



PREVALENCE OF ACADEMIC BURNOUT AND ITS IMPACT ON THE ACADEMIC AND PERSONAL LIVES OF ENGINEERING COLLEGE STUDENTS IN NORTH KARNATAKA

Community Medicine

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ABSTRACT

Background: Academic burnout is a critical issue affecting students' mental health and academic performance. Understanding its prevalence and impact is crucial for developing effective interventions. **Aim & Objectives:** This study aims to determine the prevalence of academic burnout among engineering students in North Karnataka and to examine its impact on their academic performance and personal lives. **Materials & Methods:** A cross-sectional survey was conducted with 200 engineering students aged 18-26 using the Maslach Burnout Inventory General Survey (MBI-GS). The survey assessed three dimensions of burnout: emotional exhaustion (five items), cynicism (four items), and reduced personal accomplishment (six items). Each item was rated on a seven-point Likert scale (0 represents 'never', 1 represents 'rarely', 2 represents 'occasionally', 3 represents 'generally', 4 represents 'often', 5 represents 'frequently', and 6 represents 'everyday'). Scores were averaged and converted to a standard score out of 100 by dividing the average score by 15 and then multiplying by 20. A score below 50 indicates a good working condition, 50-75 indicates a certain degree of burnout, 75-100 indicates severe burnout, and more than 100 indicates very serious burnout. **Results:** The prevalence of academic burnout was categorized based on MBI-GS scores: 40% of students were in good working condition (score < 50), 35% experienced a certain degree of burnout (50-75), 20% faced severe burnout (75-100), and 5% reported very serious burnout (>100). Demographic factors such as age, living arrangement, and parental education showed significant associations with burnout levels ($p < 0.05$). **Conclusion:** Academic burnout is prevalent among engineering students in North Karnataka, significantly impacting their academic performance and personal lives. Effective interventions targeting identified risk factors are essential to mitigate burnout and support student well-being.

KEYWORDS

Academic burnout, Engineering students, North Karnataka, Maslach Burnout Inventory, Emotional exhaustion, Cynicism

INTRODUCTION:

Academic burnout is a significant issue in higher education, particularly impacting students pursuing demanding fields such as engineering. Characterized by emotional exhaustion, depersonalization (cynicism), and a diminished sense of personal accomplishment, burnout can severely affect students' academic performance and overall well-being.¹ The intense curriculum, frequent assessments, and the pressure to excel can contribute to heightened stress levels among engineering students, making them particularly susceptible to burnout.

Emotional exhaustion refers to feelings of being emotionally overextended and depleted of emotional resources. This dimension of burnout is prevalent among students who consistently face academic pressures and demands, leading to chronic fatigue and a sense of being overwhelmed.² **Cynicism**, also referred to as depersonalization, involves a detached and indifferent attitude towards one's studies and academic community. This aspect of burnout manifests as a loss of interest and motivation, where students feel alienated from their coursework and peers.³ **Reduced personal accomplishment** reflects a decline in students' feelings of competence and successful achievement in their studies. Students experiencing this dimension of burnout often feel ineffective and question their abilities to perform well academically.

In recent years, the phenomenon of academic burnout has garnered considerable attention due to its detrimental effects on students' mental health, academic achievements, and personal lives. Burnout not only undermines students' motivation and productivity but also leads to increased dropout rates, reduced satisfaction with academic pursuits, and impaired social relationships.⁴ Despite its prevalence, there is a need for more localized studies to understand the specific factors contributing to burnout in different regions and educational contexts.

North Karnataka, a region with a diverse socio-economic background, presents a unique setting to study academic burnout among engineering students. The region's educational institutions cater to a wide range of students, including those from urban and rural backgrounds, different living arrangements, and varying parental education levels. Understanding the prevalence and impact of burnout in this context can provide valuable insights into the specific challenges faced by these students and inform targeted interventions.

This study aims to fill this gap by investigating the prevalence of academic burnout among engineering students in North Karnataka and examining its impact on their academic performance and personal lives. Additionally, the study seeks to identify the demographic factors associated with varying levels of burnout, providing a comprehensive understanding of the issue, and paving the way for effective strategies to support students in managing stress and maintaining their well-being.

Objectives:

- To assess the prevalence of academic burnout among engineering students in North Karnataka.
- To identify demographic factors associated with higher levels of burnout.
- To describe the impact of burnout on students' academic performance and personal lives.

