

Research Article

Predictors of Academic Burnout and Poor Examination Performance

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ABSTRACT

Background: Medical students are constantly subjected to academic stress, examinations, workload and expectations which can lead to academic burnout, which is an important issue in medical education. Burnout can lead to a decrease in motivation, concentration, learning ability and examination performance.

Objective: To determine the predictors of academic burnout and poor examination performance among medical students.

Methods: This descriptive cross-sectional study was conducted among 92 medical students at HBS Medical and Dental College, Islamabad, Pakistan over a period of six months, from April, 2025 to September, 2025. A non-probability consecutive sampling was chosen for selecting the students. The data were obtained by a structured questionnaire comprising of demographic and academic factors, sleep, perceived stress, academic workload, teacher support, family support, and burnout-related domains. Emotional exhaustion, cynicism and decreased academic efficacy were the three components measured for academic burnout. Examination performance was judged by recent examination score and grouped as either 'poor' or 'satisfactory' based on institutional criteria. SPSS was used to analyze the data. Frequencies, percentages, means and standard deviations were computed. The following statistical tests were used: the chi-square test, independent sample t-test, and binary logistic regression. The cut-off value of $p < 0.05$ was considered to be statistically significant.

Results: Among 92 medical students, high academic burnout was observed in 36 (39.1%), moderate burnout in 32 (34.8%), and low burnout in 24 (26.1%) students. Poor examination performance was found in 33 (35.9%) students. Emotional exhaustion was present in 58 (63.0%) students, cynicism in 47 (51.1%), and reduced academic efficacy in 43 (46.7%). High perceived stress, sleep duration less than six hours, high academic workload, low attendance, and reduced academic efficacy were significantly associated with academic burnout and poor examination performance. Logistic regression showed that high academic burnout, attendance below 75%, reduced study time, perceived stress, and reduced academic efficacy were independent predictors of poor examination performance.

Conclusion: Academic burnout was common among medical students and was significantly associated with poor examination performance. High perceived stress, poor sleep, heavy academic workload, low attendance, and reduced academic efficacy were major predictors. Early identification of students at risk, academic counseling, stress management, sleep hygiene education, and supportive teaching strategies may help reduce burnout and improve academic performance.

Keywords: Academic Burnout, Medical Students, Examination Performance, Perceived Stress, Emotional Exhaustion, Academic Workload, Medical Education.

INTRODUCTION

Medical education is an academically rigorous discipline and demands students to cope with

vast amounts of knowledge that need to be recalled, regular evaluations, clinical duties and expectations of professionalism (1). While satisfying these requirements is necessary to produce competent doctors, too much academic stress can adversely influence students' mental health and educational success (2). Academic burnout in recent times has been a major issue in medical education as it may have a negative influence on learning behavior, motivation, class attendance, and examination performance (3). Academic burnout typically refers to the emotional, mental, and academic fatigue that can eventually occur due to the cumulative effects of academic stress (4). Usually involves three aspects: emotional fatigue, skepticism of research, and loss of academic competence. Emotional exhaustion is the feeling of tiredness and loss of energy from studying (4). Cynicism is a state of detachment, lowered interest, and/or negative feelings about school (5). Academic efficacy is a diminished feeling of competence and achievement in academic activities. Symptoms of these components can be subtle and somewhat unnoticed until they start to impact attendance, study habits, confidence, and academic outcomes (6).

The competitive nature of medical education, the frequent examinations, the long hours of studying, the high expectations of families and teachers, fear of failure, and limited time for rest or recreation are particularly stressful to medical students. Other factors that can exacerbate the risk of burnout include poor sleep, perceived stress, heavy workload, lack of teacher support, poor time management, and low family support. A number of other factors can be unique to hostel children, including problems with adjustment, not living with family, peer pressure and a poor family atmosphere. All of these can contribute to a stressful school environment that can impact a child's mental health and ability to learn (7).

