Original article

Effects of COVID-19 Lockdown on mental health of medical students in Lahore, Pakistan

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Abstract

Objective: The objective isto assess the effects of lockdown on mental health of medical students of a Private medical college in Lahore. ***Materials and Methods:*** A cross sectional study has been conducted to assess the mental health status of medical students during lockdown using the designed scale DASS 21. The reliability of scale was tested using Cronbach alpha. The scale is based on 3 sub-scales used to measure depression, anxiety and stress. A sample of size 230 students from different years of MBBS is used. The data was analyzed using SPSS 21.0 ***Results & Discussion:***The proportion of females participated in study was comparatively higher. The females were observed as more depressive**.** As observed 62.6% of medical students suffered from mild to very severe depression during the lockdown period.Anxiety was observed among 52% of the students. More than half dealt with various levels of anxiety and faced stress. ***Conclusion:*** COVID-19 has caused extensive distress in the lives and mental health of millions of medical students. The findings of this study indicate that depression, anxiety and stress are common morbidities amongst medical students, particularly those in their clinical training years.

Keywords: Depression, anxiety, stress, mental health, COVID-19.

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Introduction

In late December 2019, a novel strain of the coronavirus emerged in Wuhan, China, known as SARS-Coronavirus-2. It has since disseminated throughout 208 countries/regions, being declared a global public health emergency by the World Health Organization only three months later[1, 2]. To date, around six different strains of coronavirus have been identified to infect humans namely the α-CoVs HCoV-229E, HCoV-NL63, β-CoVs HCoV-HKU1 and HCoV-OC43, causing a range of manifestations from the mild, common flu-like symptoms to lethal respiratory infections[3]. With over 100 million confirmed cases and more than 3million deaths across the globe, the world is facing an unprecedented challenge[4]. Provincial and federal governments are left scrambling, desperately enforcing measures to control spread in their respective regions. For many, that means deploying a containment strategy to execute strict lockdown measures[5]. In Punjab, Pakistan the government had ceased operation of non-essential businesses, banned unnecessary vehicular travel, quarantined citizens inside their homes and announced nationwide closure of educational institutions[6]. Amidst the panic, millions are experiencing a sense of helplessness and feelings of malaise are resonating in society; meanwhile frontline healthcare staff are dealing with the crisis under unparalleled psychological stress. They reported feelings of extreme vulnerability, uncertainty and threat to life, alongside somatic and cognitive symptoms of anxiety as proven by

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numerous studies and research[7]. Witnessing the chaos, their juniors, undergraduate medical students, faced/ are facing a wave of apprehension with regard to their role in the pandemic, academic future, and the looming yet inevitable return to hospitals.

In times of such uncertainty there has been a significant impact on the mental health of these students with stress, anxiety, depression, and fear on the rise[8]. Recent studies regarding medical undergraduate students suggest high levels of stress and depression is associated with poor academic performance, a measurable decline in cognitive skills, impaired judgment, as well as prognostic psychiatric disorders[9,10]. Furthermore, a recent survey has indicated that 24.9% of medical college students are suffering with mild to severe anxiety levels due to the pandemic[11]. Asfor the future of the healthcare workforce, this impedance may have detrimental effects on their professional outlook as well as clinical training, so these serious repercussions must not be undermined. It is crucial to evaluate the mental wellbeing of these undergraduate students to gain insight in this regard. This study aims to collect data and extrapolate the findings to report the current and potential impact of the COVID-19 outbreak on the medical students. It is hoped that the rectification of the above-mentioned issues will prove to be exceedingly beneficial for the future of the mental health of such students, and consequently the healthcare system, within Pakistan and globally.

Methodology

A cross-sectional study has been conducted to assess the mental health status of medical students at Fatima Memorial College of Medicine and Dentistry, Lahore, Pakistan during the lockdown. Structured questionnaire DASS 21 was used to assess the level of anxiety, stress and depression due to COVID-19 lockdown.

