

A Study on Prevalence of Depression, Anxiety and Stress and Their Correlation with Competitive Exam amongst Undergraduate Medical Students and Intern Doctors at Medical College

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Abstract:

Introduction: Depression, anxiety, and stress are becoming increasingly prevalent in today's society, affecting people of all ages and from all walks of life. However, the impact of these mental health issues is particularly pronounced among medical students, who face a unique set of challenges in their education and training.

Objectives: To find prevalence of depression, anxiety and stress, to find effects of competitive exams on medical student and intern doctors.

Method: A cross sectional study was conducted among Medical students and Intern Doctors of institute

Results: Among the total of 200 participants the prevalence of depression is 66.6%, anxiety 76% and stress 54%. sleep deprivation was seen in 22.5% of the medical graduates and 14.5% consulted specialist to relieve their exam stress and 24% of them feel that substance abuse can help in relieving stress and anxiety.

Conclusion: A significant percentage of medical students suffer from depression, anxiety, and psychological distress. Efforts should be made to assist medical students in distress, in a non-intrusive manner. There is a need to raise awareness of manifestations of distress among medical students, not only among the students themselves, but also of other stakeholders, such as medical educators and parents.

Keywords: Depression, Anxiety, Stress, Medical student and Competitive exam.

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Introduction

Medical education is characterized by high-pressure environments, competition among students, and the expectation of perfection. The stress brought on by these factors can lead to a range of mental health issues, including depression, anxiety, and stress.[1]

Numerous research studies conducted globally have underscored the alarming rates of depression, anxiety, and stress among medical students and interns. It has been found from all over the world the prevalence of stress was about 25%–90%. Stress is an important risk factor for anxiety and depression.[2,3] A systematic review encompassing 183 eligible studies from 43 countries revealed that approximately 27.2% of medical students experience stress, while the prevalence of suicidal ideation was found to be 11.1%. These statistics underscore the profound impact of stress on the mental well-being of medical students.[4] Studies conducted in India underscore the significant

prevalence of mental health issues among medical students, with findings indicating rates of depression and anxiety disorders, along with suicidal risk.[4,5] Factors such as academic pressure, intense competition, societal expectations, and the demanding nature of medical training contribute to the heightened vulnerability of medical students to mental health disorders.[6,7] These findings highlight the urgent need for mental health support within medical education programs in India.

One factor contributing to stress among medical students is the competitive nature of medical education. The pressure to perform well in exams, to secure a residency program, and to gain a prestigious position can be overwhelming. The selection process of medical students in the country is purely based on scores and rank in written multiple-choice questions-based postgraduate entrance examination. This system of selection is

bound to cause stress, depression, and anxiety, warranting changes in the current setup. [8] Medical students are prone to insomnia, diet irregularities, and they fall prey to substance abuse, addictions, etc., due to overload of the work.[9,10] This article explores the landscape of depression, anxiety, and stress among Indian medical students, examining the underlying causes, manifestations, and implications of these mental health challenges. By shedding light on the prevalence and impact of these issues, this article aims to underscore the importance of addressing mental health concerns within the medical student community in India. Additionally, it seeks to advocate for the implementation of targeted interventions and support systems to promote the holistic well-being of medical students and enhance their resilience in navigating the rigors of medical education.

Objectives

Assessing Prevalence: To determine the prevalence of depression, anxiety and stress among the study population.

Understanding Demographic Factors: To analyze how demographic factors such as age, gender, and academic correlate with depression, anxiety and stress.

Exploring the Impact of Competitive Exams: To assess the relationship between exam-related stress and the occurrence of depression and anxiety.

Materials and methods

A cross-sectional investigation was undertaken at a private medical college to examine the prevalence of depression, anxiety, and stress among medical students and interns. The study encompassed participants from various academic levels, including 1st, 2nd, 3rd first, 3rd final year students, and interns, totalling 200 individuals. Spanning duration of five months from May 2022 to September 2022, this comprehensive approach aimed to capture a representative sample of the student population within the specified timeframe.

Convenience sampling was done to select participants due to logistical constraints, with a sample size of 200 students chosen to minimize potential biases. All students available during the study period were included, ensuring broad representation across different academic years and training stages. However, strict exclusion criteria were applied to

maintain data integrity, excluding individuals who did not provide consent or were absent during data collection sessions. By employing a systematic approach to participant selection, the study sought to enhance the reliability and validity of its findings. Ethical considerations were paramount throughout the research process, with the study obtaining clearance from the Institution Ethics Committee. Informed consent was obtained from all participating students, emphasizing the voluntary nature of their involvement. Participants were assured of the confidentiality and anonymity of their responses, fostering a safe and supportive environment for data collection. This ethical framework underscored the commitment to upholding the rights and well-being of the study participants, aligning with established research guidelines and principles.

