

Mental Health Challenges among Medical Students: A Study on Depression, Anxiety and Stress

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Abstract:

Introduction: Medical education is a demanding journey, involving academic, emotional, and social challenges exacerbated by long hours, extensive coursework, exams, peer competition, and personal expectations. These factors contribute to significant psychological morbidity, including stress, anxiety, depression, and suicidal ideation among medical students. Globally, studies report that 25%-90% of medical students experience stress, a key determinant of mental health issues. In India, addressing the mental health of medical students has gained significant attention. This study aims to assess the prevalence of depression, anxiety, and stress among medical students at a college in Gujarat, India.

Materials & Methods: This cross-sectional study was conducted among 400 medical students across all MBBS phases. Data was collected through a structured self-administered questionnaire, consisting of three sections: demographic information, mental health assessment using the Depression Anxiety Stress Scale-21 (DASS-21), and factors associated with mental health.

Results: The study found the prevalence of depression (22.2%), anxiety (37.5%), and stress (45.5%). Factors like age, gender, MBBS phase, religion, family type, residence, and reason for joining MBBS were not significantly linked to mental status of students. However, key contributors included family and personal mental health history, academic dissatisfaction, poor coping skills, family expectations, fear of the future, and life dissatisfaction.

Conclusion: There is a critical need for mental health support systems within medical education to alleviate academic pressures, manage family expectations, and address social isolation. By creating an environment that prioritizes psychological well-being and reduces the stigma surrounding mental health, institutions can enhance student resilience, improve academic performance, and ultimately ensure better patient care.

Keywords: Academic pressure, Anxiety, Coping strategies, Depression, Medical students, Stress.

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Introduction

Medical education is a full-time commitment and responsibility that encompasses academic tasks, social conduct, and the care provided to patients. In addition to these demands, medical students face unique academic, emotional, and social challenges that are often exacerbated by long study and working hours, extensive course content, examinations, peer competition, un-inspiring environments, barriers to reaching desired specialties, undue expectations from self and family members, sleep deprivation, and loneliness. [1] The academic environment of medical education is generally perceived as highly stressful, with a significant degree of psychological

morbidity being reported among medical students. This includes stress, interpersonal problems, suicidal ideation, and psychiatric disorders. [2,3]

Globally, studies have shown that 25%–90% of medical students experience stress, which has been identified as a major determinant of depression and anxiety. [4,5] Students with dysfunctional emotional states require serious attention and management, as an inability to cope successfully can lead to adverse consequences both personally and professionally. [6] The extensive time commitment required to complete academic studies often limits students' ability to engage in extracurricular activities or

pursue hobbies, further exacerbating feelings of isolation and stress. [3] If left unaddressed, the increasing stress levels among medical students can lead to long-term detrimental effects, including poor academic performance and a diminished quality of life. [7]

In recent decades, the need to address mental health issues, especially depression, among medical students has gained significant global attention. In India, the mental health of medical students has emerged as a major research focus, second only to studies on medical education, learning processes, and evaluation. [8] With this backdrop, the present study was undertaken to assess the prevalence of depression, anxiety, and stress among medical students at a medical college in Gujarat, India.

Materials and Methods

Study Design and Setting: This cross-sectional study was conducted among one medical college of Gujarat in June 2024.

Participants: Medical students of all phase of MBBS were invited for the study. They were informed about the study and informed consent was taken from each students. Total 400 medical students completed the project. Approval for the study was obtained from the Institutional Ethics Committee (IEC).

Data collection: Data were collected using a structured self-administered questionnaire, which comprised three sections:

1. **Demographic information:** Age, gender, academic year, family background, and living situation.
2. **Mental health assessment:** An online proforma was circulated, which included Depression Anxiety Stress Scale-21 (DASS-21). DASS-21 is a 21-item self-reported instrument designed to measure the three related negative emotional states including depression, anxiety, and stress. It has 21-items, with seven items for each subscale. Students scored each item from 0-3, where zero meant "did not apply to me at all" and three meant "applied to me very much". All scores of each subscale were added and multiplied by two. "Normal" score for depression was 0-9, for anxiety 0-7, and for stress 0- 14. "Mild" score for depression was taken 10-13, for anxiety 8-9, and for stress 15-18. "Moderate" score for depression was 14-20, for anxiety 10-14, and

for stress 19-25. "Severe" score for depression was 21-27, for anxiety 15-19, and for stress 26-33. "Extremely severe" score for depression was 28+, for anxiety 20+, and for stress 34+. [9]

3. **Factors Associated with Mental Health:** Questions covered potential stressors, including academic pressure, family expectations, social relationships, future uncertainties, and personal satisfaction. Categories included academic pressure, family and social relationships, and future uncertainties.