One of the key concerns of medical education is poor performance in examinations. Test scores are affected by intelligence and knowledge, but also by the motivation, attendance, regularity of study, sleeping pattern, stress, and emotional health. Burnout students may struggle to focus in class, remember what they are taught, make revisions frequently, and do poorly on tests. Depleted energy levels can mean lower levels of energy to study, cynicism can mean lower interest in academic tasks, and lowered academic effectiveness can mean a diminished

level of confidence in preparation for examinations. Thus, burnout could serve as a part of the pathway by which academic stress processes relate to poor performance (8).

Burnout has been found to be prevalent in medical students in previous studies, and has been linked to academic stress, sleep disturbance, motivation, lifestyle factors, and academic outcomes (9, 10). A few studies have also indicated that students with high scores on the Burnout index are more prone to have poor academic outcomes and poor examination performance (11). Depression, anxiety, perceived stress, academic pressure, and bad sleep have been emphasized as factors that contribute to the development of burnout among students by other researchers (12). The results indicate that academic burnout is a complex issue and should be examined in relation to educational, behavioral and psychological issues.

Despite increasing attention to student well-being, academic burnout is still under-recognized in many medical colleges. In many settings, students with poor performance are judged mainly on the basis of marks, while the underlying contributors such as burnout, stress, poor sleep, low attendance, and reduced academic efficacy are not properly evaluated. Identifying predictors of burnout and poor examination performance is important because early intervention may improve both mental well-being and academic outcomes. This study was therefore conducted to determine the predictors of academic burnout and poor examination performance among medical students.

METHODOLOGY

This study was conducted as a descriptive cross-sectional study to determine the predictors of academic burnout and poor examination performance among medical students. The study was carried out at HBS Medical and Dental College, Islamabad, Pakistan over a period of six months, from April, 2025 to September, 2025. The cross-sectional design was selected because it allowed assessment of academic burnout, related psychological and academic factors, and examination performance at a single point in time among the selected group of medical students.

A total of 92 medical students were included in the study. The sample size was determined based on the feasibility and availability of eligible participants during the study time. The

students were selected using consecutive sampling technique (non-probability sampling). All the medical students enrolled in the chosen medical college during the study period after taking the consent form were included. Students who were away from the school during data collection, did not agree to be included, did not respond completely, or were known to have a severe medical or psychiatric condition that interferes with school attendance were not included in the study.

Before data collection, ethical approval was obtained from the institutional ethical review committee. The concern academic department and college administration were also approached. All subjects were informed of the purpose of the study and their informed consent was taken prior to their participation. Students were told that their answers would be kept confidential and that they would only be participating if they wished to. The final analysis did not use any personal identifying information. The data gathered were only used for academic and research purposes.

Structured questionnaire used for data collection. Demographic information, academic characteristics, the burnout related variables, psychological and behavioral factors, and examination performance were included in the questionnaire. Demographic factors considered were age, gender, year of study, residential status, and socioeconomic background. Academic variables comprised daily hours of study, percentage of attendance, academic burden, lecture understanding, satisfaction with teaching methods and previous academic performance. Psychological and behavioral factors were perceived stress, sleep duration, sleep quality, time management problems, family support, teacher support, and fear of failure.

The academic burnout was measured by major burnout components: emotional exhaustion, cynicism toward studies and academic inefficiency. Emotional exhaustion included this group's report of feeling tired, exhausted, fatigued, or lacking in energy because of academic pressures. The term cynicism was used to describe decreased interest, detachment, or negative attitude towards studies. Reduced academic efficacy: low confidence in academic ability and low sense of achievement. After the sum of the scores, students were classified as low, moderate or high academic burnout.

The most recent professional or internal examination score for each student was used to measure performance at examination. Students were grouped as to their performance by using the institutional passing criteria into poor and satisfactory groups. Poor examination performance was defined as not passing and satisfactory performance was defined as passing or above. For further description, the performance of examination results was also categorized as poor, average, good and excellent.

Eligible students were informed of the study and given the questionnaire to complete. Students had enough time to answer the questionnaire and they were asked to answer all questions honestly. The researcher read through each questionnaire following the completion to see if any were not completed. Those forms that were incomplete were not included in the final analysis. Examination marks were taken from students' reported marks or the students' academic records as allowed and available by the institution.

