https://doi.org/10.37939/jrmc.v27i4.2379

Depression, Anxiety And Stress Among Medical And Allied Health Sciences Students At Sargodha Medical College

Muhammad Saeed Raza[1], Ahsan Maqbool[2], Sana Zahid[3], Shoaib Ahmad Malik[4], Ayesha Yousaf[5], Kashif Rauf[6]

Abstract

Objective: This study attempts to determine the frequency of depression, anxiety and stress and associated factors among medical and allied health sciences students of Sargodha Medical College.

Methods: The nature of the study is cross-sectional, among 350 (175 each) medical and allied health sciences students of Sargodha Medical College. The students were recruited using convenient sampling. Socio-demographic information was recorded and depression, anxiety and stress were assessed using the depression, anxiety and stress scale (DASS-21). Statistical Package for Social Sciences (SPSS) version 24.0 was used for data entry and analysis.

Results: The study shows that nearly half of medical students (53.1%) had depression, 69.7% had anxiety and 44% had stress; while among allied health sciences students, 60.6% were depressed, 73.7% had anxiety and 45.1% had reported stress. The mean depression score among medical students was 12.19 ± 9.98 and 13.29 ± 11.12 among allied health sciences students ($p \leq 0.332$).

Conclusion: Based on the results, it is recommended that various methods should be adapted and prioritized for enhancing the mental health of the students to support and improve academic learning among students.

Keywords: Depression, Anxiety, Stress, mental health, medical students, allied health students

[1] Lecturer/Resident, Medical Officer, Department of Community Medicine, Sargodha Medical College, Sargodha; [2] Professor, Health Services Academy, Ministry of National Health Services Regulations and Coordination; [3] Post graduate trainee, Faisal Masood Teaching Hospital, Sargodha; [4] Assistant Professor/Head of Biochemistry Department, Sargodha Medical College, Sargodha; [5] Post Graduate Trainee, Benazir Bhutto Hospital, Rawalpindi; [6] Consultant Biochemist, Department of Biochemistry, Rawalpindi Medical College, Rawalpindi Medical University, Rawalpindi.

Correspondence: Dr. Muhammad Saeed Raza, Lecturer/Demonstrator, Department of Community Medicine, Sargodha Medical College, Sargodha.

Email: saeedraza114@gmail.com

Cite this Article: Raza MS, Maqbool A, Zahid S, Malik SA, Yousaf A, Rauf K. Depression, Anxiety And Stress Among Medical And Allied Health Sciences Students At Sargodha Medical College. JRMC. 2023 Dec. 30;27(4). https://doi.org/10.37939/jrmc.v27i4.2379.

Received August 18, 2023; accepted November 20, 2023; published online December 30, 2023

1. Introduction

Mental distress among medical and allied health sciences students is documented globally, as new strategies for reducing anxiety and stress related to training programs the students have been adopted but this issue persists. Either medical or allied health sciences educational programs embolden challenging curricula, comprehensive clinical training and laboratory setting training for allied health sciences professionals [(1)]. There are almost 80% of students experiencing stress worldwide because of their academic problem sets, papers, assignments and exams [(2)]. Stress is mainly a physiological reaction by an organism involving diverse mechanisms of defence for confronting the arise situation that can be considered threatening to that particular organism [(3)]. Recognition of mental distress issues of students and possible reasons for distress could help in major amendments in their existing curricula or training program structures for ensuring that these students can better mentally adapt to their training challenges and better cope with various educational requirements, as well as consequential dropout [(4)]. The literature mainly related to associated risk factors of stress, depression and anxiety among undergraduate students showed mainly uncertainty for their future and also pressure to succeed [(5)]. Among both sexes, females were mainly affected by such problems that can either be exogenous like training load and study subjects or endogenous like personality traits [(6)]. There are several studies conducted on depression, anxiety and stress assessment separately in either medical or allied health sciences fields but studies taking both medical and allied health sciences students in a single study are scarce. In developing countries like Pakistan, reporting to a psychologist is often considered a taboo for any mental health issue. However, there is a dire need to detect such issues in college-level students who often suffer depression, anxiety and stress across their study period and therefore exert a great impact on the quality of their lives.

