

## ORIGINAL ARTICLE

## ASSESSMENT OF STRESS, ANXIETY &amp; DEPRESSION LEVELS AMONG MEDICAL FACULTY DUE TO ONLINE TEACHING IN COVID-19

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**Background:** COVID-19 pandemic brought with it new challenges for teaching activities of the faculty, including need to master the basic use of technology to teach online in changed working environment while dealing with the additional health, family, and work-related challenges. This study aims to evaluate the occurrence of psychological parameters of stress, anxiety, and depression among the participants and the factors for coping with the said psychological parameters. **Methods:** This cross-sectional, questionnaire-based study was conducted in Jan–Jul 2021. Faculty teaching online classes in different medical colleges of Pakistan were invited through social media platforms to participate in the study. The DASS-21 scale was used to evaluate depression, anxiety and stress. **Results:** The factors that had significant contribution to stress, anxiety and depression in the faculty of medical colleges teaching include abrupt transition from face to face to online teaching, job insecurity, and personal and family financial situation. Lack of prior training in proper use of technology was associated with depression, while the uncertainty for duration of the lockdown and personal health issues were associated with anxiety. Coping factor that showed significant association with stress, anxiety and depression was increased intake of drugs. **Conclusion:** There are substantial changes in faculty's mental state concerning exhaustion, stress, depression, and anxiety after switching to online teaching as a result of COVID-19 quarantine. Appropriate measures need to be taken for training of the faculty with IT support, and to ensure peace of mind for the faculty for maximum output.

**Keywords:** Online teaching, medical colleges, medical faculty, depression, anxiety, stress

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## INTRODUCTION

The outbreak of the COVID-19 pandemic was accompanied by drastic changes in organizations all over the world.<sup>1</sup> Lockdowns were implemented globally with educational institutions witnessing a shift from face-to-face to online teaching.<sup>2</sup> Medical colleges went through similar changes, with a complete closure of all clinical activities, with all forms of teaching being shifted to virtual formats. This led to innovations in online teaching in medical education.<sup>2,3</sup>

In order to ensure the quality of the content imparted to medical students, the medical faculty were required to use methods that would improve their engagement with the students.<sup>4</sup> Loss of social contact between the students and teachers during this pandemic has been reported to have a psychological impact on those involved in higher education. During this pandemic, medical teachers have had to learn the use of digital tools with which they were not familiar.<sup>5</sup> Moreover, they have to use different strategies to keep the students engaged during online teaching sessions. Working from home and the lockdown itself have been additional factors that have contributed towards increased levels of stress, anxiety and depression within the medical teaching faculty.<sup>6</sup> Factors like insufficient time to adapt to the sudden changes in teaching dynamics unfamiliarity with technological mode of

education, disruptions caused by internet connectivity issues (malfunction). Similarly, difficulty engaging students, job dissatisfaction, and less than optimal work environment are thought to be the main contributors to the decline in mental, social and emotional health of medical faculty.<sup>7</sup>

There is no reported literature describing the levels of stress, anxiety and depression during the COVID-19 pandemic among the medical teaching faculty in Pakistan. The current study aimed to evaluate the levels of stress, anxiety and depression among the medical teaching faculty. A secondary aim of the study was to assess the associated factors with these conditions.

## MATERIAL AND METHODS

This was across-sectional, questionnaire-based study conducted from January to June 2021 following Covid-19 lock down in Pakistan. Medical teaching faculty from different medical colleges of Pakistan who were engaged in online teaching were invited to participate in the study. Invitations were sent out through social media platforms, such as Facebook and WhatsApp. Variables were added to Google Forms which comprised of three sections A, B, and C and participants were invited to fill out the forms online.

Stress levels were assessed by employing the Depression Anxiety and Stress Scale-21 (DASS 21).<sup>1,8</sup>

The DASS-21 was added into Section A. This tool consists of 21 items having four options to respond (from 0= did not occur to 3= occurred a lot or most of the time). The items were categorized into three features: depression, anxiety and stress: depression (items: 3, 5, 10, 13, 16, 17 and 21), anxiety (items: 2, 4, 7, 9, 15, 19 and 20) and stress (items: 1, 6, 8, 11, 12, 14 and 18). The scores for the items of each category were added and multiplied by 2 to get separate depression, anxiety and stress scores. These scores were then divided into the following categories: depression (normal 0–9, mild 10–13, moderate 14–20, severe 21–27 and extremely severe 28+); anxiety (normal 0–7, mild 8–9, moderate 10–14, severe 15–19, extremely severe 20+) and stress (normal 0–14, mild 15–18, moderate 19–25, severe 26–33, extremely severe 34+).