Academic burnout and examination poor performance were the chief outcome variables of the study. Predictor variables consisted of age, gender, living status, study year, attendance, daily study time, academic workload, duration of sleep, perceived stress, teacher support, family support, emotional exhaustion, cynicism, and less academic efficacy. The variables were chosen due to their frequent association with medical students' academic stress, burnout, learning behavior, and examination results.

SPSS software was used to enter and analyze data. Means and standard deviations were calculated for quantitative variables (age, examination score and burnout scores). Data of qualitative variables like gender, residence, category of burnout, attendance category and examination performance category were presented in the form of frequency and percentage. Association between categorical variables and academic burnout/poor examination performance was determined using the Chi-square test. Independent sample t test was performed to compare the mean scores of students' burn out status with regard to their poor and satisfactory examination performance. The p value < 0.05 was statistically significant.

A binary logistic regression was conducted to determine independent variables that predict academic burnout and poor examination performance. Clinically important and

statistically significant variables in initial analysis were included in the model for regression. Relative risks were adjusted for the odds ratio with 95% confidence intervals. Predictors of academic burnout were obtained using the first regression model and those of poor examination performance were obtained using the second regression model. The results were displayed tabular and graphically for easier understanding and interpretation.

RESULTS

In total, 92 medical students participated in this study. The mean age of the participants was 21.6 ± 1.8 years, ranging from 18 to 26 years. The age group of most students was 21-23 years. There was a slightly higher number of female students than male students. The student population consisted of over 50% hostel and the remaining day scholars.

Table 1: Demographic Characteristics of Medical Students

Variable	Frequency (n)	Percentage (%)
Age group		
18–20 years	28	30.4
21–23 years	49	53.3
24–26 years	15	16.3
Gender		
Male	41	44.6
Female	51	55.4
Residence		
Hostel resident	53	57.6
Day scholar	39	42.4
Year of study		
First year	18	19.6
Second year	21	22.8
Third year	19	20.7
Fourth year	17	18.5
Final year	17	18.5

Burnout in academics was measured with three main components: emotional exhaustion, cynicism and diminished academic efficacy. Overall, 39.1% of students presented

high and 34.8% presented moderate academic burnout. The most frequently impacted domain was emotional exhaustion.

Table 2: Academic Characteristics of Students

Academic Variable	Frequency (n)	Percentage (%)
Daily study hours		
<2 hours/day	31	33.7
2–4 hours/day	42	45.7
>4 hours/day	19	20.7
Attendance		
<75%	33	35.9
≥75%	59	64.1
Perceived academic workload		
Low	16	17.4
Moderate	34	37.0
High	42	45.7
Difficulty understanding lectures		
Yes	38	41.3
No	54	58.7
Satisfaction with teaching method		
Satisfied	51	55.4
Not satisfied	41	44.6

Academic burnout was assessed using three major domains: emotional exhaustion, cynicism, and reduced academic efficacy. Overall, 39.1% of students had high academic

burnout, while 34.8% had moderate burnout. Emotional exhaustion was the most commonly affected domain.

Table 3: Frequency and Severity of Academic Burnout

Burnout Variable	Frequency (n)	Percentage (%)
Overall academic burnout		
Low burnout	24	26.1
Moderate burnout	32	34.8
High burnout	36	39.1
Emotional exhaustion		
Present	58	63.0
Absent	34	37.0
Cynicism toward studies		
Present	47	51.1
Absent	45	48.9
Reduced academic efficacy		
Present	43	46.7
Absent	49	53.3

The criterion for evaluation of the examination performance was the final examination score. The average examination score of the students was 64.8 ± 11.6 . The result of the

students' performance in examination is poor with 35.9% of students and satisfactory with 64.1%.

Table 4: Examination Performance of Medical Students

Examination Performance	Frequency (n)	Percentage (%)
Poor performance	33	35.9
Satisfactory performance	59	64.1
Grade category		
Poor	33	35.9
Average	29	31.5
Good	21	22.8
Excellent	9	9.8

Among the students who felt stressed, those who reported sleeping less than 6 hours, having a high academic workload, low attendance, and studying for less than 2 hours

daily had significantly higher levels of academic burnout. Burnout also showed an association with hostel residence however this association was not statistically significant.