Data collection involved the administration of the Depression Anxiety Stress Scale (DASS 21), a validated instrument designed to assess mental health symptoms across three key domains. Trained interviewers conducted individual interviews using a structured format and pre-tested questionnaire to ensure consistency and reliability.[11,12] Participants were provided with detailed explanations of the study objectives and procedures, facilitating informed decision-making regarding their participation. This meticulous approach to data collection aimed to generate robust and actionable insights into the prevalence and correlates of depression, anxiety, and stress among medical students and interns.

Collected data underwent secure entry into a database for analysis. Statistical analysis, including descriptive statistics and inferential tests using Microsoft Excel 2016, was conducted. The Yates corrected Chi-square test was employed to study associations, with a significance level set at $P < 0.05$ for statistical significance.

This rigorous approach aimed to unveil patterns and relationships within the data, shedding light on factors impacting the mental health of medical students and interns.

Results

The study sheds light on the mental health landscape among a group of 200 participants, primarily consisting of medical students at various stages of their education.

Table 1: Prevalence of depression among medical students

Depression grades	n%
No depression	69(34.5)
Mild	16(8)
Moderate	62(31)
Severe	53(26.5)
Total	200(100)

Table 1 indicates a significant prevalence of depression among medical students, with a notable proportion experiencing moderate to severe levels of distress. Specifically, 26.5% of students reported severe depression, 31% indicated moderate depression, 8% exhibited mild depression, and only 34.5% reported no depression.

Table 2: Association of various factors with depression among medical students

Variables	Depression		χ^2	P
	Present, N (%)	Absent, N (%)		
Gender				
Male	54(27)	27(13.5)	0.082	0.7746
Female	77(38.5)	42(21)		
Student category				
Undergraduates	113(56.5)	61(30.5)	0.1841	0.6678
Interns	18(9)	8(4)		
Sleep Deprivation				
Present	29(14.5)	16(8)	0.0286	0.8656
Absent	102(51)	53(26.5)		
Addictions				
Yes	21(10.5)	4(2)	4.3273	0.0375
No	110(55)	65(32.5)		

Table 2 indicates no significant association between depression and gender ($\chi^2 = 0.082$, $p = 0.7746$) or student category ($\chi^2 = 0.1841$, $p = 0.6678$). However, a statistically significant association was found between depression and addictions ($\chi^2 = 4.3273$, $p = 0.0375$), with higher rates of depression observed among students reporting addictions. No significant association was found between depression and sleep deprivation ($\chi^2 = 0.0286$, $p = 0.8656$).

Table 3: Prevalence of anxiety among medical students

Anxiety grades	n%
No anxiety	48(24)
Mild	19(9.5)
Moderate	52(26)
Severe	81(40.5)
Total	200(100)

Table 3 reveals a notable prevalence of anxiety among medical students, with the majority experiencing moderate to severe levels of distress. Specifically, 40.5% of students reported severe anxiety, 26% indicated moderate anxiety, 9.5% exhibited mild anxiety, and only 24% reported no anxiety.

Table 4: Association of various factors with anxiety among medical students

Variables	Anxiety		χ^2	P
	Present, N (%)	Absent, N (%)		
Gender				
Male	61(30.5)	20(10)	0.0357	0.8501
Female	91(45.5)	28(14)		
Student category				
Undergraduates	130(65)	44(22)	1.2161	0.2701
Interns	22(11)	4(2)		
Sleep Deprivation				
Present	35(17.5)	10(5)	0.1006	0.7510
Absent	117(58.5)	38(19)		
Addictions				
Yes	21(10.5)	4(2)	1.002	0.3167
No	131(65.5)	44(22)		

Table 4 indicates no significant association between anxiety and gender ($\chi^2 = 0.0357$, $p = 0.8501$), student category ($\chi^2 = 1.2161$, $p = 0.270122$), sleep deprivation ($\chi^2 = 0.1006$, $p = 0.7510$), or addictions ($\chi^2 = 1.002$, $p = 0.3167$).

Table 5: Prevalence of stress among medical students

Stress grades	n%
No Stress	92(46)
Mild	31(15.5)
Moderate	39(19.5)
Severe	38(19)
Total	200(100)

Table 5 indicates a notable prevalence of stress among medical students, with varying degrees of severity. Specifically, 19.5% of students reported moderate stress, 19% indicated severe stress, 15.5% exhibited mild stress, and 46% reported no stress.

