ORIGINAL ARTICLE

Depression, Anxiety and Stress Among Medical Students: A Cross Sectional Study

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ABSTRACT

Introduction: Medical education is not only stressful environment but notoriously rigorous, often predisposing medical students to significant amount of psychological distress. Mental health issues among medical students can contribute negative impact in both personal well-being and professional development. **Aims:** To assess the levels of stress, anxiety and depression among medical students and evaluate their associations with socio-demographic factors and academic performance. **Methods:** A cross-sectional study was conducted among 143 medical students enrolled at a medical college. Data regarding socio-demographic characteristics, academic satisfaction, and levels of psychological distress (stress, anxiety, and depression) were collected. Data analysis was performed using statistical software, and a p-value < 0.05 was considered statistically significant to determine associations between variables. **Results:** Of the 143 participants, the majority were aged 21–25 years (65.7%), male (76.9%), and unmarried (97.9%), and resided in hostels (90.2%). Non-clinical students constituted 51.7% of the sample, and 67.8% reported satisfaction with their academic performance. Psychological distress was prevalent: 30.8% experienced stress (ranging from mild to extremely severe), 62.9% suffered from anxiety, and 48.3% reported depression. Extremely severe anxiety was notably high at 18.9%. Bivariate analysis revealed that anxiety levels were significantly associated with marital status (p = 0.022) and the level of education (p = 0.016), with non-clinical students experiencing higher rates of severe (9.5%) and extremely severe (28.4%) anxiety compared to clinical students. No statistically significant associations were observed between potential risk factors and stress (p > 0.05) or depression (p > 0.05). However, descriptive trends indicated higher psychological distress among students with unsatisfactory academic performance, younger age (≤ 20 years), and those in non-clinical years. **Conclusion:** Psychological distress particularly anxiety and depression is highly prevalent among medical students, with non-clinical students showing significantly higher vulnerability to severe anxiety. These findings highlight an urgent need for institutional mental health screening, stress management interventions, and robust academic support systems, particularly during the transitional non-clinical years of medical training.

Keywords: Anxiety; Depression; Medical College; Stress; Students

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INTRODUCTION

Medical education is one of the most intellectually and demanding academic journey but also perceived as stressful environment which may reflect on medical students' mental well-being and overall academic performance. High levels of stress have been reported in medical students in various studies.[1-4] Medical education is a long journey, during their academic years, medical students are confronted with significant academic, psychological and existential stressors. Consequently, prevalence of depression, anxiety is higher in medical students compared to the general population. It has also been observed that mental health worsens after students enroll medical school and remains poor throughout their training period.[5] On an individual level, this distress can contribute to poor academic performance, substance abuse, broken relationships with colleague and family, suicidal tendency and even attrition from the profession. On a professional level, studies suggest that student distress contributes to quality of care towards patients, relationship with faculty members, and ultimately the culture of the medical profession.[6] Studies of this kind will be a valuable tool to take appropriate steps like counselling for the depressed medical students Hence, the aim of this study was to find out the prevalence and associated factors of depression, anxiety and stress among medical students to ensure better academic and professional outcomes for future healthcare professionals.

METHODS

A cross sectional study was conducted among the MBBS students of Nepalgunj Medical College, after ethical approval from institutional review committee. All the students were present at the time of collection of the questionnaire and consenting for participation was included in the study. The students were approached by the authors after the end of their regular class and explained about the objectives of the study and the way to answer the questionnaire. They were encouraged to fill up the questionnaire to the best of their knowledge and perception. They were also informed that the responses would be confidential, and no any identifiers were used in the forms while filling up the questions so that the students were encouraged to answer confidently. A questionnaire including the Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress was used.[7] Further demographic characteristics of medical students, substance abuse and academic performance was also included in questionnaire. At the college, the students were categorized as clinical from third year MBBS (VII semester), fourth year (IX semester) and interns. On non-clinical were includes first year MBBS (Ist and IInd semester).

Statistics -Data collected in structured proforma was entered in Microsoft Excel and statistical analysis was be done using SPSS software.

RESULTS

Total number of students enrolled were 143. Most of students fell in age group of 21-25 years (65.7%) with male preponderance 76.9%.Response rate was slightly higher in non-clinical (51.7%) as compared to clinical group (48.3). Academic performance was satisfactory in majority (67.8%).