Table 5: Factors Associated with Academic Burnout

Variable	Burnout Present n=68	Burnout Absent n=24	p-value
Age >21 years	46	18	0.611
Female gender	42	9	0.018
Hostel residence	42	11	0.174
Study time <2 hours/day	29	2	0.002
Attendance <75%	30	3	0.001
Sleep duration <6 hours	39	5	<0.001
High academic workload	38	4	<0.001
High perceived stress	44	6	<0.001
Poor teacher support	33	6	0.041
Low family support	27	4	0.032

The correlation between academic burnout and examination performance was also examined. The poor performance of exams was more common among students with high

burnout. Emotional exhaustion, cynicism and decreased academic effectiveness were all significantly related to poor academic performance.

Table 6: Association between Burnout and Poor Examination Performance

Burnout Variable	Poor Performance n=33	Satisfactory Performance n=59	p-value
High academic burnout	24	12	<0.001
Moderate burnout	7	25	0.026
Low burnout	2	22	<0.001
Emotional exhaustion	29	29	0.002
Cynicism toward studies	25	22	0.001
Reduced academic efficacy	26	17	<0.001

Mean burnout score was compared across poor and satisfactory performance of the students in the examinations. Poor performing students scored significantly higher on

emotional exhaustion, cynicism and lower scores on academic efficacy. This means that examination performance could be impacted by academic burnout.

Table 7: Comparison of Mean Burnout Scores According To Examination Performance

Burnout Domain	Poor Performance Mean $\pm$ SD	Satisfactory Performance Mean $\pm$ SD	p-value
Emotional exhaustion score	28.4 $\pm$ 5.9	20.1 $\pm$ 6.7	<0.001
Cynicism score	17.8 $\pm$ 4.8	12.6 $\pm$ 4.5	<0.001
Reduced academic efficacy score	15.2 $\pm$ 4.3	22.7 $\pm$ 5.1	<0.001
Overall burnout score	61.4 $\pm$ 9.8	45.4 $\pm$ 10.6	<0.001

The independent predictors of academic burnout were identified using binary logistic regression analysis. Academic burnout was

predicted by high perceived stress, sleep less than 6 hours, attendance less than 75%, high academic workload, and female gender.

Table 8: Logistic Regression Analysis for Predictors of Academic Burnout

Predictor	Adjusted Odds Ratio	95% CI	p-value
Female gender	2.41	1.05–5.52	0.038
Study time <2 hours/day	2.86	1.12–7.31	0.028
Attendance <75%	3.74	1.42–9.86	0.008
Sleep duration <6 hours	4.18	1.69–10.34	0.002
High academic workload	4.63	1.77–12.08	0.002
High perceived stress	5.21	1.98–13.71	0.001
Poor teacher support	2.19	0.91–5.28	0.079

Another logistic regression model was used to determine predictors of poor examination performance. Academic burnout, low attendance, decreased study time and

decreased academic efficacy were among the important independent predictors of poor exam performance.

Table 9: Logistic Regression Analysis for Predictors of Poor Examination Performance

Predictor	Adjusted Odds Ratio	95% CI	p-value
High academic burnout	4.92	1.89–12.81	0.001
Attendance <75%	3.68	1.41–9.62	0.008
Study time <2 hours/day	3.24	1.23–8.52	0.017
Sleep duration <6 hours	2.47	0.98–6.25	0.055
High perceived stress	2.79	1.05–7.39	0.039
Reduced academic efficacy	5.36	2.01–14.29	0.001
Poor teacher support	1.94	0.78–4.82	0.153

Overall, the findings showed that academic burnout was common among medical students and was strongly associated with poor examination performance. High perceived stress, poor sleep, heavy academic workload, low attendance, and reduced academic efficacy were the major predictors of burnout and poor academic outcomes.

