic performance.[8-10] Given its high prevalence among students, the significance of procrastination cannot be overlooked.[11] Regarding other social issues like cramming, distraction, and challenges with time management, detailed studies and their associations with academic scores and medical school-specific data are scarce. Sunarti et al. (2022) found that 64.4% of preclinical medical students resort to cramming, which leads to a slight decline in their performance compared to those who do not rely on last-minute study sessions.[2] Similarly, a study in China highlighted that many struggling medical students face difficulties managing their time effectively, although its correlation with academic performance was not investigated.[12] Studies focusing on nonmedical undergraduates have shown that distractions during study time 22% contribute to a considerable 31% of documented failures.[13]

Keeping in view the complexity of influencing factors and their impact on academic scores, it was necessary to investigate this association further. The aim of this study is to establish the correlation between these behaviors and academic performance, thereby providing students with valuable insights to enhance their learning trajectory for future clinical practices. Therefore, the objective of this study is to examine learning behaviors, such as procrastination, cramming, distraction, and issues in time management, and their influence on students' GPA.

Methodology

A cross-sectional descriptive-based study design conducted at Liaquat National Hospital And Medical College, Karachi from October 2021 to April 2022. The study was approved by the ethical committee (#0695-2021 LNH-ERC) prior to initiation. It included currently enrolled MBBS students of both genders, from the 2nd year to recent graduates. Participants were asked about their study habits and their most recent professional examination scores from the past academic year (i.e., 1st to final year). However, students who were absent on the day of data collection were excluded from the study.

Procrastination among participants was assessed using the Academic Procrastination Scale (APS), a 25-item instrument scored on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items 1, 8, 12, 14, and 25 were reverse-scored.[14] Based on the Likert scale responses, procrastination levels were categorized as low or high using the median as a cutoff of.[15] The APS was further divided into three subcategories: Cramming, Time Management, and Distraction. Cronbach's alpha was used to assess the reliability of the questions.

Cramming behavior was evaluated by examining students' tendencies to complete assignments and study at the last minute. For the purpose of analysis, cramming levels were categorized as low (<12), moderate (12–25), and high (>25) based on the cramming subscale of the APS.

Time management was assessed by exploring participants' approaches to handling assignments and academic workload. Challenges in time management were classified as low (<15), moderate (15–30), and high (>30) based on the time management subscale of the APS.

Distraction was measured by determining how easily individuals became distracted and prioritized other activities over their academic responsibilities. Distraction levels were divided into three categories: low (<12), moderate (12–25), and high (>25) based on the distraction subscale of the APS.

The sample size was calculated using the Raosoft sample size calculator (http://www.raosoft.com/sample-size.html), based on an estimated presumption of a 50% response rate for the primary questions. Since a

total of 500 students were studying at LNHMC, a calculated sample size of 218 students was determined. Anticipating a low response rate, 400 questionnaires were distributed, and 324 complete responses were obtained. This larger sample size enhances the statistical power of the analysis, increasing our confidence in the results and contributing to a more robust representation of study habits among MBBS students.16 Demographic data was collected from individual participants, and the Academic Procrastination Scale was used to evaluate procrastination levels.

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS) Version 27. Frequency and percentages were calculated for qualitative variables, while mean ± SD was determined for quantitative variables such as age and GPA. Cronbach's alpha was used to assess the reliability of the questions. Student's t-test or ANOVA was used to estimate mean differences among variables, and the Chi-square test was used to analyze associations among categorical variables. A significance level of $p \leq 0.05$ was considered statistically significant. Finally, the association between Academic Procrastination Scale scores and students' scores in their last university professional examination was assessed using the ANOVA test.

Results

For the study, 324 students in total were recruited. Of these, females were 74.4%, and males were 25.6%. The demographic profile of the study population is shown in Table 1.

Procrastination behavior, with a cutoff value of 75 as indicated by the median, was observed in 37.3% of students, as shown in Figure 1. The frequency of procrastination was common among first-year students (27.3%), followed by fourth-year students (24.8%). While in 2nd, 3rd, and final year, students' procrastination was 22.3%, and 15.7%, respectively. Although no significant difference in GPA was noted between procrastinators and non-procrastinators, the latter tended to perform slightly better in exams (3.15 ± 0.37) as compared to their counterparts (3.10 ± 0.39).