AGE	Frequency	Percent
<=20	45	31.5
21-25	94	65.7
>25	4	2.8
Sex		
F	33	23.1
M	110	76.9
MARITAL STATUS		
Married	3	2.1
Unmarried	140	97.9
RESIDENCY		
Rural	44	30.8
Urban	99	69.2
LEVEL		
Clinical	69	48.3
Non-clinical	74	51.7
CURRENT RESIDENCE		
Home	2	1.4
Hostel	129	90.2
Quarter	1	0.7
Rented room	11	7.7
SUBSTANCE ABUSE		
No	136	95.1
Yes	7	4.9
ACADEMIC PERFORMANCE		
Satisfied	97	67.8
Unsatisfied	46	32.2
Total	143	100.0

Table I: Socio-demographic profile of the participants, N = 143

Among the studied group moderate level of stress, anxiety and depression was observed in majority.

STRESS	Frequency	Percent
Normal	99	69.2
Mild	15	10.5
Moderate	22	15.4
Severe	3	2.1
Extremely severe	4	2.8
ANXIETY		
Normal	53	37.1
Mild	12	8.4
Moderate	39	27.3
Severe	12	8.4
Extremely severe	27	18.9
DEPRESSION		
Normal	74	51.7
Mild	16	11.2
Moderate	33	23.1
Severe	15	10.5
Extremely severe	5	3.5

Table II: Level of Stress, Anxiety and Depression among participants

No significant association was observed with studied variables in relation with stress but mild to moderate stress was found in age group 21-25 years and severe and extremely severe was observed among age group 20 and below. Regarding gender stress level was more among female students. Among clinical and non-clinical group moderate level of stress was more among non-clinical group. Unsatisfactory academic performance was associated with different level of stress among participated students.

STRESS												
AGE	Normal	%	Mild	%	Moderate	%	Severe	%	Extremely severe	%	Total	p
<=20	31	68.9	5	11.1	5	11.1	2	4.4	2	4.4	45	
21-25	64	68.1	10	10.6	17	18.1	1	1.1	2	2.1	94	0.725
>25	4	100.0	0		0		0		0		4	
SEX												
F	21	63.6	4	12.1	5	15.2	2	6.1	1	3.0	33	0.424
M	78	70.9	11	10.0	17	15.5	1	0.9	3	2.7	110	
MARITAL STATUS												
Married	1	33.3	0		2	66.7	0		0		3	0.227
Unmarried	98	70.0	15	10.7	20	14.3	3	2.1	4	2.9	140	
RESIDENCY												
Rural	35	79.5	4	9.1	4	9.1	0		1	2.3	44	0.46
Urban	64	64.6	11	11.1	18	18.2	3	3.0	3	3.0	99	
LEVEL												
Clinical	51	73.9	7	10.1	8	11.6	1	1.4	2	2.9	69	0.716
Non-clinical	48	64.9	8	10.8	14	18.9	2	2.7	2	2.7	74	
CURRENT RESIDENCE												
Home	2	100.0	0		0		0		0		2	
Hostel	86	66.7	14	10.9	22	17.1	3	2.3	4	3.1	129	
Quarter	1	100.0	0		0		0		0		1	0.85
Rented room	10	90.9	1	9.1	0		0		0		11	
SUBSTANCE ABUSE												
Yes	93	68.4	15	11.0	21	15.4	3	2.2	4	2.9	136	1
No	6	85.7	0		1	14.3	0		0		7	
ACADEMIC PERFORMANCE												
Satisfied	71	73.2	9	9.3	13	13.4	3	3.1	1	1.0	97	0.162
Unsatisfied	28	60.9	6	13.0	9	19.6	0		3	6.5	46	

Table III: Association of Stress with potential risk factors

Mild degree of anxiety was observed among students age more than 25 years,moderate among 21 to 25 years and extremely severe among less than 20 years. Regarding gender mild to moderate level of anxiety was observed among male and severe and extremely severe level of anxiety among female participants. Mild to moderate level of anxiety was common among clinical group and severe and extremely severe level of anxiety found on non-clinical group. Satisfactory academic performance was associated with mild level of anxiety, moderate and severe level was associated with unsatisfactory academic performance.