2. Materials & Methods

A cross-sectional study design was used to detect the frequency of depression, anxiety and stress among medical and allied health sciences students. The duration of the study was 6 months (Nov. 2021 – Apr. 2022). Standard questionnaire DASS 21 as well as sociodemographic Performa was used to collect the data. All medical and allied health sciences students of Sargodha Medical College studying in 2022 were selected as the study population. A sample size of 350 was calculated with a 95% confidence level, 5% margin of error and taking the expected prevalence of stress among medical students i.e., 35% [(1)] in students belonging to the Pakistani population by using the following formula:

$$n = \frac{z^2_{1-\alpha/k} P(1-P)}{d^2}$$

350 students (175 from each program i.e. MBBS and Allied Health Sciences Program each) fulfilling the selection criteria were enrolled in this study from different classes (medical and allied) of Sargodha Medical College by using the Convenience sampling technique. A list of all students (medical and allied health sciences) was obtained from the admission office of the college and consented individuals were included. Depression anxiety and stress were labelled using scores from the DASS-21 questionnaire(7)DASS-21 is a tool that effectively screens for depression, stress and anxiety. However, this tool does not confirm the actual presence of the diagnosis. DASS-21 is given importance because of its simplicity, and reliability as well as being a validated tool among all the major settings both in students and professionals and thus could be utilized in research and also clinical perspective. The documented internal consistency of DASS-21 proforma is high with Cronbach's α of 0.84 to 0.97 (8). Data was entered and analysed using SPSS v.24. software. Recommended cut-off scores for conventional severity labels from DASS-21 are as under [(7)]

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

Data was entered in SPSS v.24 and analysis was done using this software. Quantitative Variables like age, family income and DASS-21 scores were presented as mean ± SD and categorical variables like sex, class, presence of depression, anxiety or stress etc. were presented as frequency and percentage. Means were compared among the students using the Student t-test. For hypothesis testing, a t-test and chi-square test (as applicable based on the type of variable) were utilized using two groups of medical versus allied health sciences students. p-value≤0.05 was taken as statistically significant.

3. Results

Table-1 Frequency distribution of different variables among Medical and Allied health science Students

Variables		Medical (n=175)	Allied health sciences (n=175)
		n (%)	**n (%)**
Age (Years)	17-21	82 (46.9)	88 (50.3)
	22-25	93 (53.1)	87 (49.7)
Sex	Male	51 (29.1)	51 (29.1)
	Female	124 (70.9)	124 (70.9)
Stay	Day Scholar	49 (28.0)	79 (45.1)
	Boarders	126 (72.0)	96 (54.9)
Family Income (Rupees)	≤100,000	119 (68.0)	154 (88.0)
	>100,000	56 (32.0)	21 (12.0)
Residence	Urban	140 (80.0)	113 (64.6)
	Rural	35 (20.0)	62 (35.4)
Family Type	Nuclear	140 (80.0)	140 (80.0)
	Joint	35 (20.0)	35 (20.0)
Sleep Hours	≤ 8	155 (88.6)	148 (84.6)
	> 8	20 (11.4)	27 (15.4)
Depression	Normal	82 (46.9)	69 (39.4)
	Mild	20 (11.4)	27 (15.4)
	Moderate	42 (23.9)	37 (21.2)
	Severe	12 (6.9)	16 (9.1)
	Extremely Severe	19 (10.9)	26 (14.9)
Anxiety	Normal	53 (30.3)	46 (26.3)
	Mild	15 (8.6)	07 (4.0)
	Moderate	39 (22.3)	41 (23.4)
	Severe	21 (12.0)	23 (13.1)
	Extremely Severe	47 (26.8)	58 (33.2)
Stress	Normal	98 (56.0)	96 (54.9)
	Mild	20 (11.4)	20 (11.4)
	Moderate	27 (15.4)	30 (17.2)
	Severe	21 (12.0)	23 (13.1)
	Extremely Severe	9 (5.1)	06 (3.4)