DASS 21 (based on 21 items) scale is a set of three report scales to observe depression, anxiety and stress. These three scales each based on 7 items. The score ranges from 0-3 for a particular item in Dass 21. The score then added for depression, anxiety and stress. Final score is multiplied by 2.

The data was collected using simple random sampling technique. Those students who were not willing to participate are excluded. A sample of size 230 students from different years of MBBS is used. The internal consistency of the scale was observed. Exploratory factor analysis was used to examine the factor structure of DASS-21. The data was analyzed using SPSS 21.0.

Result

The data was collected from 230 medical students. The mean age of the students (in years) was 21.87 $\pm$ 1.54. Most of the students participated in the study live in nuclear family. The proportion of female students was slightly higher as compared to male students.The incidence of depression was not the same across male and female students (Table 1).

Table 1: Mean (SD) of DASS score and the incidence across various categories of demographics

DASS	Gender			Family Type			Family Members		
	Male	Female	Sign.	Nuclear	Extended	Sign.	≤ 5	>5	Sign.
Total	100	130		196	34		116	114	
Depression	10.4 (8.72)	17.15 (11.15)	0.000	14.46 (10.77)	12.08 (10.57)	0.408	15.88 (11.87)	12.60 (9.13)	0.070
Anxiety	7.24 (6.89)	11.08 (7.354)	0.000	9.55 (7.33)	8.59 (7.79)	0.407	9.51 (7.68)	9.31 (7.13)	0.900
Stress	11.40 (8.65)	16.37 (8.63)	0.000	14.45 (8.86)	12.82 (9.55)	0.282	15.30 (9.22)	13.14 (8.61)	0.092

The internal consistency of each sub-scales of DASS-21 for the data was checked using Cronbach alpha. The consistency of depression sub-scale was 0.823, 0.765 of anxiety sub-scale and 0.85 of stress sub-scale. The overall reliability for the data was 0.923.

Factor structure of DASS-21 was examined using Exploratory factor Analysis (EFA). The significance level of Kaiser Mayer-Olkin (KMO) test and Bartlett's test of sphericity gives an indication to continue factor analysis. Correlation was sufficient between the items. Three-factor EFA extracted those factors that explained reasonable proportion of total variance (Figure 1). For an item factor loading the

Table 2: Level of Severity of DASS 21 score

Level	Depression n (%) Range	Anxiety n (%) Range	Stress n (%) Range
Normal	86 (37.3%) **(0-9)**	110 (48%) **(0-7)**	133 (58%) **(0-14)**
Mild	36 (16%) **(10-13)**	12 (5%) **(8-9)**	21 (9%) **(15-18)**
Moderate	56 (24.3%) **(14-20)**	47 (20%) **(10-14)**	53 (23%) **(19-25)**
Severe	21 (9%) **(21-27)**	38 (17%) **(15-19)**	17 (7%) **(26-33)**
Very severe	31 (13.4%) **28+**	23 (10%) **20+**	6 (3%) **34+**
Total	**230 (100%)**	**230 (100%)**	**230 (100%)**

significance was set at 0.30.

Dass 21 must be multiplied by 2 for the final score. The recommended cut off for different conventional severity levels were given in Table 2 with the frequency and percentage of depression, anxiety and stress. As observed 62.6% of medical students suffered from mild to very severe depression during the lockdown period.Anxiety was observed among 52% of the students. Most of the students had different levels of severity of depression.

The prevalence of depression, anxiety and stress was not the same among male and female students. It was seen that female students were more depressive, anxious and stressed (Table 3). Depression was very severe among 20% of the female students. About 25% and 31.5% of the female students were moderately anxious and stressed.

