ORIGINAL ARTICLE

Issues Related to Academic Success and Mental Health: A Cross-sectional Study among Medical Students of Sangli District, Maharashtra, India

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Abstract

Introduction: Medical students often experience high levels of stress, anxiety, and depression due to the demanding nature of their studies. Academic pressure can be a significant factor in the development of stress, depression, and anxiety among medical students. The situation may deteriorate if these students have personal, academic, or institutional problems. Hence, this study was planned to identify the prevalence of mental health problems among medical students and their association with personal, academic, and institutional issues.

Materials and methods: We conducted a cross-sectional study among medical students from Sangli District, Maharashtra, India. Data were collected using a predesigned and pretested questionnaire. Chi-square and multivariate regression analysis were used for the statistical analysis. Microsoft Office 365 and SPSS 22 were used for analysis purposes.

Results: A significant proportion of medical students reported experiencing symptoms of mental health challenges: 50.0% depression, 73.6% anxiety, and 22.2% stress. The significant predictors for depression were birth order, physical health, and religiosity; for anxiety—age, upbringing, and stress; gender, year in which they are studying, upbringing, birth order, and physical health. By using binary logistic regression, it was found that personal issues are significant predictors related to depression, anxiety, and stress.

Conclusion: Various academic, personal, and institutional issues were contributing to mental health problems among medical students. A robust support system is required to identify and alleviate these problems, which can empower them to cope with challenges and succeed in their academic challenges.

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Introduction

Medical schools train doctors to be skilled, caring, and committed to helping patients. Mental well-being is a necessary factor required for the academic performance of medical students, who are future healthcare professionals. Due to the demanding curriculum, learning environment, educational work, clinical rotations, and continuous assessments, medical students are highly under pressure. Medical colleges aim to produce skilled, empathetic, and dedicated doctors. Mental well-being is crucial for the academic success of medical students. However, the extensive curriculum, clinical exposure, repeated assessments, peer and faculty expectations, and overall daunting environment of a medical college exert immense pressure on the students. These all contribute to creating perfect conditions for the development of stress, depression, and anxiety. Various studies among medical students have reported a very high prevalence of severe or extremely severe stress (30.5–38%), anxiety (38.5–53%), and depression (30–50%).[1–6] Medical students experience mental health problems at higher rates than the general population.[7,8] Even though the rates of depression, anxiety, and stress are high, some students employ coping strategies like time management, counseling, and peer support systems.[9,10] Interventions such as mindfulness training, wellness programs, and curriculum changes can help to tackle mental health issues.

Mental health plays a vital role in our everyday lives, especially in academics. Some studies show that poor mental health is related to lower grades, while other studies suggest the connection is more complex.[11–15] Similarly, personal issues like family situations or addictions can result in increased absenteeism or lack of confidence. These can contribute to poor academic performance and the development of various mental health issues.[1,16]

Due to poor mental health, students may face lower grades in their academic performance, and they may have difficulty concentrating. It may affect their clinical performance while making accurate diagnoses or treatment decisions. It may reduce their ability to connect with patients and even increase the risk of substance abuse or can increase the risk of suicidal thoughts or behaviors.[4,17] Hence, mental health is a significant concern for medical students.

Mental health struggles are generally associated with issues related to academic success achievement. If these issues are not addressed in time, students' mental health might lead to adverse effects on academic performance. We do not know much about how different issues related to academic success affect mental health problems. Most of the studies are about mental health problems and academic performance, but issues related to academic success, such as personal, academic, and institutional issues, are given less weightage.

Hence, this study was conducted to assess whether mental health problems like depression, stress, and anxiety are associated with issues related to academic success, like personal, academic, and institutional issues in the study area, by considering the objective of finding the prevalence of mental health conditions.

Materials and Methods

A cross-sectional study was conducted among medical college students of the Sangli district, Maharashtra, India. Data were collected from two medical colleges from April to October 2022. After the Institutional

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Ethics Committee approval, permission was taken from the respective institute heads. After assuring the anonymity of participation and explaining the nature of the research and the questionnaire, all the students present at the time of data collection were asked to fill out the consent forms, who were willing to participate in the study. The students who were absent at the time of data collection, who witnessed death, divorce, or any major tragedy in their family or close relationships within the last 6 months, or the students who were suffering from any long-term illness or disease were not included in the study. After the consent forms had been collected from the participating students, predesigned and pretested questionnaires were given to them.