In section B, the possible contributors to stress due to online teaching in COVID-19, the participants were asked to rate a list of possible contributors on a 5-point scale, ranging from 0= ‘Strongly disagree’ to 5= ‘Strongly agree’ were added. These variables included sudden closure of institutes, connectivity issues, transition from face to face to online teaching, lack of prior training, job insecurity, uncertain duration of lock down, personal and family financial situation, health issues, institutional support, and relocation. We also tried to find out the use of managing strategies during the COVID-19 crisis under the headings, adaptive and maladaptive strategies. The response was documented dichotomously as yes or no to either engaging in positive or negative coping mechanisms Adaptive strategies encompassed exercise, taking healthy food and social digitalizing while maladaptive strategies enclosed behaviours such as excessive smoking, unnecessary drug intake, indulgence to social media.

Section C, included demographic data i.e., age, gender, designation, job description, family support system, number of children and status of spouse.

All the entered data was exported into an Excel file. The data was then exported into SPSS-25. Frequencies and percentages were described for categorical variables such as categories of depression, anxiety and stress; age, gender, designation, job type, family system, number of kids and status of spouse. Mean and standard deviation were described for numerical variables, such as depression, stress and anxiety scores.

## RESULTS

A total of 120 medical faculty working in different medical colleges of Pakistan participated in this study. Out of 120, 35 (29.2%) were male and 85 (70.8%) were female faculty members. Most of the participants 48 (40%) were in 36–45 years age group or and rest above 46 years of age 41 (34.2%). The majority of the faculty members were at the position of Assistant Professor 67

(55.8%). Moreover, our sample included most of the participants from private institutions 98 (81.7%). All patient characteristics have been illustrated in Table-1.

**Table-1: Medical faculty characteristics (n=120)**

Characteristic		Frequency (%)
Age	25–35 Years	31 (25.8%)
	36–45 Years	48 (40%)
	≥46 Years	41 (34.2%)
Gender	Male	35 (29.2%)
	Female	85 (70.8%)
Designation	Assistant Professor	67 (55.8%)
	Associate Professor	24 (20%)
	Professor	29 (24.2%)
Job Description	Government	22 (18.3%)
	Private	98 (81.7%)
Family Support System	Nucleus	70 (58.3%)
	Joint	50 (41.7%)
Number of Children	1	28 (23.3%)
	2	39 (32.5%)
	3	32 (26.7%)
	>3	21 (17.5%)
Spouse Working	Working	76 (63.3%)
	Not Working	29 (24.2%)
	No spouse	15 (12.5%)

Faculty were asked to rate their level of depression, anxiety and stress with regard to teaching online during the current COVID-19 pandemic. The frequency rates of depression, anxiety and stress were found to be 36 (30%), 42 (35.3%) and 31 (25.8%). The relationship of stress, anxiety and depression with different contributing factors has been illustrated in Table-2. Abrupt transition to online teaching, job insecurity, personal financial situation and family financial situation were found to be significant contributing factors associated with stress, anxiety and depression.

The relationship of different coping factors with stress, anxiety and depression have been shown in Table-3. Crosstab followed by chi square test was applied to calculate percentages and *p*-value. No participant reported to either start smoking or increasing smoking during the COVID-19 pandemic. The only coping mechanism found to have a significant association with stress, anxiety and depression was increase in the use of drugs, as shown in Table-3.

Out of a list of 11 possible contributors, 8 were found to be statistically significant. One of the possible contributors was internet issues leading to anxiety (0.020). Abrupt transition to online teaching led to depression (0.006), anxiety (0.001), and stress (0.031). Lack of prior training lead only to depression (0.004). Another cause of depression (0.001), anxiety (0.001) and stress (0.045) were job insecurity. Uncertain duration of lock-down was found to cause only anxiety (0.001). Personal and family financial situation contributed to depression (0.003, 0.012), anxiety (0.002, 0.002), and stress (0.045, 0.001) respectively. Personal health issues caused anxiety (0.041).