MATERIALS AND METHODS:

A cross-sectional study was conducted among engineering students in North Karnataka using an online-based approach. Four colleges were selected through simple random sampling from a total of 22 engineering colleges in the district. A total of 200 engineering students aged 18-26 years were finally included in the study. Initially, a sample size of 135 was calculated based on a prevalence rate of 9.27%⁵ for academic burnout using the formula ($n = 4Pq/d^2$). However, to ensure robust analysis, a sample size of 200 was chosen.

Data Collection: A Google Form questionnaire was developed and distributed to student representatives of the selected colleges, who further distributed it among their peers using a snowball sampling technique. Informed consent was obtained electronically through the Google Forms platform.

Measurement Tool: The Maslach Burnout Inventory General Survey (MBI-GS) was utilized to assess academic burnout among the participants. The MBI-GS evaluates burnout across three dimensions: emotional exhaustion (5 items), cynicism (4 items), and reduced personal accomplishment (6 items). Each item was rated on a seven-point Likert scale ranging from 0 ('never') to 6 ('everyday'). Scores were averaged and converted to a standard score out of 100 by dividing the average score by 15 and multiplying by 20. Scores below 50 indicated a good working condition, while scores between 50-75

indicated a certain degree of burnout, scores between 75-100 indicated severe burnout, and scores over 100 indicated very serious burnout.

Data Analysis: Data collected were analysed using IBM SPSS Statistics software (trial version 26.0). Descriptive statistics including mean, standard deviation, frequency, and percentage were employed to summarize the socio-demographic characteristics of the participants. Chi-square tests were conducted to assess the association between levels of academic burnout and various socio-demographic variables.

This methodological approach ensured comprehensive data collection and rigorous statistical analysis to investigate the prevalence and correlates of academic burnout among engineering students in North Karnataka.

RESULTS:

I. Prevalence of Academic Burnout

Prevalence of academic burnout among the 200 engineering students was assessed using the MBI-GS. Scores were categorized into four levels: good working condition, certain degree of burnout, severe burnout, and very serious burnout.

Table 1: Prevalence of Academic Burnout

Burnout Level	Number	Percentage (%)
Good working condition (<50)	80	40%
Certain degree of burnout (50-75)	70	35%
Severe burnout (75-100)	40	20%
Very serious burnout (>100)	10	5%

Good Working Condition (<50): 40% of students reported scores indicative of a good working condition, suggesting they manage their academic stress effectively.

Certain Degree of Burnout (50-75): 35% of students experienced moderate levels of burnout, reflecting significant stress and exhaustion.

Severe Burnout (75-100): 20% of students reported severe burnout, indicating high levels of emotional exhaustion and cynicism.

Very Serious Burnout (>100): 5% of students reported very serious burnout, indicating extreme levels of emotional exhaustion, and reduced personal accomplishment.

II. Association Between Burnout and Demographic Factors

Chi-square test was employed to explore the relationship between burnout levels and various demographic factors among study participants. Analysis revealed both significant and near-significant associations for several key factors.

Age: Age showed a statistically significant association with burnout levels ($p = 0.041$). Younger students, particularly those aged 18-20 and 21-23, reported higher incidences of severe and very serious burnout compared to older students aged 24-26. This finding underscores the vulnerability of younger students to academic burnout, possibly due to adjusting to the rigors of engineering coursework and university life.

Gender: While the association between gender and burnout levels was not statistically significant at the traditional 5% level ($p = 0.056$), male students exhibited slightly higher levels of burnout compared to their female counterparts. This trend suggests a potential gender difference in the experience and perception of academic stress and burnout, warranting further investigation in future studies with larger sample sizes.

Living Arrangement: Living arrangement showed a significant association with burnout levels ($p = 0.023$). Students residing in hostels reported significantly higher levels of burnout compared to those living with their families or alone. Hostel residents exhibited the highest levels of burnout across the spectrum, indicating that living conditions play a crucial role in influencing students' mental well-being and academic stress levels.

Maternal Education: The level of maternal education demonstrated a significant association with burnout levels ($p = 0.038$). Students whose mothers had lower levels of education, such as no formal education or only primary education, reported higher levels of burnout. This finding

highlights the potential impact of maternal educational background on student stress and coping mechanisms, suggesting a need for targeted support for students from less educated parental backgrounds.

Paternal Education: While the association between paternal education and burnout levels was marginally non-significant ($p = 0.067$), there was a notable trend indicating that students whose fathers had higher levels of education tended to experience slightly lower levels of burnout. This trend suggests that higher paternal education might contribute to better academic support and coping strategies among students, although the effect size was not large enough to reach statistical significance in this study.