Data Analysis: Data were analyzed using SPSS version 20. Descriptive statistics (percentages, means) were used to summarize demographic and mental health data. Associations between mental health outcomes (depression, anxiety, stress) and categorical factors (e.g., academic pressure, family expectations) were analyzed using chi-square tests. A p-value of <0.05 was considered statistically significant

Results

The study sample included 400 medical students with an average age of 21.7 ± 1.92 years. Males comprised 60.8% of the participants. Students from all four MBBS phases participated, with the largest group in Phase I (27.25%) and the smallest in Phase III Part II (22.5%). Most students identified as Hindu (89.75%), and 55.5% came from nuclear families, while 29.25% were from three-generation families.

About 60% resided in campus hostels, while 40% lived off-campus. A family history of mental disorder was reported by 14.5% of students, and a personal history of mental disorder was reported by 9.25%. Academic dissatisfaction was noted by 34.5% of students. One fourth (24.5%) of the students reported having ever smoked, and 9.5% reported ever consuming alcohol.

The mental health assessment revealed distinct patterns across depression, anxiety, and stress among medical students. Most students (77.8%) scored in the normal range for depression, while 8% had mild depression, 11% had moderate depression, 2.3% had severe depression, and 1% had extremely severe depression. For anxiety, 62.5% were classified as normal, while mild, moderate, severe, and extremely severe anxiety affected 9%, 15%, 8%, and 5.5% of students, respectively. In terms of stress, 54.5% of students were in the normal category, while 13.5% experienced mild stress, 15.5% moderate stress, 9.5% severe stress, and 7% extremely severe stress.

Table 1: Profile of medical students

Profile	Number (%)
Age (years)	21.7 ± 1.92
Gender	
Male	243 (60.8%)
Female	157 (39.3%)
Year of MBBS	
Phase I	109 (27.25%)
Phase II	103 (25.75%)
Phase III part I	98 (24.5%)
Phase III part II	90 (22.5%)
Religion	
Hindu	359 (89.75%)
Others	41 (10.25%)
Family Type	
Nuclear	222 (55.5%)
Joint	61 (15.25%)
Three generation	117 (29.25%)
Residence	
Campus hostel	240 (60%)
Outside campus	160 (40%)
Family history of mental disorder	58 (14.5%)
Personal history of mental disorder	37 (9.25%)
Academic dissatisfaction	138 (34.5%)
Students who have ever smoked	98 (24.5%)
Students who have ever consumed alcohol	38 (9.5%)

Table 2: Severity levels of depression, anxiety, and stress among medical students

Category	Depression (%)	Anxiety (%)	Stress (%)
Normal	311 (77.8%)	250 (62.5%)	218 (54.5%)
Mild	32 (8%)	36 (9%)	54 (13.5%)
Moderate	44 (11%)	60 (15%)	62 (15.5%)
Severe	9 (2.3%)	32 (8%)	38 (9.5%)
Extremely Severe	4 (1%)	22 (5.5%)	28 (7%)

Table 3: Factors associated with depression, anxiety and stress among medical students