**Table-2: Relationship of depression, anxiety and stress with different contributing factors**

Parameter		Depression			Anxiety			Stress		
		Normal	Depression	p	Normal	Anxiety	p	Normal	Stress	p
Sudden closure	Agree	63.1%	66.7%	0.708	61.0%	69.0%	0.385	61.8%	71.0%	0.359
	Disagree	36.9%	33.3%		39.0%	31.0%		38.2%	29.0%	
Internet issues	Agree	82.1%	91.7%	0.181	79.2%	95.2%	0.020*	84.3%	87.1%	0.704
	Disagree	17.9%	8.3%		20.8%	4.8%		15.7%	12.9%	
Abrupt transition to online teaching	Agree	60.7%	86.1%	0.006*	57.1%	88.1%	0.001*	62.9%	83.9%	0.031*
	Disagree	39.3%	13.9%		42.9%	11.9%		37.1%	16.1%	
Lack of prior training	Agree	56.0%	83.3%	0.004*	58.4%	73.8%	0.095	60.7%	74.2%	0.176
	Disagree	44.0%	16.7%		41.6%	26.2%		39.3%	25.8%	
Job insecurity	Agree	21.4%	52.8%	0.001*	19.5%	50.0%	0.001*	25.8%	45.2%	0.045*
	Disagree	78.6%	47.2%		80.5%	50.0%		74.2%	54.8%	
Uncertain duration of lock down	Agree	91.7%	100.0%	0.074	19.5%	50.0%	0.001*	92.1%	100%	0.108
	Disagree	8.3%	0%		80.5%	50.0%		7.9%	0%	
Personal financial situation	Agree	22.6%	50.0%	0.003*	23.4%	45.2%	0.002*	25.8%	45.2%	0.045*
	Disagree	77.4%	50.0%		76.6%	54.8%		74.2%	54.8%	
Family financial situation	Agree	15.5%	36.1%	0.012*	13.0%	38.1%	0.002*	14.6%	41.9%	0.001*
	Disagree	84.5%	63.9%		87.0%	61.9%		85.4%	58.1%	
Personal health issues	Agree	41.7%	50.0%	0.400	37.7%	57.1%	0.041*	39.3%	58.1%	0.070
	Disagree	58.3%	50.0%		62.3%	42.9%		60.7%	41.9%	
Institutional support	Agree	53.6%	44.4%	0.359	53.2%	47.6%	0.557	52.8%	45.2%	0.463
	Disagree	46.4%	55.6%		46.8%	52.4%		47.2%	54.8%	
Relocation	Agree	14.3%	23.8%	0.193	14.3%	23.8%	0.193	14.6%	29.0%	0.074
	Disagree	85.7%	76.2%		85.7%	76.2%		85.4%	71.0%	

\*Significant

**Table-3: Relationship of different coping factors with depression, anxiety and stress [n (%)]**

Parameter		Depression			Anxiety			Stress		
		Normal	Depression	p	Normal	Anxiety	p	Normal	Stress	p
Exercise	Agree	36 (42.9)	14 (38.9)	0.686	32 (41.6)	18 (42.9)	0.891	39 (43.8)	11 (35.5)	0.417
	Disagree	48 (57.1)	22 (61.1)		45 (58.4)	24 (57.1)		50 (56.2)	20 (64.5)	
Healthy eating	Agree	67 (79.8)	27 (75.0)	0.562	59 (76.6)	34 (81.0)	0.585	71 (79.8)	23 (74.2)	0.516
	Disagree	17 (20.2)	9 (25.0)		18 (23.4)	8 (19.0)		18 (20.2)	8 (25.8)	
Digital socializing	Agree	64 (76.2)	28 (77.8)	0.851	56 (72.7)	35 (83.3)	0.192	69 (77.5)	23 (74.2)	0.705
	Disagree	20 (23.8)	8 (22.2)		21 (27.3)	7 (16.7)		20 (22.5)	8 (25.8)	
Increased drug use	Agree	0 (0)	4 (11.1)	0.002*	0 (0)	4 (9.5)	0.006*	1 (1.1)	3 (9.7)	0.022*
	Disagree	84 (100.0)	32 (88.9)		77 (100.0)	38 (90.5)		88 (98.9)	28 (90.3)	
Adoption of new hobbies	Agree	44 (52.4)	17 (47.2)	0.604	38 (49.4)	23 (54.8)	0.573	41 (46.1)	20 (64.5)	0.077
	Disagree	40 (47.6)	19 (52.8)		39 (50.6)	19 (45.2)		48 (53.9)	11 (35.5)	

\*Significant

## DISCUSSION

The present study was done to assess the levels of stress, anxiety and depression among medical faculty members during the COVID-19 pandemic and evaluate the relationship of these psychological parameters with various contributing factors and coping mechanisms.

The majority of the participants in our sample were females 85 (70.8%). Although the specialty of the participants was not recorded, the principal investigator did observe that the majority of the participants were from basic medical sciences. In Pakistan, the majority of the faculty members in basic medical sciences are generally females. Moreover, since the investigators approached more private medical colleges, there was a significantly greater number of participants from private medical colleges 98 (81.7%).