First-year students showed the highest tendency to cram (25.9%), while final-year students showed the lowest tendency (11.9%). When we compared academic scores and cramming, a highly significant result was obtained ($p = 0.016^*$), as shown in Table 2 and Figure 1.

The 4th-year MBBS students had the highest difficulty in managing time (30.2%), followed by the 2nd-year (24.5%), 1st-year (24.5%), and 3rd-year (13.2%) students. The final-year students had the lowest rate of challenges (7.5%). Roughly 81.8% of students reported having moderate time management issues, and 16.4% reported having severe time management issues. No significant difference was obtained when comparing GPA and challenges with time management. Despite this, it can be observed that students who struggle less with managing time have scored well compared to students who struggle more .The details are depicted in table 2

A significant level of distraction is observed among first-year students, with a percentage of 27.3%. This is followed by fourth-year students with a percentage of 23.6%, second-year students with a percentage of 21.2%, and third-year students with a percentage of 19.4%. The final-year MBBS students were less prone to distraction, with a percentage of 8.5%. On comparing GPA with distraction, a significant difference was not observed. Reliability statistics of questions assessing time management, distraction, and cramming can also be seen in Table 2.

Table 1. Demographic profile of Study Participants (n=324)

Demographic Profile	Frequency (n=324)	Percentage
Gender		
Male	83	25.6
Female	241	74.4
Year of study		
1st year	69	21.3
2nd Year	70	21.6
3rd Year	61	18.8
4th Year	85	26.2
5th Year	39	12.0
Marital Status		
Married	6	1.9
Unmarried	318	98.1

Table 2. Correlation of Academic Performance with Cramming, Time Management, and Distraction

|	Frequency (%)	Age	P-value	GPA	P-value	Cronbach's Alpha	Reliability Level
Cramming						0.727	Acceptable
Low <12	4 (1.2)	23.00±0.81	0.329	3.51±0.33	0.016*		
Moderate (12-25)	177 (54.6)	21.89±1.48		3.16±0.37			
High >25	143 (44.1)	21.93±1.45		3.12±0.40			
Challenges with Time Management						0.741	Acceptable
Low <15	6 (1.9)	22.16±1.32		3.44±0.20			
Moderate (15-30)	265 (81.8)	21.88±1.48	0.583	3.12±0.39	0.140		
High >30	53 (16.4)	22.09±1.40		3.11±0.33			
Distraction						0.801	Good
Low <12	2 (0.6)	23.50±2.12		3.15±0.21			
Moderate (12-25)	157 (48.5)	21.99±1.47	0.198	3.13±0.37	0.890		
High >25	165 (50.9)	21.83±1.45		3.11±0.40			

*Significant at p<0.05 **Significant at p<0.01
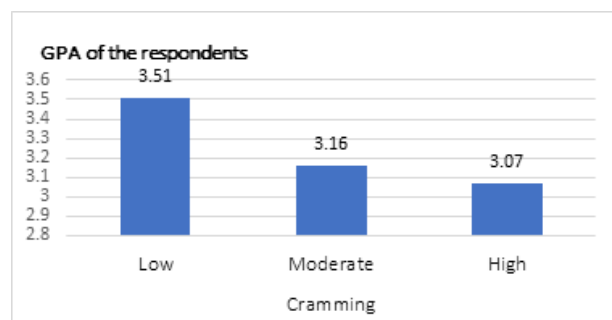
Figure 1: Academic Scores vs. Cramming Levels

Discussion

This study aimed to explore the trends of cramming, time management, distraction, and procrastination and their effect on academic performance among medical students using APS scores. In the present study, a higher proportion of female participants (74.4%) was observed compared to male participants (25.6%). This gender distribution reflects the general trend of increasing female representation in medical education in Pakistan.[17] Although gender differences in study habits could still exist, the observed distribution aligns with broader demographic trends in the region.