Variables	Prevalence of Depression (n=89, %)	p value	Prevalence of Anxiety (n=150, %)	p value	Prevalence of Stress (n=182, %)	p value
Age (years)	22.2 ± 1.23	0.25	21.9 ± 1.48	0.44	22.9 ± 1.84	0.41
Gender						
Male	49 (20.2%)	0.22	94 (38.7%)	0.59	117 (48.1%)	0.21
Female	40 (25.5%)		56 (35.7%)		65 (41.4%)	
Year of MBBS						
Preclinical	44 (20.8%)	0.47	84 (39.6%)	0.4	88 (41.5%)	0.1
Clinical	45 (23.9%)		66 (35.1%)		94 (50%)	
Religion						
Hindu	80 (22.3%)	1.00	135 (37.6%)	1.00	165 (46%)	0.62
Others	9 (22%)		15 (36.6%)		17 (41.5%)	
Family type						
Nuclear	58 (26.1%)	0.11	92 (41.4%)	0.07	109 (49.1%)	0.25
Joint	10 (16.4%)		24 (39.3%)		26 (42.6%)	
3 generation	21 (17.9%)		34 (29.1%)		47 (40.2%)	
Residence						
Campus hostel	50 (20.8%)	0.46	83 (34.6%)	0.14	100 (41.7%)	0.06

Outside campus	39 (24.4%)		67 (41.9%)		82 (51.3%)	
Family H/O mental disorder						
Yes	27 (46.6%)	< 0.001	31 (53.4%)	0.03	30 (51.7%)	0.32
No	62 (18.1%)		129 (37.7%)		152 (44.4%)	
Personal H/O mental disorder						
Yes	32 (86.5%)	< 0.001	30 (81.1%)	< 0.001	31 (83.8%)	< 0.001
No	57 (15.7%)		120 (33.1%)		151 (41.6%)	
Academic dissatisfaction						
Yes	27 (77.1%)	< 0.001	25 (71.4%)	< 0.001	25 (71.4%)	< 0.001
No	62 (17%)		125 (34.2%)		137 (37.5%)	
Number of attempts to join MBBS						
First Attempt	68 (22.7%)	0.78	107 (35.8%)	0.23	132 (44.1%)	0.38
At Least 2 Attempts	21 (20.8%)		43 (42.6%)		50 (49.5%)	
Reason to join MBBS						
Personal Choice	50 (19.8%)	0.13	85 (33.7%)	0.06	109 (43.3%)	0.25
Parents' Pressure	39 (26.4%)		65 (43.9%)		73 (49.3%)	
Awareness of vastness of medical course before joining MBBS						
Yes	55 (19.5%)	0.01	96 (34%)	0.03	123 (43.6%)	0.27
No	37 (31.4%)		54 (45.8%)		59 (50%)	
Number of supplementary examinations						
None	61 (18.7%)	0.001	116 (35.6%)	0.11	145 (44.5%)	0.43
At least One	27 (36.5%)		34 (45.9%)		37 (50%)	
Subjective (self) assessment of ability to cope with medical syllabus (1-10 Points)						
1-4 (Low)	17 (40.5%)	0.001	23 (54.8%)	0.02	26 (61.9%)	0.004
5-7 (Medium)	56 (23.1%)		91 (37.6%)		116 (47.9%)	
8-10 (High)	16 (13.8%)		36 (31%)		40 (34.5%)	
Subjective (self) assessment of academic performance (1-10 Points)						
1-4 (Low)	19 (32.2%)	0.02	35 (59.3%)	0.003	39 (66.1%)	< 0.001
5-7 (Medium)	61 (22.7%)		96 (35.7%)		128 (47.6%)	
8-10 (High)	9 (12.5%)		19 (26.4%)		15 (20.8%)	

Factors such as age, gender, year of MBBS, religion, family type, residence, and reason to join MBBS were not significantly associated with depression among medical students. Key factors significantly associated with depression included a family history of mental disorder (46.6% prevalence, $p < 0.001$), personal history of mental disorder (86.5% prevalence, $p < 0.001$), and academic dissatisfaction, with 77.1% of dissatisfied students experiencing depression ($p < 0.001$). Other academic and lifestyle factors, such as lack of awareness of the medical course's vastness before joining (31.4%, $p = 0.01$) and a history of supplementary examinations (36.5%, $p = 0.001$), were also significantly linked to depression. Students' subjective assessment of coping ability and academic performance showed a higher prevalence of depression among those who rated themselves lower on both scales ($p = 0.001$ and $p = 0.02$, respectively). Similarly, anxiety prevalence showed no significant differences by age, gender, MBBS phase, or

religion. Significant factors included a family history (53.4%, $p = 0.03$) or personal history of mental disorder (81.1%, $p < 0.001$) and academic dissatisfaction (71.4%, $p < 0.001$). Students who were unaware of the course's demands before joining (45.8%, $p = 0.03$) and those with lower self-assessed coping (54.8%, $p = 0.02$) or academic performance (59.3%, $p = 0.003$) also had higher anxiety levels.

