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ORIGINAL ARTICLE

Prevalence of Depression, Anxiety and Stress in Medical Students, interns and residents in Pakistan

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ABSTRACT

Aim: To assess prevalence of Depression, Anxiety, Stress in medical students, interns, and residents in Pakistan
Study design: Cross-sectional Survey (Questionnaire) based study.
Place and duration of study: This study was conducted at Combined Military Hospital Lahore Medical College from March 2020 to May 2020.
Results: 104 participants were included in the study. There was female predominance 58(55.8%), and the mean age was 23.55±1.42. The overall mean score of depression and anxiety was 21.2±12.67 and 15.7±10.67 respectively and most prevalent in third and fourth-year residents. The mean stress score was 13.7, 10. 27. Twenty-eight (26.9%) of the overall participants had extremely severe depression, 36 (34.6 %) had extremely severe anxiety and 13(12.5%) had severe stress. Doctors studying and practicing in the private sector have a higher DASS21 score (p = < 0.006)
Conclusion: Multiple factors have been found to contribute to the poor mental health of health care workers, including financial trouble, sleep deprivation, abuse from colleagues, high expectations, female gender, broken relationships, and substance misuse.
Keywords: Anxiety Disorders, Depression, Medical, Mental Health Problem Solving, Psychological Distress,

INTRODUCTION

The World Health Organization regards mental health as an essential component of health. Deterioration of mental health is a concern for public health authorities around the globe. It has been reported that medical students have a greater chance of suffering from depression and anxiety when compared with their colleagues from other fields[1]. Putrhan et al[2] in 2016 reported a meta-analysis of 77 different studies which showed a 28% prevalence of depression among medical students around the globe. Some studies have shown an incidence of depression and anxiety among medical students to be as high as 51% [1,3,4,5]. Depression has been associated with a higher rate of suicidal ideation[4,5]. The medical fraternity also carries a higher rate of suicide than the general population[5].

The constant struggle and difficult training that health care providers go through can result in considerable mental distress[3]. Additional contributing factors include exposure to patient suffering, financial trouble[5,6,7] sleep deprivation [8], abuse from colleagues[9], high family and teacher expectations[9], and female gender [10]. Broken relationships, substance misuse, and debilitation from the profession can also contribute to mental distress[3]. All these factors may be the reason that health care professionals have a higher rate of depression and suicidal ideation when compared with the general population.

If Junior Doctors and Medical Students are free from mental stress, it provides them an environment to excel in their field, enhance their learning, and achieve high standards of professionalism and morals. It also enables them to develop efficient problem-solving skills and developing a proficient approach as clinicians. It is therefore imperative to regularly assess the mental status of junior doctors and medical students. This will help in addressing specific issues which are detrimental to mental health. Resultantly we would achieve the intended goal of developing excellent physicians.

This study was designed to assess the status of depression, anxiety, and stress amongst junior doctors and medical students of Pakistan.

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PATIENT AND METHODS

After approval for the institutional review board, this Cross-sectional study was conducted with the help of an instrument for estimation of Depression, stress and anxiety called DASS-21. It was a short, reliable, and validated questionnaire 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 stress 0-14. "Mild" score for depression was taken 10-13, for anxiety 8-9, and stress 15-18. "Moderate" score for depression was 14-20, for anxiety 10-14, and stress 19-25. "Moderate" score for depression was 14-20, for anxiety 10-14, and stress 19-25. "Severe" score for depression was 21-27, for anxiety 15-19, and stress 26-33. "Extremely severe" score for depression was 28+, for anxiety 20+, and for stress 34+ Validity and reliability of the Iranian version of DASS-21 were determined (Cronbach Alpha 0.77, 0.79, and 0.78 for depression, anxiety, and stress domains, respectively) [The questionnaire is attached in illustration 1.] Sample size was calculated with WHO calculator with 95 % confidence interval and 5 % margin of error to be 95[10].