ANXIETY												
AGE	Normal	%	Mild	%	Moderate	%	Severe	%	Extremely severe	%	Total	p
<=20	16	35.6	3	6.7	8	17.8	5	11.1	13	28.9	45	
21-25	34	36.2	8	8.5	31	33.0	7	7.4	14	14.9	94	0.157
>25	3	75.0	1	25.0	0		0		0		4	
SEX												
F	15	45.5	2	6.1	5	15.2	4	12.1	7	21.2	33	0.375*
M	38	34.5	10	9.1	34	30.9	8	7.3	20	18.2	110	
MARITAL STATUS												
Married	0		0		1	33.3	2	66.7	0		3	0.022
Unmarried	53	37.9	12	8.6	38	27.1	10	7.1	27	19.3	140	
RESIDENCY												
Rural	16	36.4	3	6.8	18	40.9	2	4.5	5	11.4	44	0.109*
Urban	37	37.4	9	9.1	21	21.2	10	10.1	22	22.2	99	
LEVEL												
Clinical	27	39.1	9	13.0	22	31.9	5	7.2	6	8.7	69	0.016*
Non-clinical	26	35.1	3	4.1	17	23.0	7	9.5	21	28.4	74	
CURRENT RESIDENCE												
Home	1	50.0	0		1	50.0	0		0		2	
Hostel	46	35.7	10	7.8	35	27.1	11	8.5	27	20.9	129	
Quarter	0		0		0		1	100.0	0		1	0.224
Rented room	6	54.5	2	18.2	3	27.3	0		0		11	
SUBSTANCE ABUSE												
Yes	50	36.8	11	8.1	37	27.2	11	8.1	27	19.9	136	0.501
No	3	42.9	1	14.3	2	28.6	1	14.3	0		7	
ACADEMIC PERFORMANCE												
Satisfied	34	35.1	10	10.3	25	25.8	8	8.2	20	20.6	97	0.665*
Unsatisfied	19	41.3	2	4.3	14	30.4	4	8.7	7	15.2	46	

Table IV: Association of Anxiety with potential risk factors

Depression was observed more among age group below 20 years. Male participants demonstrate more depressive episode as compared to female. Moderate to severe level of depression was observed among non-clinical group. Unsatisfactory academic performance was associated with different level of depression among participants.

	DEPRESSION											
AGE	Normal	%	Mild	%	Moderate	%	Severe	%	Extremely severe	%	Total	p
<=20	19	42.2	6	13.3	12	26.7	7	15.6	1	2.2	45	
21-25	52	55.3	10	10.6	20	21.3	8	8.5	4	4.3	94	0.792
>25	3	75.0	0		1	25.0	0		0		4	
SEX												
F	18	54.5	1	3.0	11	33.3	2	6.1	1	3.0	33	0.245
M	56	50.9	15	13.6	22	20.0	13	11.8	4	3.6	110	
MARITAL STATUS												
Married	1	33.3	1	33.3	0		1	33.3	0		3	0.261
Unmarried	73	52.1	15	10.7	33	23.6	14	10.0	5	3.6	140	
RESIDENCY												
Rural	25	56.8	6	13.6	8	18.2	4	9.1	1	2.3	44	0.821
Urban	49	49.5	10	10.1	25	25.3	11	11.1	4	4.0	99	
LEVEL												
Clinical	42	60.9	8	11.6	10	14.5	6	8.7	3	4.3	69	0.130*
Non-clinical	32	43.2	8	10.8	23	31.1	9	12.2	2	2.7	74	
CURRENT RESIDENCE												
Home	1	50.0	0		1	50.0	0		0		2	
Hostel	64	49.6	14	10.9	31	24.0	15	11.6	5	3.9	129	0.433
Quarter	0		1	100.0	0		0		0		1	
Rented room	9	81.8	1	9.1	1	9.1	0		0		11	
SUBSTANCE ABUSE												
Yes	70	51.5	14	10.3	32	23.5	15	11.0	5	3.7	136	0.596
No	4	57.1	2	28.6	1	14.3	0		0		7	
ACADEMIC PERFORMANCE												
Satisfied	52	53.6	13	13.4	21	21.6	9	9.3	2	2.1	97	0.392
Unsatisfied	22	47.8	3	6.5	12	26.1	6	13.0	3	6.5	46	

Table V: Association of Depression with potential risk factors

DISCUSSION

The current cross-sectional study was conducted to evaluate the prevalence and socio-demographic correlates of depression, anxiety, and stress among medical students. Medical education is one of the globally recognized and highly demanding academic journey which also associate with stressful environment that frequently compromises student psychological well-being.[8] In our study a substantial portion of the medical students experienced varying degrees of psychological distress, with anxiety being the most pronounced morbid state, followed by depression and stress.

