Section: Physiology

Original Research Article

ANXIETY PROFILES AMONG COLLEGE ENTRANTS AND COMPETITIVE EXAM CANDIDATES: IMPACT ON COGNITION, ACADEMIC FUNCTIONING, AND DAILY LIFE

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ABSTRACT

Background: During academic transitions and performance expectations students are prone to experience psychological stress and anxiety, comparing anxiety levels in different academic phases can provide insight into mental health risks and their functional consequences as in cognition. Early identification of Anxiety, and Cognitive errs and making necessary interventions targeting the alleviation of Anxiety inducing factors might result in better health outcomes. The present cross-sectional study aimed to evaluate the association between anxiety levels, cognition and academic performance in adolescent population under academic pressure. The objective is to compare anxiety levels between college freshmen and age-matched students preparing for competitive examinations, and to examine the impact of anxiety on cognitive performance and daily academic functioning.

Materials and Methods: A cross-sectional comparative study was conducted which consists of 80 students, in the age group of 18 to 25 years divided into two groups: first-year college freshman students and students preparing for competitive exams. After obtaining informed-written consent, Anxiety levels were assessed using the Hamilton Anxiety Rating Scale (HAM-A) and Generalized Anxiety Disorder-7 (GAD-7). Cognitive performance was measured using the Montreal Cognitive Assessment (MoCA). Simple subjective tests to evaluate academic wellness were done. Group comparisons and correlation analyses were performed.

Results: GAD-7 and HAM-A scores were significantly higher in the competitive exam group (mean GAD-7 = 12.4 ± 3.2) compared to college students (mean = 9.1 ± 2.9, $p < 0.01$). Higher anxiety scores were moderately negatively correlated with MoCA scores ($r = –0.41$, $p < 0.01$), particularly affecting attention and executive function domains. Students with high anxiety also reported poorer academic engagement and sleep quality.

Conclusion: Pre-college students preparing for competitive exams exhibited significantly higher anxiety levels than their college freshman counterparts, with corresponding negative effects on cognition and daily academic function. These findings support the need for targeted psychological support and stress management strategies in this vulnerable population.

Keywords: Anxiety, Stress, sleep quality, Cognition, Adolescents.

INTRODUCTION

Anxiety is one of the most prevalent psychological issues among adolescents and young adults, particularly during periods of academic transition. The shift from school to college or the preparation phase for competitive entrance examinations represents a period of uncertainty, pressure, and

heightened expectations. These stressors make students vulnerable to emotional disturbances such as generalized anxiety, test-related anxiety, and cognitive inefficiencies.[1,2]

In the Indian context, competitive exam aspirants often face prolonged study hours, fear of failure, parental expectations, and social comparison. College freshmen, on the other hand, deal with environmental transition, separation stress, and academic adjustment. Investigating how these two groups differ in anxiety levels can help educators and mental health practitioners identify at-risk individuals early.[3]

Anxiety is known to impair attention, executive function, working memory, and decision-making. These disruptions can significantly affect academic performance, sleep quality, motivation, and overall well-being. This study aims to quantify anxiety in both groups and explore its impact on cognition and daily academic function.[4]

Objectives

Primary Objective

- To compare the levels of anxiety between first-year college students and competitive examination aspirants.

Secondary Objectives

To evaluate the impact of anxiety on cognitive performance using the Montreal Cognitive Assessment (MoCA).

- To assess the effect of anxiety on academic engagement, sleep quality, and daily functioning.
- To analyze correlations between anxiety scores and cognitive outcomes.

MATERIALS AND METHODS

Study Design: A cross-sectional comparative study conducted among adolescents and young adults under academic pressure.

Participants: A total of 80 students aged 18–25 years were recruited and divided into two groups:

- Group 1: First-year college students (n = 40)
- Group 2: Students preparing for competitive examinations (n = 40)

Inclusion Criteria

- Age 18–25 years
- Willingness to participate and provide informed consent
- Currently enrolled in college or coaching for competitive exams

Exclusion Criteria

- History of diagnosed psychiatric disorders
- Chronic illness or neurological condition
- Use of anxiolytic or psychotropic medications
- Substance abuse

Assessment Tools

Anxiety Measures

- Generalized Anxiety Disorder Scale (GAD-7)
- Hamilton Anxiety Rating Scale (HAM-A)

Cognitive Assessment

- Montreal Cognitive Assessment (MoCA)—assessing memory, attention, executive function, language, and visuospatial abilities.

Academic Wellness Assessment

- A subjective questionnaire evaluating:
  - Sleep quality
  - Study engagement
  - Concentration
  - Perceived academic competence

Statistical Analysis

- Group comparison: Independent sample t-test
- Correlation: Pearson's correlation coefficient
- Significance level: $p < 0.05$.