Table-1 shows that the mean age among respondents was 21.53±1.56 years; there were 82 (46.9%) medical students aged between 17 to 21 years and among allied health sciences students there were 88 (50.3%) aged 17 to 21 years of age, whereas 93 (53.1%) medical students had the age of 22 to 25 years and 87 (49.7%) allied health sciences students had the age of 22-25 years. Regarding sex, 51 (29.1%) males each were medical students and allied health sciences students while the remaining 124 (70.9%) among both groups were females. Family type of the students showed that 140 (80%) of medical and allied health sciences students respectively were living in nuclear family structures while the remaining 35 (20%) medical and allied health sciences students each belonged to the joint family system. Sleeping hours of the students showed that 155 (88.6%) medical and 148 (84.6%) allied health sciences students had ≤8 hours of sleep while 20 (11.4%) medical and 27 (15.4%) allied health sciences students slept for >8 hours.

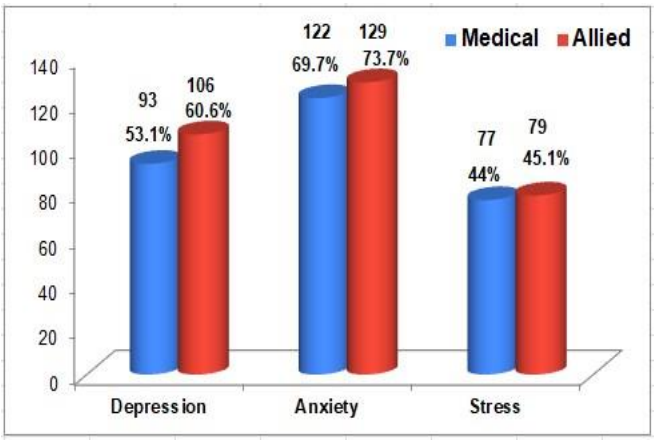

Figure-1 Distribution of Depression, Anxiety and Stress among Medical and Allied Health Sciences Students

Figure 1 shows that based on DASS21 scores, there were 93 (53.1%) medical students showing depression, 122 (69.7%) showed anxiety and 77 (44%) showed stress while 106 (60.6%) allied health sciences students showing depression, 129 (73.7%) showed anxiety and 79 (45.1%) showed stress.

Table 2 reflects that out of 93 medical students having depression, there were 45 (54.9%) medical students with depression belonged to the 17 to 21 years age group while 48 (51.6%) medical students were aged 22 to 25 years. The difference was statistically insignificant (p≤0.666). Out of 106 allied health students having depression, there were 61 (69.3%) allied health sciences students having depression belonged to the 17 to 21 years age group and 45 (51.7%) having depression belonged to the 22 to 25 years age group.

This difference between age groups of allied health sciences students and depression was statistically significant (p<0.017). All of the variables i.e., age; sex, sleep hours, stay and family type among both medical and allied health sciences students were statistically insignificant except for age among allied health sciences students which was statistically significant.

Regarding anxiety, Table 2 shows that out of 122 medical students having anxiety, there were 57 (69.5%) medical students whose anxiety belonged to the 17 to 21 years age group while 65 (69.9%) medical students had the age of 22 to 25 years. The difference was statistically insignificant (p≤0.956).