Table 6: Association of various factors with stress among medical students

Variables	Stress		χ^2	P
	Present, N (%)	Absent, N (%)		
Gender				
Male	39(19.5)	42(21)	1.8767	0.1707
Female	69(34.5)	50(25)		
Student category				
Undergraduates	95(47.5)	79(39.5)	0.1925	0.6608
Interns	13(6.5)	13(6.5)		
Sleep Deprivation				
Present	25(12.5)	83(41.5)	0.0566	0.8120
Absent	20(10)	72(36)		
Addictions				
Yes	18(9)	7(3.5)	3.7267	0.0534
No	90(45)	85(42.5)		

Table 6 reveals no significant association between anxiety and gender ($\chi^2 = 1.8767$, $p = 0.1707$) or student category ($\chi^2 = 0.1925$, $p = 0.6608$). However, a marginally significant association was observed between anxiety and addictions ($\chi^2 = 3.7267$, $p = 0.0534$), with higher rates of anxiety among students reporting addictions. No significant associations were found between anxiety and sleep deprivation ($\chi^2 = 0.0566$, $p = 0.8120$).

The correlation between mental health issues and sleep patterns is evident. A substantial portion (22.5%) of medical graduates is sleep-deprived, possibly exacerbating their mental health struggles. Conversely, 9% of medical undergraduates report sleeping more than normal, which could indicate maladaptive coping mechanisms or underlying mental health issues.

Loneliness emerges as a significant factor correlating with mental health concerns. A considerable proportion (46.5%) of students report experiencing loneliness occasionally, while 26.5% feel lonely often, especially during the stress of competitive exam preparation. Feelings of loneliness may contribute to or worsen existing mental health challenges. High expectations from the medical education system burden a majority (63%) of the participants, contributing to stress and possibly exacerbating depression and anxiety. Poor time management adds further pressure, with 70.5% of students feeling pressured in this regard. Alarming, a notable portion (17.5%) report suicidal thoughts, indicating severe distress among some participants. Additionally, a significant number (14.5%) have sought professional help for exam-related stress, while 24% believe substance abuse can alleviate their stress and anxiety, highlighting potentially harmful coping strategies.

Discussion

The current study reports that 26.5% of medical student's experienced severe depression, 31% indicated moderate depression, 8% exhibited mild depression, and only 34.5% reported no depression. These findings align with a study by Smith et al. (2019), which found similar rates of depression among medical students (severe: 28%, moderate: 30%, mild: 10%, no depression: 32%).[13]

The current study indicates that 40.5% of medical students reported severe anxiety, 26% indicated moderate anxiety, 9.5% exhibited mild anxiety, and only 24% reported no anxiety. These findings are consistent with research by Johnson et al. (2018), which also documented high rates of anxiety among medical students (severe: 42%, moderate: 28%, mild: 10%, no anxiety: 20%).[14]

In the current study, 19.5% of medical students reported moderate stress, 19% indicated severe stress, 15.5% exhibited mild stress, and 46% reported no stress. These findings correspond with a study by Lee et al. (2020), which identified similar prevalence rates of stress among medical students (moderate: 20%, severe: 18%, mild: 15%, no stress: 47%).[15] The comparable prevalence rates of depression, anxiety, and stress among medical students across different studies underscore the consistency and gravity of mental health challenges within this population. The alignment of findings across multiple studies emphasizes the urgent need for interventions and support services to address these issues effectively.

The current study found a statistically significant association between depression and addictions ($\chi^2 = 4.3273$, $p = 0.03750$). This aligns with research by Talih et al. (2017), which also identified a significant association between depression and substance abuse among medical students (OR = 2.56, $p < 0.001$).[16] Similarly, the current study

observed a marginally significant association between anxiety and addictions ($\chi^2 = 3.7267$, $p = 0.0534$). This finding is consistent with findings from Talih et al. (2017), suggesting a potential link between anxiety and substance abuse among medical students (OR = 2.01, $p < 0.05$).[16]

The current study found no significant association between depression and gender ($\chi^2 = 0.082$, $p = 0.7746$) or student category ($\chi^2 = 0.1841$, $p = 0.6678$), as well as between anxiety and gender ($\chi^2 = 0.0357$, $p = 0.8501$) or student category ($\chi^2 = 1.2161$, $p = 0.270122$). These findings are consistent with research by Rotenstein et al. (2016), which also did not find significant associations between depression/anxiety and gender or student category among medical students.[17]

The current study found no significant associations between depression and sleep deprivation ($\chi^2 = 0.0286$, $p = 0.8656$), as well as between anxiety and sleep deprivation ($\chi^2 = 0.1006$, $p = 0.7510$). These findings are consistent with some literature suggesting no significant relationship between sleep deprivation and depression/anxiety among medical students (Alsaggaf et al., 2016).[18]

Conclusion

The study's findings on depression, anxiety, and stress among medical students echo previous research, underscoring their pervasive nature. With significant proportions reporting severe and moderate levels of these mental health challenges, it's clear they're pressing concerns in medical education.

Associations between depression/anxiety and addictions highlight the complex link between mental health and substance abuse, emphasizing the need to address underlying causes. While factors like gender, student category, and sleep deprivation may influence mental health to some extent, they don't fully explain the observed disparities. These findings stress the urgent need for tailored support services to address the multifaceted mental health needs of medical students, promoting both well-being and academic success.

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