In our study, the majority of students fell within the 21–25 age group (65.7%), representing the typical age distribution of undergraduate medical programs. Interesting trends emerged when correlating age with emotional morbidity. Our study revealed students aged 20 years or younger demonstrated a higher proportion of severe and extremely severe stress (4.4% each) as well as extremely severe anxiety (28.9%). Furthermore, depressive episodes were also observed more frequently among this age group (57.8% overall prevalence of depression compared to 44.7 % in the 21–25 age group). Although these differences did not reach statistical significance ($p > 0.05$), they suggest that younger students, who are typically in their initial years of medical school, are highly vulnerable. This is consistent with existing literature indicating that the abrupt transition to a voluminous curriculum and competitive environments makes younger students highly prone to severe anxiety and depression.[9]

A distinct patterns of psychological distress was observed among studied subjects across gender lines. In terms of stress, a higher proportion of female students suffered from severe stress (6.1%) compared to males (0.9%). Similarly, females exhibited higher levels of severe (12.1%) and extremely severe (21.2%) anxiety than their male counterparts. This trend aligns with regional and global studies that consistently document higher rates of stress and anxiety among female medical students, often attributed to higher self-reported vulnerabilities, differential coping mechanisms, and unique societal expectations.[10] Interestingly, however, our study found that male participants demonstrated a marginally higher absolute rate of depressive episodes (49 %) compared to females (45.4%). While the associations for gender across all three domains did not show statistical significance ($p > 0.05$), the elevated burden of severe anxiety in females and depressive symptoms in males underscores the need for gender-sensitive mental health interventions.[11] The disparity in our study that depression more common among male as compared to female might be multifactorial. Firstly, smaller sample size of female medical students, rest as males are more likely to hide symptoms, less willing to seek psychological help, mask depression with substance use, or suffer in silence until it reaches a crisis point.

A distinct finding in this study was the variation of psychological morbidity across clinical and non-clinical level. Non-clinical students demonstrated higher rates of moderate-to-severe stress (18.9% moderate; 2.7% severe) and depression (31.1% moderate; 12.2% severe) compared to clinical students. Most importantly, our study revealed significant statistical association between the academic level and anxiety levels ($p = 0.016$). Non-clinical students experienced a remarkably high rate of extremely severe anxiety (28.4%) compared to clinical students (8.7%). This statistically significant finding contradicts several global studies where clinical rotations due to patient care responsibility and erratic schedules typically yield higher distress.[1] Instead, our data aligns with models showing that the initial preclinical years, characterized by intense note memorization, lack of clinical exposure, and continuous assessments, represent the peak period of anxiety.[12] As students progress to the clinical years, they may develop better psychological resilience and adaptation mechanisms.

A clear correlation between academic performance and psychological distress was observed in our study. While 67.8% of the participants were satisfied with their academic perfor-

mance, those who were unsatisfied consistently demonstrated higher rates of emotional distress. Unsatisfactory academic performance was linked to higher moderate stress (19.6%) and extremely severe stress (6.5%). It was also strongly tied to elevated rates of moderate and severe anxiety, as well as a higher overall prevalence of depression (52.1% in unsatisfied students vs. 46.4% in satisfied students). Academic failure or poor self-evaluation creates a vicious cycle where severe anxiety and depressive symptoms impair cognitive functions, concentration, and memory, which in turn further diminishes actual academic output.[10,13]

Substance abuse was reported by 4.9% (n = 7) of the enrolled students. While the small sample size in the "Yes" group prevented the achievement of statistical significance ($p > 0.05$), the cross-tabulation revealed that 14.3% of students who engaged in substance abuse suffered from moderate stress and severe anxiety. In medical student cohorts, substance use (such as alcohol, tobacco, or unprescribed stimulants) is frequently adopted as a maladaptive coping mechanism to temporarily numb or manage intense academic pressure.[14] Institutional screening is vital, as early substance use heavily compounds long-term psychiatric morbidity.

LIMITATIONS

This study is limited by its cross-sectional design, which captures data at a single point in time and precludes the determination of definitive causal relationships between the socio-demographic risk factors and psychological outcomes. Additionally, the relatively small sample size (N = 143) from a single institution restricts the generalizability of these findings to all medical colleges across the region.

CONCLUSION

Psychological distress is not uncommon among medical students, with varying degree of stress, anxiety and depression, particularly anxiety and depression is highly prevalent and non-clinical students showing significantly higher vulnerability to severe anxiety. Considering these observed findings, an urgent need for institutional mental health screening, stress management interventions, and robust academic support systems, particularly during the transitional non-clinical years of medical training is utmost.

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