Out of a total of 129 allied health sciences students having anxiety, there were 69 (78.4%) allied health sciences students having anxiety belonged to the 17 to 21 years age group and 60 (69%) having anxiety belonged to the 22 to 25 years age group. This difference between age groups of allied health sciences students and anxiety was statistically insignificant (p≤0.156). Regarding sex, there were 32 (62.7%) male medical students had anxiety while 90 (72.6%) female medical students suffered anxiety. The difference between sex and anxiety among medical students was insignificant statistically (p≤0.198). There were 39 (76.5%) allied health sciences male students who had anxiety while 90 (72.6%) females had anxiety. The difference was statistically insignificant (p≤0.595) between sex and anxiety among allied health sciences students. Regarding sleeping hours, there were 105 (67.7%) medical students having anxiety slept for ≤8 hours while 17 (85%) medical students slept for >8 hours. The difference was statistically insignificant (p≤0.114) between sleep hours and anxiety among medical students.

There were 108 (73%) allied health sciences students having anxiety who slept for ≤8 hours and 21 (77.8%) having anxiety slept for >8 hours. This difference between the sleep hours of allied health sciences students and anxiety was statistically insignificant (p=0.602).

Regarding student stay, 34 (69.4%) medical students were day scholars having anxiety while 88 (69.8%) border medical students suffered anxiety. The difference between stay and anxiety among medical students was insignificant statistically (p≤0.953). There were 59 (74.7%) allied health sciences students who had anxiety and were day scholars while 70 (72.9%) had anxiety and were living in hostels.

Table-2 Association of Sociodemographic factors with Depression, anxiety and stress among Medical and Allied health sciences Students

VARIABLES			AGE (years)		SEX		SLEEP HOURS		STAY		FAMILY TYPE	
			17-21	22-25	Male	Female	≤8	>8	Day scholar	Boarders	Nuclear	Joint
DEPRESSION	**Medical**	n (%)	45 (54.9)	48 (51.6)	26 (51)	67 (54)	80 (51.6)	13 (65)	22 (44.9)	71 (56.3)	72 (51.4)	21 (60)
		p-value	0.666		0.713		0.259		0.173		0.363	
	Allied Health Sciences	n (%)	61 (69.3)	45 (51.7)	28 (54.9)	78 (62.9)	87 (58.8)	19 (70.4)	50 (63.3)	56 (58.3)	83 (59.3)	23 (65.7)
		p-value	0.017*		0.325		0.257		0.504		0.486	
ANXIETY	**Medical**	n (%)	57 (69.5)	65 (69.9)	32 (62.7)	90 (72.6)	105 (67.7)	17 (85)	34 (69.4)	88 (69.8)	97 (69.3)	25 (71.4)
		p-value	0.956		0.198		0.114		0.953		0.805	
	Allied Health Sciences	n (%)	69 (78.4)	60 (69)	39 (76.5)	90 (72.6)	108 (73)	21 (77.8)	59 (74.7)	70 (72.9)	100 (71.4)	29 (82.9)
		p-value	0.156		0.595		0.602		0.792		0.169	
STRESS	**Medical**	n (%)	37 (45.1)	40 (43)	15 (29.4)	62 (50)	66 (42.6)	11 (55)	21 (42.9)	56 (44.4)	62 (44.3)	15 (42.9)
		p-value	0.779		0.013*		0.292		0.849		0.879	
	Allied Health Sciences	n (%)	44 (50)	35 (40.2)	18 (35.3)	61 (49.2)	69 (46.6)	10 (37)	31 (39.2)	48 (50)	61 (43.6)	18 (51.4)
		p-value	0.194		0.093		0.357		0.155		0.403	

The difference was statistically insignificant (p≤0.792) between student stay and anxiety among allied health sciences students. Regarding the family type, 97 (69.3%) medical students living in nuclear families have anxiety while 25 (71.4%) medical students living in the joint family systems suffer from anxiety.

The difference between family type and anxiety among medical students was statistically insignificant (p≤0.805). There were 100 (71.4%) allied health sciences students who had anxiety living in the nuclear system while 29 (82.9%) had anxiety living in the joint family system. The difference was statistically insignificant (p≤0.169) between family type and anxiety among allied health sciences students. All of the variables i.e., age; sex, sleep hours, stay and family type among both medical and allied health sciences students were statistically insignificant.