Stress prevalence also showed no significant differences by age, gender, MBBS phase, religion, or family type. Significant factors included a personal history of mental disorder (83.8%, $p < 0.001$), academic dissatisfaction (71.4%, $p = 0.0002$), and lower self-assessed coping ability (61.9%, $p = 0.004$) and academic performance (66.1%, $p < 0.001$). Students residing outside the campus (51.3%) also tended to report higher stress levels, though this was marginally significant ($p = 0.06$).

Table 4: Factors associated with depression, anxiety, and stress among medical students

Factors	Depression (n=89)	Anxiety (n=150)	Stress (n=182)
Academic pressure			
Pressure of studies	54 (60.7%)	94 (62.7%)	118 (64.8%)
Pressure of passing exams	79 (88.8%)	135 (90%)	173 (95.1%)
Cluelessness about future choices	45 (50.6%)	78 (52%)	93 (51.1%)
Family expectations and relationships			
Pressure to fulfill family's expectations	62 (69.7%)	109 (72.7%)	139 (76.4%)
History of parental conflict	6 (6.7%)	8 (5.3%)	11 (6.0%)
Relationship with family	19 (21.3%)	33 (22%)	47 (25.8%)
Social and emotional isolation			
Missing family / away from home	25 (28.1%)	39 (26%)	64 (35.2%)
Relationship with friends	45 (50.6%)	77 (51.3%)	91 (50%)
Future uncertainty and life satisfaction			
Fear of future life	11 (12.4%)	28 (18.7%)	27 (14.8%)
Dissatisfaction with body image	19 (21.3%)	38 (25.3%)	37 (20.3%)
Global dissatisfaction with life	15 (16.9%)	27 (18%)	41 (22.5%)

Academic pressure: The primary academic stressor was exam pressure, affecting 88.8% of students with depression, 90% with anxiety, and 95.1% with stress. Pressure of studies was also significant, impacting around 60-65% across all conditions, while uncertainty about future choices showed a moderate association, affecting about 50%.

Family Expectations and Relationships: Many students felt pressured by family expectations, affecting 69.7% with depression, 72.7% with anxiety, and 76.4% with stress. Family relationships and parental conflict had a smaller impact (depression: 21.3%, anxiety: 22% and stress: 25.8%)

Social and Emotional Isolation: Missing family or being away from home was a notable factor (28.1% in depression, 26% in anxiety and 35.2% in stress). Friend relationships were a consistent issue, reported by around 50% of students across depression, anxiety, and stress.

Future Uncertainty and Life Satisfaction: Fear of the future, body image dissatisfaction, and global dissatisfaction had moderate associations, particularly affecting stress.

Discussion

Depression, anxiety, and stressful life events among medical students are frequently underrecognized and inadequately treated. Due to prevailing stigma and taboos surrounding mental health, many medical students are reluctant to seek professional help, often experiencing feelings of shame that discourage them from accessing necessary support. [10]

Profile of Medical Students: In the present study, 400 medical students from all phases of MBBS with an average age of 21.7 ± 1.92 years participated, with 60.8% male. Most identified as Hindu (89.75%), and 55.5% were from nuclear families.

About 60% lived on campus, 14.5% had a family history of mental disorders, and 34.5% reported academic dissatisfaction. Additionally, 24.5% had a history of smoking, and 9.5% had consumed alcohol.

Kumar B et al. [11] reported an average age of 22.74 ± 1.52 years among 312 final-year medical students, with 84.6% being females. Taneja N et al.¹ found a mean age of 21.54 ± 1.98 years in 187 students, mostly male (66%) and hostellers (65.8%), with 24.1% reporting smoking and 34.6% alcohol consumption. Similar to our findings, 24.1% reported having smoked, and a higher proportion (34.6%) had consumed alcohol. Additionally, 31.6% of students had a family history of chronic noncommunicable diseases, while 11.2% reported a family history of chronic mental illness, and 25.7% had suffered from some medical condition.