There were three different sections in the questionnaire. The first section was related to sociodemographic information like age, gender, educational details, area of upbringing, type of family, education, occupation of mother and father, number of brothers and sisters, helping nature of parents in different situations, sleeping hours, time spent on various activities, addiction, etc., as well as factors related to mental health conditions or academic issues.

The second section had a DASS-21 questionnaire, which is related to screening for depression, anxiety, and stress.[18] It is a 4-point Likert scale (0–3, where 0 means did not apply at all and 3 means applied most of the time), indicating how much the statements applied to participants over the last week. There are 21 questions, which are divided into three self-reported scales designed to measure depression, anxiety, and stress. The scores for each question were added and doubled to obtain the final score. Depression, anxiety, and stress scores are then categorized as normal/absent (0–9 for depression, 0–7 for anxiety, 0–14 for stress), and present (mild, moderate, severe, and extremely severe). The DASS-21 had high reliability, with Cronbach's alpha ranging from 0.74 to 0.93.[19]

The third section was the academic success assessment, which is a standard questionnaire based on published literature.[20] The assessment comprises various challenges that students encounter, encompassing several factors related to three main issues: personal, academic, and institutional. It considers 17 academic, 16 personal, and 10 institutional issues faced by the students. Each issue was scored from 0 to 2, with 0 being absent, 1 being present, and 2 if the problem interfered with the daily routine. This scale exhibited good reliability (Cronbach's alpha reliability coefficient 0.899).

The calculated sample size was 664, using a statistical formula (p = 0.05, level of significance = 1%, and 5% absolute precision). The data were collected using purposive sampling. About 700 students meeting inclusion and exclusion criteria participated in the study. However, 34 questionnaires were incomplete; hence, 666 participants were included in the final analysis.

Frequency and percentages were obtained for qualitative data, and mean, standard deviation, skewness, and kurtosis were obtained for quantitative data. Data were checked for the normality assumptions using the Shapiro–Wilk test and found to meet the assumptions of normal distribution.

The Chi-squared test was used to study the association between stress, depression, anxiety, and academic success factors. Multivariate analysis was used to determine significant predictors for depression, anxiety, and stress. Binary logistic regression with Wald's backward stepwise method was used to see which explanatory variables statistically relate to the response variable. Statistical analysis was done using Microsoft Excel 365 and SPSS 29 (IBM Corp, Armonk, New York, USA).

Results

Out of the total 666 medical students, 312 were males and 354 were females, with a gender ratio of 1:1.13. About 415 (62.31%) students belonged to urban areas, and the remaining came from rural areas. Most participants presently lived in hostels (537, 80.63%), followed by living with their family (108, 16.22%), while the remaining (18, 2.7%) stayed with relatives or as paying guests. Only 199 (29.88%) of the students were from joint families, while the remaining were from nuclear families.

It was found that 371 (55.71%) of the students always talk with their parents, while the majority, 554 (83.18%), of parents always listen to their children. About 631 (94.74%) of students mentioned that their parents always help them, and 596 (89.49%) mentioned that they always ask for money from their parents.

It was found that 50.0% of students reported symptoms of depression (n = 333), 73.6% reported anxiety (n = 490), and 22.2% reported stress (n = 148). Among those who reported each condition, 30.0% (n = 100) of students with depression, 42.9% (n = 210) of students with anxiety, and 20.3% (n = 30) of students with stress had severe symptoms.

Out of the total, 70.3% of students mentioned their percentage of marks. The mean percentage of marks was found to be 67.11, with 12.14 SD (min = 45, max = 96). Depression was found to be a significant predictor of marks (regression coefficient = −0.458, p = 0.015).