Regarding stress Table 2 shows that out of 77 medical students having stress, 37 (45.1%) stressed medical students belonged to the 17 to 21 years age group while 40 (43%) medical students had age 22 to 25 years. The difference was statistically insignificant (p≤0.779). There 44 (50%) allied health sciences students having stress belonged to the 17 to 21 years age group and 35 (40.2%) having stress belonged to the 22 to 25 years age group. This difference between age groups of allied health sciences students and stress was statistically insignificant (p≤0.194). Regarding sex, there were 15 (29.4%) male medical students who had stress while 62 (50%) female medical students suffered from stress. The difference between sex and stress among medical students was statistically significant (p<0.013). There were 18 (35.3%) allied health sciences male students who had stress while 61 (49.2%) females had stress. The difference was statistically insignificant (p≤0.093)

between sex and stress among allied health sciences students. Regarding sleeping hours, there were 66 (42.6%) medical students having stress slept for ≤8 hours while 11 (55%) medical students slept for >8 hours. The difference was statistically insignificant (p=0.292) between sleep hours and stress among medical students. There were 69 (46.6%) allied health sciences students having stress who slept for ≤8 hours and 10 (37%) having stress slept for >8 hours. This difference between the sleep hours of allied health sciences students and stress was statistically insignificant (p≤0.357). Regarding student stay, 21 (42.9%) medical students were day scholars having stress while 56 (44.4%) border medical students suffered from stress. The difference between stay and stress among medical students was insignificant statistically (p≤0.849). There were 31 (39.2%) allied health sciences students who had stress were day scholars while 48 (50%) had stress were living in hostels. The difference was statistically insignificant (p≤0.155) between student stay and stress among allied health sciences students. Regarding family type, 62 (44.3%) medical students were living in nuclear families having stress while 15 (42.9%) medical students living in joint family systems suffered from stress. The difference between family type and stress among medical students was insignificant statistically (p≤0.879). There were 61 (43.6%) allied health sciences students who had stress living in a nuclear system while 18 (51.4%) had stress living in a joint family system. The difference was statistically insignificant (p≤0.403) between family type and stress among allied health sciences students. All of the variables i.e. age; sex, sleep hours, stay and family type among both medical and allied health sciences students were statistically insignificant except for sex among medical health sciences students was statistically significant.

Table -3 DASS-21 Mean Score comparison among the Medical & Allied health sciences Students

Variables	Medical (n=175)		Allied health sciences (n=175)		P value
	Mean	SD	Mean	SD	
Depression Score	12.19	9.98	13.29	11.12	0.332
Anxiety Score	13.30	9.50	15.21	10.08	0.069
Stress Score	15.18	9.23	15.65	9.30	0.637

The mean depression score among medical and allied health sciences students was statistically insignificant (p≤0.332). The mean anxiety score among medical and allied health sciences students was statistically insignificant (p≤0.069). The mean stress score among medical and allied health sciences students was not statistically significantly different (p≤0.637).

Table 4 shows that depression and anxiety scores among medical students showed a positive correlation (r=0.695; p<0.001), depression and stress scores among medical students reflected a strong positive correlation (r=0.800; p<0.001) and lastly anxiety and stress scores among medical students also showed strong positive correlation (r=0.795; p<0.001). Among allied health sciences students, depression and anxiety scores showed a positive correlation (r=0.739; p<0.001), depression and stress scores among allied health sciences students showed a strong positive correlation (r=0.878; p<0.001) and lastly anxiety and stress scores among allied health sciences students also showed strong positive correlation (r=0.782; p<0.001).