Prevalence of depression, anxiety, and stress among medical students:

The present study found prevalence of depression (22.2%), anxiety (37.5%), and stress (45.5%), though notable proportions experienced mild to severe levels. Comparatively, Kumar B et al.¹¹ reported moderate to severe mental health issues among medical students, with 57.6% experiencing depression, 74% anxiety, and 57.7% stress. Similarly, Timsinha S et al.¹⁰ observed prevalence rates of 46.4% for depression, 58.4% for anxiety, and 29.2% for stress. Taneja N et al. [1] reported rates of 32% for depression, 40.1% for anxiety, and 43.8% for stress.

A Brazilian study found 34.6% of students suffered from depression, 37.2% from anxiety, and 47.1% from stress. [12] Turkish medical students reported rates of 27.1% for depression, 47.1% for anxiety, and 27% for stress, while a Nepalese study indicated prevalence rates of 29.9% for depression, 41.1% for anxiety, and 27% for stress. [13]

Within India, mental health concerns also vary by region. A study in Jodhpur reported 57.98% of students experienced depression and 47.41% experienced anxiety. [14], while a Delhi-based study found 21.5% prevalence for depressive disorders and 7.6% for major depressive disorders. [15] Conversely, earlier studies conducted over two decades ago showed little or no evidence of high stress levels among medical students. [16,17] These comparisons underscore that mental health challenges are prevalent among medical students across various educational and geographic contexts, highlighting the urgent need for targeted mental health support.

Factors associated with depression, anxiety and stress among medical students: This study found that demographic factors like age, gender, MBBS year, religion, family type, residence, and reasons for choosing MBBS were not significantly linked to depression, anxiety, or stress. However, depression was notably associated with factors such as a family history of mental illness, a personal mental health history, academic dissatisfaction, unawareness of course demands, and lower self-assessed coping and academic performance. Similarly, anxiety showed significant associations with a family or personal history of mental illness, academic dissatisfaction, lack of course awareness, and lower coping skills. Stress was also associated with personal mental health history, academic dissatisfaction, and lower coping and academic performance, with students living off-campus reporting slightly higher stress levels.

Academic pressure was a significant factor, with exam stress impacting 88.8% of students with depression, 90% with anxiety, and 95.1% with stress. Future uncertainty influenced about 50% across all conditions. Family expectations impacted depression (69.7%), anxiety (72.7%), and stress (76.4%), while social isolation, including homesickness and friend relationship issues, also contributed to these conditions.

Kumar B et al. [11] highlighted similar factors, noting that dissatisfaction with exam criteria, overburdened schedules, and family pressure in Asian contexts are associated with mental health issues among medical students. Timsinha S et al. [10] also noted that psychological health deterioration among students could impair learning and patient care quality. High depression rates were linked to female students, family history, personal mental health history, lower academic performance, and academic dissatisfaction, aligning with findings from studies in other academic fields. [11,18]

Taneja N et al. [1] found that a family history of noncommunicable disorders was linked to stress, while family history of mental illness correlated with depression. They also observed that parental

conflict, poor relationship with family members, dissatisfaction with body image and life satisfaction issues were statistically associated with depression and anxiety. It was noted that coping difficulties in the early years of medical education were significantly associated with all three conditions, consistent with findings by Aktekin et al. [19] who reported high depression and anxiety rates among first- and second-year students.

The elevated levels of stress and depression observed highlight a decline in the psychological well-being of medical students, which can adversely affect their behavior, hinder learning, and ultimately compromise patient care. [10] These findings emphasize the pervasive mental health challenges faced by medical students, driven by a complex interaction of academic, personal, and social factors. The results point to the urgent need for comprehensive support systems that address academic pressures, family expectations, social isolation, and the stigma surrounding mental health in medical education.

Conclusion

This study reveals a significant prevalence of depression (22.2), anxiety (37.2%), and stress (45.5%) among medical students, with academic dissatisfaction, personal mental health history, and family background emerging as key contributing factors. The findings highlight the critical need for mental health support systems within medical education, aimed at alleviating academic pressures, managing family expectations, and addressing social isolation. By fostering an environment that prioritizes psychological well-being and reducing the stigma around mental health, institutions can enhance student resilience, improve academic performance, and ultimately ensure better patient care.

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