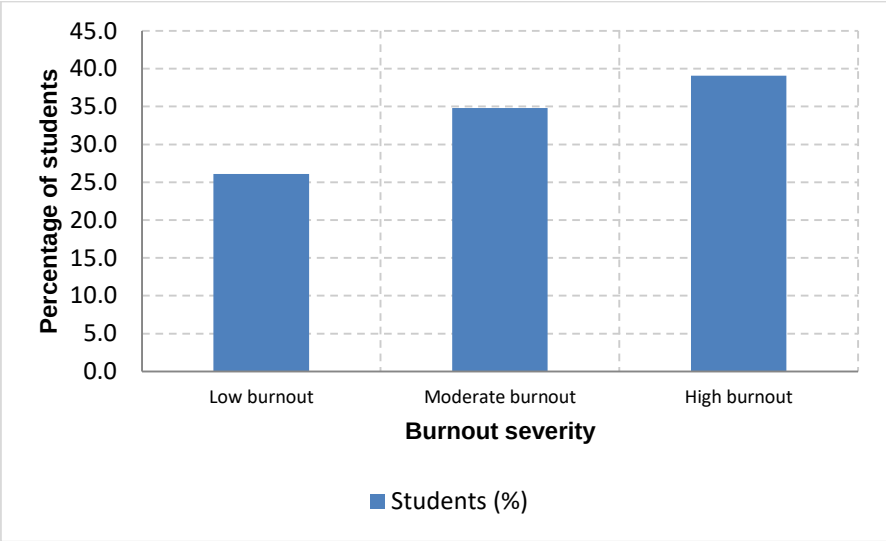


Figure 1: Severity of Academic Burnout among Medical Students

Figure 1 shows the distribution of academic burnout severity among medical students. High burnout was observed in 39.1% of students, followed by moderate burnout in 34.8% and low burnout in 26.1%, indicating that a substantial proportion of students experienced moderate to high levels of academic burnout.

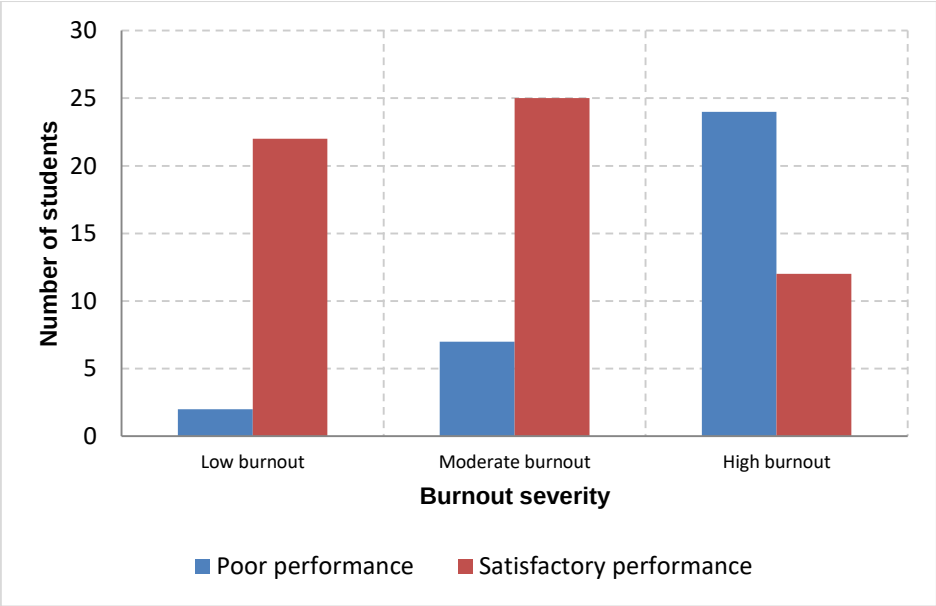


Figure 2: Association between Academic Burnout Severity and Examination Performance

Figure 2 illustrates the relationship between academic burnout severity and examination performance among medical students. Poor examination performance was lowest among students with low burnout and highest among those with high burnout. In contrast, satisfactory performance was more common in students with low and moderate burnout, showing that increasing burnout severity was associated with poorer examination outcomes.