Table-4 Correlation between various DASS-21 scores among Medical and Allied health Sciences Students

DASS-21 scores	Medical Students		Allied Health Sciences	
	r	p-value	r	p-value
Depression vs Anxiety	0.695	<0.001*	0.739	<0.001*
Depression vs Stress	0.800	<0.001*	0.878	<0.001*
Anxiety vs Stress	0.795	<0.001*	0.782	<0.001*

r=Correlation Coefficient Value; *Significant Value (p<0.05)

Mental and physical illnesses, diminished work efficiency, absenteeism, and burnout might trigger the levels of anxiety, depression and stress among the students. [9] Moreover, extensive depression and stress resulted in both mental and physical health problems, eventually resulting in suppressing their abilities to achieve the best in their academics, and personal as well as professional development [10] Our study results showed that among medical students 46.9% students were having no depression as per DASS-21 depression score, whereas 53.1% showed depression ranges from mild to extremely severe level. Among allied health

sciences students there were 39.4% were normal and 60.6% had some level of depression as per the DASS-21 depression score.

4. Discussion

Our study results showed that regarding anxiety, among medical students there were 30.3% normal students as per DASS-21 anxiety score, 8.6% showed mild anxiety, 22.3% had moderate anxiety, 12% showed severe anxiety and 26.8% medical students had extremely severe anxiety; while among allied health sciences students there were 26.3% having no anxiety, 4% showed mild anxiety, 23.4% had moderate anxiety, 13.1% showed severe anxiety and 33.2% allied health sciences students had extremely severe anxiety. Syeda Rubab and Mukhtiar among students from Karachi, Pakistan showed anxiety present among 72% (136) participants; mild 15.4% (29), moderate 43.6% (82), severe 7.4% (14) and extremely severe anxiety among 5.9% (11) participants [(1)] Our study results showed the higher prevalence of anxiety in the studied groups in comparison to the literature reviewed. The reason could be attributed to the situation prevailing due to the loss of year due to coronavirus infection cases and thereafter online class schedules.

Our study results showed that stress, among medical students, there were 56% had no stress 11.4% showed mild stress, 15.4% had moderate stress, 12% showed severe stress and 5.1% of medical students had extremely severe stress; while among allied health sciences students 54.9% having no stress as per DASS-21 stress score, 11.4% showed mild stress, 17.2% had moderate stress, 13.1% showed severe stress and 3.4% allied health sciences students had extremely severe stress. Several other studies from the same region reported the prevalence of depression and stress as 38% to 42% and 55% to 61% respectively [(11)]; [(12)]. Stress prevalence among Nepali medical students was 20.9% (13), in Saudi Arabia it was 63.8% and in Pakistan was 90% [(14)(15)].

Our study results showed a considerably low prevalence of stress among the studied groups in comparison to the literature reviewed. The reason could be that the student is not bothered by stressful situations and desires to have a chilled mood most of the time.

Our study results showed that the mean depression score among medical students was 12.19±9.98 in comparison to 13.29±11.12 among allied health sciences students (p≤0.332). The mean anxiety score among medical students was 13.30±9.50 in comparison to 15.21±10.08 among allied health sciences students (p≤0.069). The mean stress score among medical students was 15.18±9.23 in comparison to 15.65±9.30 among allied health sciences students (p≤0.637). On comparing the scores among studying classes (p0.05) the allied health sciences students showed statistically significant results on all the sub-scales while medical students did not show statistically significant results (p>0.05).

In this study, there were 51% of male medical students had depression while 54% of females had depression (p=0.713). While there were 54.9% of allied health sciences male students had depression and 62.9% of females showed depression (p≤0.325). Nileshwari and colleagues' study results showed that out of 150, 43 students had depression; among these males 6.4% and females had (9.2%) [(16)].

In our study, there were 62.7% of male medical students had anxiety while 72.6% of female medical students suffered anxiety (p≤0.198). Whereas, there were 76.5% of allied health sciences male students had anxiety while 72.6% of female students had anxiety (p=0.595). Nileshwari and colleagues showed that out of 39 students having anxiety, males had 7.6% and females had 9.6% anxiety [(16)]. Wafaa and Safaa's study showed that 65% had anxiety and among these 70.4% and 54.7% were males and females respectively (p<0.001)(17). The proportion of students in both the studied groups was higher as compared to research done by other authors in separate settings and geographical regions.