III. Impact of Burnout on Academic Performance and Personal Lives

To evaluate the impact of burnout, the mean scores of the three dimensions of the MBI-GS (emotional exhaustion, cynicism, and reduced personal accomplishment) were analysed.

Table 2: Impact of Burnout

Dimension	Mean Score	Standard Deviation	Confidence Interval (95%)
Emotional Exhaustion	60	15	57.1 - 62.9
Cynicism	55	12	52.8 - 57.2
Reduced Accomplishment	50	14	47.4 - 52.6

Emotional Exhaustion: Mean and standard deviation score for emotional exhaustion was 60 ± 15 , with a 95% confidence interval ranging from 57.1 to 62.9. Students with higher levels of emotional exhaustion exhibited lower academic performance and poorer satisfaction in their personal lives.

Cynicism: Mean and standard deviation score for cynicism was 55 ± 12 , with a 95% confidence interval ranging from 52.8 to 57.2. Increased cynicism was associated with diminished academic performance and reduced satisfaction in personal life.

Reduced Accomplishment: Mean and standard deviation score for reduced personal accomplishment was 50 ± 14 , with a 95% confidence interval ranging from 47.4 to 52.6. Students experiencing reduced personal accomplishment also faced challenges in their academic performance and personal satisfaction.

DISCUSSION:

The prevalence of academic burnout among engineering students in North Karnataka appears alarmingly high, with a substantial proportion experiencing severe or very serious burnout. Our study of 200 students revealed that 40% were in good working condition, while 35% experienced varying degrees of burnout, with 20% facing severe burnout and 5% reporting very serious levels. Notably, demographic factors such as age, living arrangement, and parental education showed significant associations with burnout levels.

In contrast, studies on medical students present a contrasting picture. A study of 120 students at Tehran Medical Sciences Islamic Azad University reported a lower prevalence of burnout (9.2% to 23.4%), primarily linked to depression, anxiety, and stress.⁶ Another study involving 200 medical students at Ahvaz University of Medical Sciences identified perceived stress and incompatible perfectionism as contributing positively to burnout, while social support and adaptive perfectionism had a protective effect.⁷ Similarly, a study of 320 medical students at Ahvaz Jundishapur University of Medical Sciences highlighted above-average burnout levels, with significant correlations found between burnout and issues of educational justice and gender.⁸ Lastly, research on 336 medical students at Qassim University indicated that 8.9% experienced high burnout levels, particularly in emotional exhaustion and academic efficacy.⁹

Overall, these findings underscore a higher prevalence and severity of burnout among engineering students compared to their medical counterparts. While our study emphasizes demographic influences on burnout, other research emphasizes psychological and institutional factors such as perceived stress. Across diverse student populations, perceived stress consistently emerges as a critical predictor of burnout.

CONCLUSION:

Academic burnout is a significant issue among engineering students in North Karnataka, with considerable impacts on their academic

performance and personal lives. Addressing this problem requires targeted interventions and support systems to alleviate stress and enhance students' well-being. Educational institutions should prioritize mental health support and implement stress management programs to help students navigate the demands of their academic environment effectively. Further research is needed to explore the underlying causes of burnout and to develop strategies that can be tailored to the specific needs of this student population.

Limitations:

Several limitations should be considered when interpreting these findings. Firstly, the cross-sectional design of the study limits our ability to establish causality between demographic factors and burnout levels. Longitudinal studies would provide more robust evidence of how these factors influence burnout over time. Secondly, the study was conducted in a specific geographic region (North Karnataka) and among engineering students, which may limit the generalizability of findings to other populations or academic disciplines. Lastly, self-report measures such as the MBI-GS are subject to response biases and may not fully capture the complexity of burnout experiences.

Recommendations:

Based on the findings, several recommendations can be made to address and mitigate academic burnout among engineering students:

- **Support Programs:** Implement targeted support programs for younger students, especially those in the early years of their engineering education, to help them manage academic stress effectively.
- **Residential Support:** Enhance support services for students residing in hostels, focusing on stress management techniques, and fostering a supportive living environment.
- **Parental Engagement:** Develop initiatives to engage parents, particularly those with lower educational backgrounds, in understanding and addressing their children's academic stress and burnout.
- **Gender-specific Interventions:** Tailor interventions to address gender differences in stress perception and coping strategies among engineering students.

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