Table 1 explains the association between personal issues and mental health conditions. Stress and anxiety were statistically highly dependent on personal issues (p = 0.001), but depression was independent (p = 0.769). The

Table 1: Association of personal issues and mental health conditions

Personal issue	*Depression*		*Anxiety*		*Stress*		*Total*
	No	*Yes*	*No*	*Yes*	*No*	*Yes*	
No problem	18	14	15	17	32	0	32
	(56.3%)	(43.8%)	(46.9%)	(53.1%)	(100.0%)	(0.0%)	(100.0%)
Problem	306	310	161	455	474	142	616
	(49.7%)	(50.3%)	(26.1%)	(73.9%)	(76.9%)	(23.1%)	(100.0%)
Disturbed routine	9	9	0	18	12	6	18
	(50.0%)	(50.0%)	(0.0%)	(100.0%)	(66.7%)	(33.3%)	(100.0%)
Total	333	333	176	490	518	148	666
	(50.0%)	(50.0%)	(26.4%)	(73.6%)	(77.8%)	(22.2%)	(100.0%)
Chi-square/Fisher's exact	0.526		14.362*		14.255*		
p-value	0.769		0.001		0.001		

*Fisher's exact test

students who have stress and anxiety have disturbed routines. The students who were not having depression were not having any problems related to their personal issues.

Table 2 is about the association between academic issues and mental health conditions. Academic issues were significantly associated with stress ($p = 0.000$) but not associated with depression and anxiety. A greater percentage of students who were having stress, depression, or anxiety were found to have disturbed routines regarding their academic issues.

Table 3 is related to the association of institutional issues and mental health conditions. None of the stress, depression, or anxiety were associated with institutional issues. A large number of students were found to have stress and were having their disturbed routine of institutional issues. Students who have anxiety or depression have problematic institutional issues.

To obtain the prediction models for depression, anxiety, and stress, age, year in which students are studying, upbringing, and personal, academic, and institutional issues were considered as independent factors, which were significantly associated.

Three different models were prepared and explained in Table 4. Mental health conditions (depression, anxiety, and stress) were taken as dependent variables, and sociodemographic factors and factors related to the students were taken as independent variables. The accuracy of the models was >71%.

The risk of depression was more strongly related to having more sisters, being born later in the family, and poor physical health. A slight increase in depression risk was also connected to lower levels of religiosity. However, factors like gender, age, upbringing, living with, and the number of brothers did not show a significant relationship with depression (model accuracy: 71.1%).

In the anxiety analysis (model accuracy: 76%), significant factors included age, upbringing, number of brothers, and number of sisters. Older age and upbringing were associated with reduced anxiety, while having more brothers or sisters increased the risk. Other factors like living arrangements, family type, birth order, and religiosity did not show significance.

For stress (model accuracy: 77%), gender, year, upbringing, type of family, number of sisters, birth order, and physical health were significant. Gender played a notable role, as did the year of study and a stable upbringing, which were associated with lower stress levels. Conversely, having more sisters, being born later, and poorer physical health increased stress. The number of brothers did not significantly affect stress levels.

Three more regression models were obtained for the same dependent variables (mental health conditions), and issues related to academic success (personal, academic, and institutional) were considered as independent variables. Personal issues were a significant predictor ($p < 0.001$) for depression, anxiety, and stress. Regression models of depression, anxiety, and stress showed the model accuracy as 61.1, 73.6, and 76.9, respectively.

Discussion

This study examined the relationship between academic factors and mental health among medical students. It also identified the prevalence of mental health conditions and different factors associated with these issues. The findings suggest that students face anxiety and stress due to personal issues, but academic and institutional issues are also responsible for stress.

It is observed that half of the students experienced depression symptoms, while a substantial proportion of students reported anxiety, followed by stress. Anxiety is the most prevalent mental health concern in medical students. Kumaraswamy reported that