There 29.4% of male medical students had stress while 50% of female medical students suffered stress (p<0.013). Among allied health sciences students, there were 35.3% of male students who had stress while 49.2% of females were stressed (p≤0.093). Nileshwari and colleagues from Jamnagar India showed that 27 students were suffering from stress 5.2% were males and 5.6% were females [(16)]. Wafaa and Safaa's study results showed that stress was present among >60% of students; 57% of males and 65.9% of females had stress (p<0.001) [(17)]. The cross-sectional study from Saudi Arabia comparing the sex-wise occurrence of stress showed that females (75.7%) had a higher percentage in comparison to 57% of males having stress [(18)]. There was a lower percentage of males and females in our study having stress as compared to the stated literature from international studies.

In our study, depression and anxiety scores among medical students showed a positive correlation (r=0.695; p<0.001), depression and stress scores among medical students was a strongly positive correlation (r=0.800; p<0.001) and lastly anxiety and stress scores among

medical students also showed a strong positive correlation (r=0.795; p<0.001). Among allied health sciences students, depression and anxiety scores showed a positive correlation (r=0.739; p<0.001), depression and stress scores among allied health sciences students had a strong positive correlation (r=0.878; p<0.001) and lastly anxiety and stress scores among allied health sciences students also showed a strong positive correlation (r=0.782; p<0.001). The correlation values showed that as the depression, among either the medical or allied health sciences students increases, so do the anxiety and stress scores among them also increases.

5. Conclusion

The findings of the present study conclude that more than 10% of the medical students at Sargodha Medical College had extremely severe depression levels while allied health sciences students had almost 15% extremely severe depression. The severe anxiety levels among medical students were lower than that of allied health sciences students and stress levels among medical students were more common than among allied health sciences students. Moreover, the finding from correlation showed that there was a significant positive correlation between depression, anxiety and stress levels among medical students as well as allied health sciences students showing that all three 3 scores progress simultaneously so that if one score increase the other two scores also show an increasing trend. However, the need of the hour is that there must be frequent/regular assessment of depression, anxiety as well as stress levels are critical in identification of the support needed by the undergraduates for their academic life and also for better professional achievements later in their lives. The poor status of mental health also significantly influences the undergraduates' future; therefore, various methods should be adapted and prioritized for enhancing the mental health of the students in several areas; their services as well as support in academic learning techniques, their course design, class environment, social culture and also communication among society circles and students.

CONFLICTS OF INTEREST- None

Financial support: None to report.
Potential competing interests: None to report
Contributions:
M.S.R, A.M, A.Y - Conception of study
S.Z, K.R - Experimentation/Study Conduction
M.S.R, A.M, S.Z, S.A.M - Analysis/Interpretation/Discussion
M.S.R - Manuscript Writing
S.A.M - Critical Review
M.S.R, S.Z, A.Y, K.R - Facilitation and Material analysis