Illustration 1: Depression and Anxiety Severity Score (DASS 21)

DEPRESSION ANXIETY STRESS SCALES (21)

Name:_____ Date:_____

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you **over the past week.** There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:
0: Did not apply to me at all
1: Applied to me to some degree, or some of the time
2: Applied to me to a considerable degree, or a good part of the time
3: Applied to me very much, or most of the time

						Scoring D	A	S
1.	I found it hard to wind down	0	1	2	3			
2.	I was aware of dryness of my mouth	0	1	2	3			
3.	I couldn't seem to experience any positive feeling at all	0	1	2	3			
4.	I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3			
5.	I found it difficult to work up the initiative to do things	0	1	2	3			
6.	I tended to over-react to situations	0	1	2	3			
7.	I experienced trembling (e.g., in the hands)	0	1	2	3			
8.	I felt that I was using a lot of nervous energy	0	1	2	3			
9.	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3			
10.	I felt that I had nothing to look forward to	0	1	2	3			
11.	I found myself getting agitated	0	1	2	3			
12.	I found it difficult to relax	0	1	2	3			
13.	I felt down-hearted and blue	0	1	2	3			
14.	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3			
15.	I felt I was close to panic	0	1	2	3			
16.	I was unable to become enthusiastic about anything	0	1	2	3			
17.	I felt I wasn't worth much as a person	0	1	2	3			
18.	I felt that I was rather touchy	0	1	2	3			
19.	I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)	0	1	2	3			
20.	I felt scared without any good reason	0	1	2	3			
21.	I felt that life was meaningless	0	1	2	3			
						Multiply x 2		
						Totals		

Depression Score:_____
Anxiety Score:_____
Stress Score:_____

	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+	37+

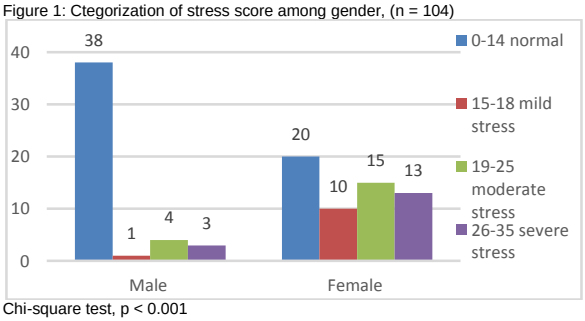
The questionnaire was administered online using Google Forms after electronic consent over 3 months from March 2020 to May 2020. Medical students and junior doctors of either gender and age more than 20 years (house officers and post-graduate residents) were included in the study. Doctors who have completed their specialization were excluded from the study. No identifying information like name or affiliating institute was collected to address ethical considerations. Analysis was performed using IBM SPSS Statistics version 21. Descriptive statistics were applied to categorical variables as frequencies or proportions and as a measure of central tendency to qualitative variables [mean ± SD]. Mean scores were calculated for depression, anxiety, and stress. Kruskal Wallis test was used to compare differences amongst a score of final year medical students, house surgeons, and resident different groups. To assess the relationship between depression, anxiety, and stress correlation analysis was also performed using Person and Spearmen rank correlation coefficient as appropriate. Adjusted β-coefficient with their 95% CI was reported. A p-value of <0.05 was considered statistically significant.

RESULTS

Table 1 Comparison of DASS 21 scores according to academic years and overall DASS 21 scores among study participants(n=104)

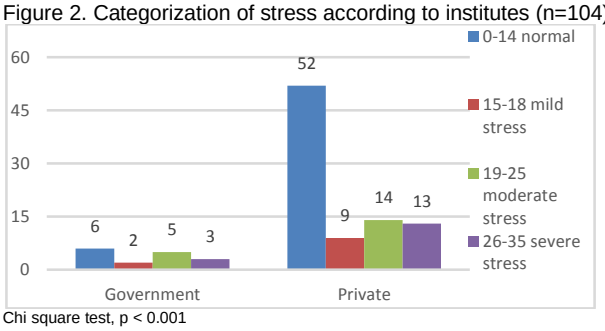
Academic year and position	Depression	Anxiety	Stress
Final Year Medical Student	23.2±12.8	17.4±11.3	16.3±11.2
Start of House job	17.3±10.1	12.1±9.9	10.7±9.6
End of house job	20.9±12.17	13.6±10.4	13.1±9.9
Year 1 and 2 Surgical Resident	24±0	22±0	12±0
Year 3 and 4 medical Resident	36±0	28±0	16±0
Year 3 and 4 Surgical Resident	30.3±16.2	20.6±8.7	17.4±8.3
Year 1 and 2 Medical Resident	30.7±7.6	25.3±9.0	25.3±7.6
P – Value	0.372	0.448	0.415
Scores	21.2±12.2	15.1±10.7	13.7±10.3