Table 2: Association of academic issues and mental health conditions

Academic issue	*Depression*		*Anxiety*		*Stress*		*Total*
	No	*Yes*	*No*	*Yes*	*No*	*Yes*	
No problem	41	49	17	73	83	7	90
	(45.6%)	(54.4%)	(18.9%)	(81.1%)	(92.2%)	(7.8%)	(100.0%)
Problem	288	275	158	405	429	134	563
	(51.2%)	(48.8%)	(28.1%)	(71.9%)	(76.2%)	(23.8%)	(100.0%)
Disturbed routine	4	9	1	12	6	7	13
	(30.8%)	(69.2%)	(7.7%)	(92.3%)	(46.2%)	(53.8%)	(100.0%)
Total	333	333	176	490	518	148	666
	(50.0%)	(50.0%)	(26.4%)	(73.6%)	(77.8%)	(22.2%)	(100.0%)
	Pearson Chi-square = 2.93 $p = 0.231$		Pearson Chi-square = 5.753 $p = 0.056$		Pearson Chi-square = 19.198 $p = 0.000$		

Table 3: Association of institutional issues and mental health conditions

Institutional issue	*Depression*		*Anxiety*		*Stress*		*Total*
	No	*Yes*	*No*	*Yes*	*No*	*Yes*	
No problem	123	103	61	165	188	38	226
	(54.4%)	(45.6%)	(27.0%)	(73.0%)	(83.2%)	(16.8%)	(100.0%)
Problem	197	223	107	313	316	104	420
	(46.9%)	(53.1%)	(25.5%)	(74.5%)	(75.2%)	(24.8%)	(100.0%)
Disturbed routine	13	7	8	12	14	6	20
	(65.0%)	(35.0%)	(40.0%)	(60.0%)	(70.0%)	(30.0%)	(100.0%)
Total	333	333	176	49	518	148	666
	(50.0%)	(50.0%)	(26.4%)	(73.6%)	(77.8%)	(22.2%)	(100.0%)
	Pearson Chi-square = 5.179 $p = 0.075$		Pearson Chi-square = 2.127 $p = 0.345$		Pearson Chi-square = 6.092 $p = 0.048$		

Table 4: Multivariate regression models for dependent variables: depression, anxiety, and stress

	B	*S.E.*	*Wald*	*df*	*Sig.*	*Exp (B)*	*95% CI for Exp (B)*	
							Lower	*Upper*
Dependent variable: depression, with model accuracy of 71.1%								
Gender (male)	0.111	0.19	0.341	1	0.559	1.117	0.77	1.621
Age	0.011	0.062	0.034	1	0.854	1.011	0.895	1.142
Upbringing	–0.109	0.148	0.544	1	0.461	0.897	0.672	1.198
Living with	–0.081	0.171	0.225	1	0.635	0.922	0.66	1.289
No. of brothers	0.297	0.161	3.406	1	0.065	1.345	0.982	1.843
No. of sisters	0.495	0.157	9.939	1	0.002	1.641	1.206	2.233
Birth order	–0.354	0.146	5.914	1	0.015	0.702	0.528	0.934
Physical health	0.16	0.055	8.406	1	0.004	1.173	1.053	1.307
Religious	–0.131	0.053	6.136	1	0.013	0.877	0.79	0.973
Constant	0.214	1.381	0.024	1	0.877	1.238		
Dependent variable: anxiety, with model accuracy of 76%								
Age	–0.152	0.07	4.694	1	0.03	0.859	0.749	0.986
Upbringing	–0.356	0.168	4.489	1	0.034	0.701	0.504	0.974
Living with	0.173	0.209	0.683	1	0.409	1.188	0.789	1.789
Type of family (joint)	0.078	0.232	0.114	1	0.736	1.081	0.687	1.703
No. of brothers	0.813	0.224	13.18	1	<0.001	2.255	1.454	3.499
No. of sisters	0.654	0.212	9.537	1	0.002	1.923	1.27	2.913
Birth order	–0.17	0.185	0.842	1	0.359	0.844	0.587	1.212
Physical health	0.091	0.063	2.051	1	0.152	1.095	0.967	1.239
Religious	–0.063	0.06	1.082	1	0.298	0.939	0.834	1.057
Constant	4.134	1.583	6.819	1	0.009	62.408		
Dependent variable: stress, with model accuracy of 77%								
Gender (male)	0.605	0.228	7.055	1	0.008	1.831	1.172	2.861
Age	0.067	0.089	0.563	1	0.453	1.069	0.897	1.274
Year	–0.273	0.115	5.632	1	0.018	0.761	0.607	0.954
Upbringing	–0.381	0.182	4.403	1	0.036	0.683	0.479	0.975
Type of family (joint)	–0.513	0.242	4.475	1	0.034	0.599	0.372	0.963
No. of brothers	0.283	0.178	2.517	1	0.113	1.327	0.936	1.882
No. of sisters	0.452	0.174	6.712	1	0.01	1.571	1.116	2.211
Birth order	–0.437	0.168	6.801	1	0.009	0.646	0.465	0.897
Physical health	0.161	0.064	6.221	1	0.013	1.174	1.035	1.332
Constant	–1.64	1.8	0.831	1	0.362	0.194		