With respect to the other socio-personal parameters, those with children showed more anxiety than those without, all though the difference is not significant. Furthermore, faculty members who suffered with chronic diseases and those who lived with a person having some chronic illness exhibit a significantly higher level of anxiety. Additionally, those who lived with a person who has been infected with COVID-19

also showed greater levels of anxiety, possibly due to the fear of infecting the ill relative, along with the fear of being infected themselves.<sup>9</sup>

Our study found that the abrupt transition to online teaching was significantly associated with stress, anxiety and depression. This implies that since the medical teachers were not prepared for online teaching, this transition was quite difficult for them. They were not able to cope with different mode of teaching and the associated technology use. Online teaching requires using digital gadgets and being well-versed with the software used for teaching. Not knowing how to use these gadgets and software meant that the teachers had to first learn how to use these tools and then use them for teaching their students. Lack of prior training and not being comfortable with the relatively newer modes of teaching led to an increase in the occurrence stress, anxiety and depression among the faculty.<sup>10</sup> This led to a feeling of job insecurity among professionals. The medical teaching profession was similarly affected by this job insecurity phenomenon. The findings of our study substantiate this point as suggested by the significant association found between job insecurity and the occurrence of stress, anxiety and depression.

The results of our study are consistent with the study carried out by Rasmitadila, *et al*, which emphasised that majority of the teachers were found to be in moderate perceived stress pertaining to job insecurity during the uncertain period of Covid.<sup>11</sup>

The pandemic had serious economic implications all over the world. Our study found that both personal and family financial situations were associated with psychological parameters, as shown in Table-2. Salary cuts were commonly observed during the pandemic and along with job insecurity, this had serious psychological implications for medical teachers. Study conducted by Haleem, *et al*, concluded same results with emphasis on psychological and financial impacts of COVID-19 on medical educators.<sup>12</sup>

The only coping mechanism found to be significantly associated with the stress, anxiety and depression was the increased use of drugs. Although a statistical difference was observed between medical teachers who were having psychological effects and those who were not but the frequency differences were apparently not of a significant value. For instance, only four (11.1%) of the depressed teachers increased drug usage as compared to none (0%) of those who were not depressed. Similar differences were seen for anxiety and stress as well. Although the differences are small, the significant difference must be addressed with caution since increasing use of drugs among medical teachers is an alarming finding. The results are supported by study conducted by Austin V, *et al*.<sup>13</sup>

## CONCLUSION

This study discovered substantial changes in faculty's mental state concerning exhaustion, stress, depression, and anxiety after switching to online teaching as a result of COVID-19 quarantine.

## RECOMMENDATIONS

There is a need for proper training of the medical teaching faculty in different medical colleges of

Pakistan for online teaching. Appropriate measures need to be taken to ensure job security for peace of mind for the faculty for maximum output. Further studies should contact clinical teachers as well as faculty members from more government colleges. IT support needs improvement.

## REFERENCES

1. Ciotti M, Ciccozzi M, Terrinoni A, Jiang WC, Wang CB, Bernardini S. The COVID-19 pandemic. *Crit Rev Clin Lab Sci* 2020;57(6):365–88.
2. Ferri F, Grifoni P, Guzzo T. Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies* 2020;10(4):86.
3. Sandhu P, de Wolf M. The impact of COVID-19 on the undergraduate medical curriculum. *Med Educ Online* 2020;25(1):1764740.
4. Graffam B. Active learning in medical education: strategies for beginning implementation. *Med Teach* 2007;29(1):38–42.
5. Winter E, Costello A, O'Brien M, Hickey G. Teachers' use of technology and the impact of Covid-19. *Irish Educ Stud* 2021;40(2):235–46.
6. König J, Jäger-Biela DJ, Glutsch N. Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany. *Eur J Teach Educ* 2020;43(4):608–22.
7. Hayat AA, Keshavarzi MH, Zare S, Bazrafcan L, Rezaee R, Faghihi SA, *et al*. Challenges and opportunities from the COVID-19 pandemic in medical education: a qualitative study. *BMC Med Educ* 2021;21(1):247.
8. Ruiz FJ, Martín MBG, Falcón JCS, González PO. The hierarchical factor structure of the Spanish version of Depression Anxiety and Stress Scale-21. *Int J Psychol Psychol Ther* 2017;17(1):97–105.
9. Baldi E, Savastano S. Fear of contagion: one of the most devious enemies to fight during the COVID-19 Pandemic. *Disaster Med Public Health Prepar* 2020;15(4):e8–9.
10. Ali A, Ahmed M, Hassan N. Socioeconomic impact of COVID-19 pandemic: Evidence from rural mountain community in Pakistan. *J Public Aff* 2020:e2355.
11. Rasmitadila R, Aliyyah RR, Rachmadtullah R, Samsudin A, Syaodih E, Nurtanto M, *et al*. The perceptions of primary school teachers of online learning during the COVID-19 pandemic period: A case study in Indonesia. *J Ethnic Cultur Stud* 2020;7(2):90–109.
12. Haleem A, Javaid M, Vaishya R. Effects of COVID-19 pandemic in daily life. *Curr Med Res Pract* 2020;10(2):78–9.
13. Austin V, Shah S, Muncer S. Teacher stress and coping strategies used to reduce stress. *Occup Ther Int* 2005;12(2):63–80.

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