References

1. Baig M. Frequency and perceived causes of depression, anxiety and stress among medical students of a private medical institute in Karachi: a mixed method study. Article in Journal of the Pakistan Medical Association. 2019. Available from: https://www.researchgate.net/publication/333658728
2. Abebe AM, Kebede YG, Mengistu F. Prevalence of Stress and Associated Factors among Regular Students at Debre Birhan Governmental and Nongovernmental Health Science Colleges North Showa Zone, Amhara Region, Ethiopia 2016. Psychiatry J. 2018 Sep 2;2018:1–7. DOI: 10.1155/2018/7534937
3. Gao W, Ping S, Liu X. Gender differences in depression, anxiety, and stress among college students: A longitudinal study from China. J Affect Disord. 2020 Feb 15;263:292–300. DOI:10.1016/j.jad.2019.11.121.
4. Kumar S, H.S. K, Kulkarni P, Siddalingappa H, Manjunath R. Depression, anxiety and stress levels among medical students in Mysore, Karnataka, India. Int J Community Med Public Health. 2016;359–62. DOI: 10.4103/0971-5916.156571
5. Amir Hamzah NS, Nik Farid ND, Yahya A, Chin C, Su TT, Rampal SRL, et al. The Prevalence and Associated Factors of Depression, Anxiety and Stress of First Year Undergraduate Students in a Public Higher Learning Institution in Malaysia. J Child Fam Stud. 2019 Dec 1;28(12):3545–57. DOI: 10.1007/s10826-019-01537-y
6. Bore M, Kelly B, Nair B. Potential predictors of psychological distress and well-being in medical students: A cross-sectional pilot study. Adv Med Educ Pract. 2016;7:125–35. DOI: 10.2147/AMEP.S96802
7. Crawford JR, Henry JD. The Depression Anxiety Stress Scales (DASS): Normative data and latent structure in a large non-clinical sample. British Journal of Clinical Psychology. 2003;42(2):111–31. DOI: 10.1348/014466505X29657
8. Coker AO, Coker OO, Sanni D. Psychometric properties of the 21-item Depression Anxiety Stress Scale (DASS-21). African Research Review. 2018 Jul 16;12(2):135. DOI: 10.1057/s41599-022-01229-x
9. Kerebih H, Ajaeb M, Hailesilassie H. Common mental disorders among medical students in Jimma University, Southwest Ethiopia. Afr Health Sci. 2017;17(3):844–51. DOI: 10.4314/ahs.v17i3.27
10. Fasoro AA, Oluwadare T, Ojo TF, Oni IO. Perceived stress and stressors among first-year undergraduate students at a private medical school in Nigeria. J Taibah Univ Med Sci. 2019 Oct 1;14(5):425–30. DOI: 10.1016/j.jtumed.2019.08.003
11. Norphun N, Pitanupong J, Jiraphan A. Stress and coping strategies among thai medical students in a southern medical school. Siriraj Med J. 2020 May 1;72(3):238–44. http://dx.doi.org/10.33192/Smj.2020.32

12. Taneja N, Sachdeva S, Dwivedi N. Assessment of Depression, Anxiety, and Stress among Medical Students Enrolled in a Medical College of New Delhi, India. Indian J Soc Psychiatry 2018;34:285–8. DOI:10.4103/ijsp.ijsp_114_17
13. Paudel K, Adhikari TB, Khanal P, Bhatta R, Paudel R, Bhusal S, et al. Sleep quality and its correlates among undergraduate medical students in Nepal: A cross-sectional study. PLOS Global Public Health. 2022 Feb 18;2(2):e0000012. DOI:10.1371/journal.pgph.0000012
14. Almigbal T, Batais MA. The Relationship between Stress and Academic Achievement of Medical Students in King Saud University: A Cross-Sectional. Article in The Kuwait medical journal: KMJ: the official journal of the Kuwait Medical Association 2018 https://www.researchgate.net/publication/323561247
15. Tariq S, Tariq S, Tariq S, Jawed S. Perceived stress, severity and sources of stress among female medical students in a private medical college in Pakistan. J Pak Med Assoc. 2020 Jan 1;70(1):162–7. DOI: 10.5455/JPMA.2153
16. Vala N, Vachhani M, Sorani A. Study of anxiety, stress, and depression level among medical students during COVID-19 pandemic phase in Jamnagar city. Natl J Physiol Pharm Pharmacol. 2020;10(0):1. DOI: 10.1186/s41983-021-00377-2
17. Abdel Wahed WY, Hassan SK. Prevalence and associated factors of stress, anxiety and depression among medical Fayoum University students. Alexandria Journal of Medicine. 2017;53(1):77–84. http://dx.doi.org/10.1016/j.ajme.2016.01.005
18. Abouammoh N, Irfan F, Alfaris E. Stress coping strategies among medical students and trainees in Saudi Arabia: A qualitative study. BMC Med Educ. 2020 Apr 22;20(1). DOI: 10.1186/s12909-020-02039-y.