Since students often encounter substantial hurdles at the beginning of their academic journey and may lack specific guidance or a clear path to enhance their learning,[18] the present study found that junior stu-dents demonstrated a higher tendency for learning challenges such as procrastination, cramming, and distraction compared to their seniors. This suggests that as students progress through their medical education, they acquire superior skills in self-control and stress management, which improves their academic performance. Therefore, the development of effective study methods is critical for students in medical programs.[19]

The present study observed procrastination among 37.3% of students, which is lower than global data.[9] On the other hand, it is marginally higher than Iran's reported prevalence of 29.25%,[8] and the findings are consistent with a regional study conducted in Pakistan, highlighting contextual similarities and recent reforms to the medical curricula to meet global standards.[10,20] Although, medical students are representative of type A personality traits (organized, goal-driven, and work-aholic), this difference could be due to parental pressures and academic demands, allowing less space to procrastinate as compared to international data.[21,22] Moreover, despite not finding a significant relationship between procrastination and academic performance, a negative correlation is visible, aligning with studies across the globe.[8,10] Academic procrastination is a concern that many students encounter, and its adverse impacts on academic performance, health, and well-being indicate the need to implement appropriate methods for both prevention and treatment.[18]

In the present study, the prevalence of cramming was notably high, showing a significant correlation with lower grades. Our findings align with previous

research conducted in an Irish medical college and an Indonesian preclinical study, reporting prevalence rates of 47.1% to 64.35%, respectively, with a negative correlation with academic grades.[2,23] However, a study conducted in the USA and Canada among surgical residents demonstrated intriguing findings, revealing that an increase in study hours among crammers in the last month did not improve overall performance but demonstrated better scores within their cohort.[24] Despite individual improvement, the literature consistently discourages the habit of cramming, advocating regular learning for better retention. Moreover, it has been observed that dividing study material into multiple sessions allows for more effective assimilation of knowledge.[3]

The ability to manage time efficiently is one of the key factors behind academic achievement.[19] In the present study, despite statistically insignificant results, students with better time management skills performed slightly better in exams compared to those who struggled more. These insignificant results, despite the recognized correlation with time management, could be due to the rigorous and complicated medical curriculum, including strenuous and inflexible schedules and high expectations of Pakistani society, which may leave little margin to delay tasks.[25] Moreover, students may have employed adaptive strategies to overcome inconsistent habits, which were not analyzed in this study. Regardless of regional factors, the findings align with an international study that similarly reported an inverse relationship between time management challenges and academic performance.[26] However, Aeon et al. (2021) contend that while time management benefits other domains, its impact on standardized examinations may be limited, as exam performance relies more heavily on problem-solving skills and strategic thinking than on comprehension or cognitive processing of learned material.[5]

Distraction emerges as one of the leading causes of poor academic performance. In a study conducted at Washington University on preclinical students, distraction was found to be a negative predictor of academic scores, leading to 1 or 2% lower exam scores among distractors.[27] This study aligns with the present findings, though we received statistically insignificant results. Students with low distraction demonstrated a higher GPA compared to those with high distraction. This insignificant correlation is likely due to the generalized GPA scoring and self-reported distraction levels and categorization. Moreover, Volpe et al. (2022) highlighted that structured distractions depict a positive impact on well-being suggesting a complex relationship where not all distractions negatively affect academic outcomes, although that study didn't establish a correlation with academic scores, suggesting a complex relationship where not all distractions negatively affect academic outcomes.[28]

Limitations

The findings of this study cannot be generalized due to its single-center design and predominantly female population. Furthermore, the use of self-reported questionnaires introduces a potential risk of recall bias, which may compromise the objective evaluation of students' behaviors and skill.

Conclusion

In conclusion, this study found that medical students at junior levels are more prone to encounter academic challenges, including procrastination, cramming, time management difficulties, and distraction, that can have a detrimental impact on their academic performance. Considering these findings, it is recommended to employ targeted interventions and support systems in medical schools. Interventions such as time management sessions, study skills training sessions, and mentorship programs, including self-regulation courses, can prove beneficial to equip students effectively and enhance academic performance. Moreover, easily accessible support services such as career counselors and psychologists can be helpful for students' academic endeavors. For future research, it is recommended to employ extended multi-center studies with longitudinal designs and include objective measurements alongside qualitative assessment to expand upon these findings and overcome study limitations.

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Authors' Contribution Statement

FA contributed to the conception, design, acquisition, analysis, interpretation of data, drafting of the manuscript, and final approval of the version to be published. HJ contributed to the design, acquisition, analysis, and drafting of the manuscript. KA contributed to the acquisition, analysis, interpretation of data, and drafting of the manuscript. FN contributed to the acquisition, analysis, and interpretation of data. SM contributed to the acquisition, analysis, and drafting of the manuscript. All authors are accountable for their work and ensure the accuracy and integrity of the study.

Confilct of Interest

Authors declared no conflict on interest

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None

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.