Figure 1: Ctegorization of stress score among gender, (n = 104)



Chi-square test, p < 0.001

Figure 2. Categorization of stress according to institutes (n=104)



Chi square test, p < 0.001

A total of 104 participants were recruited in the present study. There was overall female dominance 58(55.8%), and the mean age was 23.55±1.42, 88(84.6%) were working in a private setup. The majority of the respondents were in the initial period of their house job 39(37.5%) followed by final year medical students 26(26.9%). The overall mean score of depression was 21.2 ±12.67, Anxiety score was 15.7± 10.67, and stress scores 13.7± 10. 27. Twenty-eight (26.9%) had extremely severe depression, 36 (34.6 %) had extremely severe anxiety and 13 (12.5%) had severe stress. Table 1 shows the mean score of depression, anxiety, and stress among academic years. Table 2 shows the categorization of depression, and anxiety according to age gender, and institution. Figure 1 and figure 2 show the categorization of stress among gender and institution respectively.

Table 2: Categorization of depression, and anxiety according to age gender, and institution = 104

Demographic characteristics	0-9 Normal%	10-13 mild%	14-20 moderate%	21-27 Severe%	>28Extremely severe %	P value
Depression						
Gender						
Male	18(39.1)	8(17.3)	18(39.1)	0	2(4.37)	< 0.001
Female	0	3(5.17)	11(18.9)	18(31)	26(44.8)	
Institutions						
Government	4(25)	2(12.5)	2(12.5)	7(43.7)	0.06	0.006
Private	17(19.3)	7(7.9)	27(30.6)	16(18.1)	21(23.8)	
Anxiety						
	0-7 Normal%	**8- 9 mild n%**	**10-14 moderate%**	**15-19 Severe%**	**>20 Extremely severe%**	
Gender						
Male	25 (52)	3(6.25)	5(10.41)	8(16.66)	5(10.41)	<0.001
Female	6(10.3)	5(86.2)	9(15.5)	7(12)	31(53.4)	
Institution						
Government	4(25)	1(6.25)	2(12.5)	1(6.25)	8(50)	0.66
Private	27(30.6)	7(79.5)	12(13.6)	14(15.9)	28(31.8)	

DISCUSSION

In developing countries, the prevalence of depression and anxiety is found to be around 10-44%[1]. The significance of its identification cannot be emphasized further by the fact that it is the second leading cause of morbidity in the year 2020[3]. Not only medical students but also post-graduate trainees have to go through extensive stress not only in terms of substantial course material and diversity of subjects but also to meet their social expectations[11,12,13]. It is because the first step of solving a problem is its identification, our study aims to identify the prevalence of emotional stress on medical students, interns, and residents in terms of depression, anxiety, and stress.

Females are more prone to depression and anxiety 58(55.7%) and the difference is statistically significant (p <0.001). Comparable results are reported by Mirza et al in Pakistan[4] and variable international studies[15,16]. We noticed an extremely severe depression in 28 individuals (26.9%) which are in contrast to 1.3% reported by Azim SR et al in Karachi in 2019 .[17]We also noticed that it was mostly in female doctors amongst the whole study population 26(44.8%) which was statistically significant. Out of these 26, 21(80.7%) were in a private setup. (p< 0.001), during their final year of medical school 8(30.7%) or the start of house job 6(23%) which was also statistically significant but contrary to previous literature which shows it to be in majority of students in first and second years of medical school[17]. Whereas according to a study conducted by Shrestha N et al in Nepal, depression is most prevalent in 3rd-year medical students[18]. This disparity in results obtained in different areas of the world can be due to the difference in the teaching curriculum and course distribution.