DISCUSSION

The present study showed that academic burnout was common among medical

students, with 39.1% of students having high burnout and 34.8% having moderate burnout. Emotional exhaustion was the most frequent burnout domain, followed by cynicism and reduced academic efficacy. This pattern suggests that many students were not only physically and mentally tired but were also developing a negative attitude toward studies and a reduced sense of academic achievement. Similar findings have been reported in recent international literature. Almutairi et al. reported a pooled burnout prevalence of 37.23% among medical students in a systematic review and meta-analysis, while Yahya et al. found burnout in 38.2% of medical students at the University of Kerbala. These findings support the present study and show that burnout is a frequent problem in medical education settings (9, 10). As observed in the present study, students with poor sleep, high perceived stress, high academic workload and low attendance showed significantly high academic burnout. These results make biological and educational sense, as excessive academic stress, without sufficient rest, can lead to decreased focus, emotional regulation, and learning effectiveness. Both Daud et al. and Felaza et al. have reported similar predictors. Daud et al. identified academic and supervisory factors in the prediction of burnout among medical students in Malaysia and Felaza et al. reported that motivation was associated with the domains of burnout among undergraduate medical students (13, 14). Also reported by Lee et al. was the association of demographic and lifestyle factors with burnout among medical students, and by Obregon et al. the usefulness of the Maslach Burnout Inventory-Student Survey for assessing student burnout (8, 15). The results of these studies give credence to the concept that burnout is a multi-faceted phenomenon, occurring as a result of a combination of academic stress, individual attitudes, self-interest, and institutional climate.

The present study also revealed that academic burnout was significantly correlated with the poor performance in examinations. Poor performance was more prevalent in the burned out group, and satisfactory was more prevalent in the less burned out and moderately burned out groups. This could be due to a decrease in attention, memory consolidation, a drop in class involvement, self-confidence, and consistent study. The results are similar to Aljadani et al. who found

that medical students in Saudi Arabia had an association between academic performance with burnout (16). Likewise, they found that the academic achievement of medical students was associated with the risk of burnout, with the early identification of students at risk of burnout being emphasized (17). The results indicate that the academic burnout phenomenon needs to be seen not only as a psychological phenomenon, but can also have an impact on measurable academic results like marks, grades, and examination results.

The present study revealed that perceived stress, sleep duration of less than 6 hours, attendance under 75%, high academic workload, and female gender were significant predictive factors for academic burnout using regression analysis. Besides, academic burnout, decreased academic efficacy, poor attendance, decreased study time, and perceived stress were important factors associated with poor examination performance. The above results are confirmed by Aghajani Liasi et al. who reported cases of educational burnout, depression, anxiety and stress amongst medical students, and by Bolatov et al. who reported the presence of burnout syndrome in medical students in Kazakhstan (11, 18). A large cross-sectional study also showed that the academic burnout was affected by gender, academic grade, study pressure, life pressure, and interests in professional knowledge (19). These findings suggest that both individual and educational factors should be considered in order to prevent burnout.

This study has implication for the medical colleges. Burnout screening, student counseling, stress management, academic mentoring, sleep hygiene instruction, as well as early identification of students having low attendance or declining grades can help lower the burnout and enhance academic results. It also emphasizes the importance of enabling teaching strategies, well-balanced assessment timetables, and improved communication between teachers and students. But there are some shortcomings in this study. It is a cross sectional study, therefore, causal relationships cannot be established. Moderate sample size, and a single setting may constrain generalizability. Other variables, including stress, sleepiness, and burnout, were subject to the influence of response bias and were based on student responses. There needs to be a multicenter, longitudinal study in the future to validate these predictors and to

evaluate the effectiveness of structured wellness and mentoring programs to reduce burnout and enhance examination performance.

CONCLUSION

This study concluded that academic burnout was common among medical students and was significantly associated with poor examination performance. High perceived stress, short sleep duration, heavy academic workload, low attendance, and reduced academic efficacy were important predictors of burnout and poor academic outcomes. Students with high burnout were more likely to have poor examination performance compared with students with low burnout. Early screening, academic counseling, stress reduction strategies, improvement in sleep habits, supportive teaching, and regular monitoring of attendance and academic progress may help reduce burnout and improve student performance in medical education.

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