B = regression coefficients; S.E. = standard error; Wald = Wald's coefficient; df = degrees of freedom; Sig. = significance; Exp (B) = odds ratio; 95% CI for Exp (B) = 95% confidence interval for odds ratio

10–20% of students experience psychological issues, highlighting the need for surveys to assess the prevalence of such problems.[21] Farrau et al. found 47.3% depression, 68.1% anxiety, and 39.4% stress in Nigerian medical students.[22] Farrau et al. reported a slightly lower percentage of anxiety, but it is consistent with the trend that anxiety is the most prevalent mental health issue across different medical student populations, as in our study. This shows the global nature of anxiety in medical education. It indicates that medical students may be at a higher risk of anxiety and depression, potentially due to the pressure of medical training. The prevalence of mental disorders in India has nearly doubled since 1990, and by 2017, one in seven Indians was affected by some form of mental illness.[23]

Organizing seminars and workshops could enhance mental health awareness among students, while training teachers to identify and support struggling individuals can further strengthen mental well-being.

The study found that >55% of students regularly talked with their parents, and 83% of parents always listened to their children. A high percentage of students, >94%, always received help from their parents. This highlights the family support in managing depression, anxiety, and stress. Ramberg mentioned a significant negative association between parental support and students' psychological complaints.[24] Having parents who listen and provide help can make a big difference for students, especially when they are facing academic pressures or mental challenges. This suggests that encouraging strong family connections can be a key part of helping students to cope with mental health challenges.

Only 70% of the students mentioned their exam scores. Students with depression have lower exam scores. Stankovska et al. found that anxiety and stress play an important role in the prediction of academic achievement.[25] It means that psychological well-being is closely related to academic success and emphasizes addressing mental health concerns to support academic success.

In the study, personal issues were identified as a significant predictor for depression, anxiety, and stress, showing the strong influence personal struggles have on students' mental well-being. Roberts LW

reported that nearly 90% of the students need care for their concerns, with nearly 50% indicating at least one mental health issue.[11]

Conclusion

Personal, academic, or institutional problems can contribute to the development of mental health issues in students. To prevent these problems, it is required to actively monitor students' well-being and provide timely support whenever possible. There is a significant association between personal issues and stress and anxiety, as well as a significant link between academic issues and stress. Although institutional issues did not significantly contribute to mental health problems, many students reported it. The regression model also revealed that personal problems are a significant predictor of mental health problems.

Medical schools need to go beyond just academic teaching and focus on fostering both the mental and physical well-being of their students, preparing them to handle the tough demands of medical practice.

Limitations

The study was conducted among medical students from the Sangli district. Hence, there are limitations in generalizing the findings. The result may not reflect the experiences of all the medical students from different demographics.

This cross-sectional study is limited to establishing the causal relationship between personal, academic, and institutional issues and the mental health outcomes observed. To examine the changes over time, we need to conduct longitudinal studies.

As self-reported questionnaires were used, there may be the possibility of response bias of under- or overreport of the symptoms due to stigma or personal interpretation.

In the study, only three mental health conditions were considered—depression, anxiety, and stress—based on the DASS-21 scale. Other important facets of mental health, such as burnout, sleep disorders, or substance use, were not included, which limits the depth of the mental health assessment.

Questionnaires used in the study are standardized tools; they may not fully capture the experiences of students in terms of personal, academic, or institutional problems. Some relevant factors, such as social support, coping mechanisms, or institutional policies, might have been overlooked.

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