Similar female predominance was seen in terms of stress 58(55.7%) which was also statistically significant (p < 0.001). Kumar B Et al in a local study also noticed that not only are women more prone to stress but also have higher stress scores than men showing 18.2% had extremely severe stress which is alarmingly higher than in our study 31(53.4%)[10]. He also reported that majority of them 48(17.4%) were from government set up which is in contrast to our observation[10]. This shows that the workplace environment and attitude of teachers play a vital role in keeping students calm and complete their tasks with sound minds irrespective of private or public setup. This had drawn our attention towards better training of the educators and establishing a trend of certification in medical education.

In our study, we found that the highest stress scores are seen in females during their final year of MBBS and start of house job 15(53%) and 15(38.4%) respectively. Similar results are reported by Dahlia et al in a study conducted in Sweden. A possible explanation can be made by the fact that students in their senior years of student life and their clinical years face more pressure from the family and society along with the transition from only books to practical knowledge and patient interaction[5].

In our study doctors were further segregated into private and government sectors. We found that at private hospitals, doctors are more depressed 88(84.6%) and suffer from anxiety more 88(84.6%) but both were statistically insignificant. In another study conducted in 2010 in Karachi, they found both depression and anxiety to be more common in the public sector (30% and 52.2% respectively)[10]. However we have not evaluated the causes leading to depression and anxiety in our study so no validation can be made. Further work is required in this grey area.

We have also divided the students according to their year of study to evaluate any effect of their academic year on their mental stress due to differences in the responsibilities faced by them. We found that depression was most common at the start of a house job 30(28.8%). This highlights a dramatic shift in Pakistan in contrast to a study conducted in 2003 where the highest prevalence was seen in students in the first and second year. [18]Similar results were obtained in Nepal in 2012[19]. But over the years, there has been a shift towards students in their clinical years. More studies are required in a similar timeline to validate our results.

We observed that anxiety was most prevalent among doctors at the end of their house job 24(23%) whereas the variable level of stress was found in final year medical students 15(14.4%). However, all of them were statistically significant. This following Baldassin et al (2008) who found it most prevalent in clerkship years[20]

In terms of mean score, as shown in table 1, we found that Year 3 and 4 Medical Residents had more prevalence of depression and anxiety (36+0 and 28+0) respectively, however, stress was more prevalent in the first and second-year medical residents (25.3$\pm$7.6). The literature search did not show any similar study where they have

compared the difference of depression, anxiety, and stress among postgraduate trainees of different years of training and different specialties. As the study was conducted in the COVID-19 pandemic, where all but specifically the medical trainees were most actively involved in establishing policies and management, the above-mentioned results are not surprising.

Various studies have tried to correlate the DASS 21 score with various score factors like marital status, the number of siblings, family income, the motive of studying medicine, religious commitments, previous suicidal attempts, history of illicit drug use, the recent loss of a family member and history of any psychiatric illness in the family.[21,22,23] However we have not identified such factors in our study. We need to further extend arms to not only identify the prevalence of depression, anxiety, and stress but also rule out any modifiable factors so that some solution can be provided to the young doctors.

It is worth mentioning that our study was conducted during the first wave of the COVID 19 pandemic when the general population was in chaos and everyone was drenched in worries. At this time and even now, doctors are our only weapon. It is significant to mention here that medical students who are already trying hard to cover their curriculum must have felt very insecure and truly unprepared to tackle the situation.

There are some limitations of this study. Firstly, the data on depression, anxiety, or stress among the study before being enrolled in a medical program is not available. Secondly, the study tool depends upon self-reported measures. Thirdly it's single-center data and results cannot be generalized. Lastly, we have not identified some important factors like ongoing examinations as they will affect the total score in that time duration only

CONCLUSION

Mental health is an actual issue. The prevalence of depression, anxiety, and stress is common in medical students but results vary from center to center. This calls for the development of strategies, workshops, and programs to identify modifiable stressors, encourage students to reach out to their family members and their teachers to verbalize their issues and make psychiatric consultation accessible to them.

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Conflict of interest: Nil

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