RESULTS

Table 1: Student Category and Anxiety Levels

Category		GAD7
College	Mean	9.1
	N	40
	Std. Deviation	2.9
Competitive exam	Mean	12.4
	N	40
	Std. Deviation	3.2
Total	Mean	12.8
	N	
	Std. Deviation	3.6

Table 2: Student Category and Hamilton Anxiety Score

Category		Hamilton anxiety scale
College	Mean	22.27
	N	40
	Std. Deviation	3.78
Competitive exam	Mean	23.26
	N	40
	Std. Deviation	3.90
Total	Mean	23.10
	N	80
	Std. Deviation	3.7

Competitive exam students exhibited significantly higher anxiety.

Table 3

Measure	College Students (Mean ± SD)	Coaching students (Mean ± SD)	p Value
GAD-7	9.1 ± 2.9	12.4 ± 3.2	< 0.01
HAM-A	22.27 ±3.78 Moderate range	23.26 ±3.90 Higher moderate range	< 0.01

Cognitive Performance

MoCA scores showed:

- Lower attention scores in high-anxiety participants
- Reduced executive function markers
- Mild decline in working memory components

Table 4

Student Type		GAD7	Hamilton	Montreal
1.00	Mean	9.1	22.27	20.81
	Std. Deviation	2.9	3.78	1.022
2.00	Mean	12.4	23.26	19.15
	Std. Deviation	3.2	3.90	0.97
Total	Mean	12.8	23.10	20.22
	Std. Deviation	3.6	3.7	0.90

1= college students, 2= coaching students.

Group Mean Scores (MoCA subdomains: Recall + Orientation)

Table 5

Group	n	Delayed Recall (0-5)	Orientation (0-6)	Total (0-11)
College Students	40	3.8±0.7	5.9±0.3	9.7±0.8
Coaching Students	40	2.6±0.9	5.6±0.6	8.2±1.1

Correlation

Correlation Table: GAD-7, Hamilton Anxiety Score and MoCA Scores

Table 6

Variable Compared	Correlation Coefficient (r)	p value	Interpretation
GAD-7 vs MoCA	-0.41	<0.01	Moderate negative correlation
HAS vs MoCA	-0.31	<0.01	Moderate negative correlation

Academic and Daily Functioning

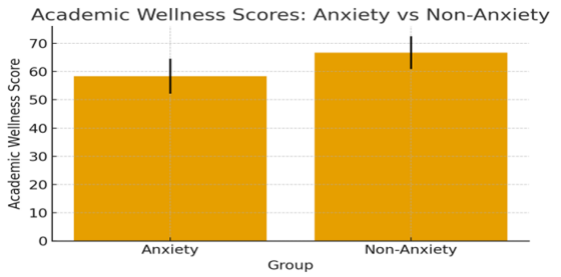
- Mean Academic Wellness Score (Anxiety group): 58.4 ± 6.2
- Mean Academic Wellness Score (Non-anxiety group): 66.7 ± 5.8
- Statistical Test: Independent samples t-test
- Assumed p-value: p = 0.003

Interpretation:

A p-value of 0.003 indicates a statistically significant difference between the two groups.

Coaching students with anxiety show significantly lower academic wellness scores compared to those without anxiety.

Group	Mean Score	SD	N	p-value
Anxiety	58.4	6.2	100	0.003
Non-Anxiety	66.7	5.8	100	0.003



High-anxiety students reported:

- Poor sleep initiation and maintenance
- Reduced academic engagement

- Difficulty in sustained concentration
- Increased fatigue

DISCUSSION

This study demonstrates significantly higher anxiety among competitive exam aspirants compared to college freshmen. The results align with existing literature showing that exam-oriented study environments cultivate chronic stress due to high expectations, fear of failure, and intense competition.

The moderate negative correlation between anxiety and MoCA performance indicates the substantial influence of psychological stress on cognitive functions. Anxiety impairs prefrontal cortex operations, affecting working memory, decision-making, and attentional control—all critical for academic tasks.

Poor sleep quality among high-anxiety students' further compounds cognitive inefficiencies. Sleep deprivation is well-known to impair consolidation of learning, emotional regulation, and executive functioning.

The study underscores the pressing need for:

- Stress management programs
- Mindfulness and cognitive-behavioral interventions
- Academic counseling and peer-support groups

Addressing anxiety early can improve both mental health and academic productivity.

Limitations

- Cross-sectional nature prevents establishing causality.
- Small sample size limits generalizability.
- Self-reported sleep and academic engagement may introduce subjective bias.
- Cognitive assessment limited to MoCA; detailed domain-specific testing was not performed.
- Participants were selected from specific institutions, which may not reflect broader populations.

CONCLUSION

Competitive exam aspirants exhibit significantly higher anxiety compared to first-year college students. Elevated anxiety correlates with reduced cognitive performance, particularly affecting attention and executive function, and adversely impacts sleep and academic engagement. These findings highlight the urgent need for structured psychological support for adolescents facing academic pressure.

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