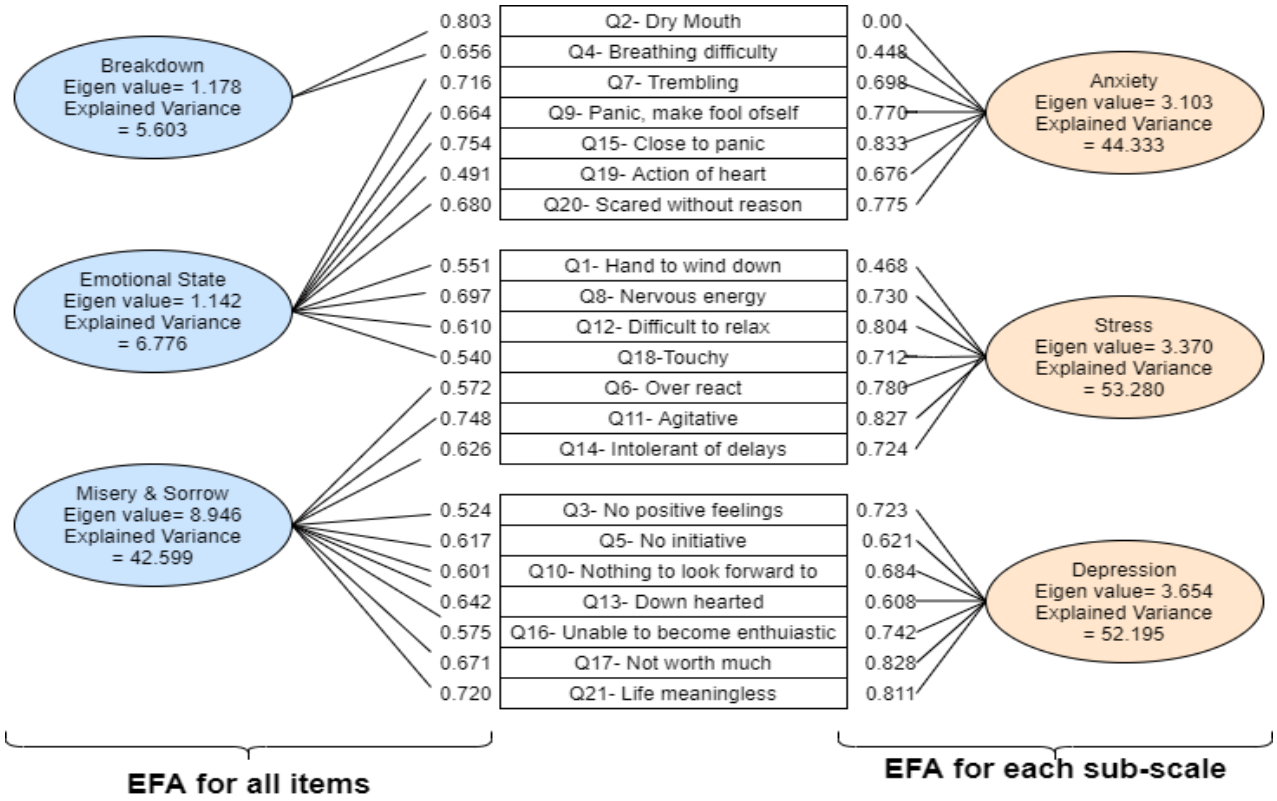

Figure 1: 3- Factor EFA and Factor labelling

Table 3: Crosstab of Depression, Anxiety and Stress with various Factors

Factors	Categories	Depression		p-value	Anxiety		p-value	Stress		p-value
		No	Yes		No	Yes		No	Yes	
Gender	Male	54	46	0.000	63	37	0.000	72	28	0.000
	Female	32	98		47	83		61	69	
Total		86	144		110	120		133	97	
MBBS Year	1st	11	16	0.959	13	14	0.681	20	7	0.130
	2nd	14	27		23	18		26	15	
	3rd	11	15		13	13		17	9	
	4th	35	59		40	54		46	48	
	5th	15	27		21	21		24	18	
Total		86	144		110	120		133	97	
Family Type	Nuclear	71	125	0.493	90	106	0.228	111	85	0.379
	Extended	15	19		20	14		22	12	
Total		86	144		110	120		133	97	

Discussion

It has been well established that medical students worldwide are particularly vulnerable to higher levels of psychological distress relative to the general population as well as university students of the same age group. Numerous studies conducted in various parts of the world highlight that the recent COVID-19 pandemic has further negatively impacted the mental health of this population. In Brazil, 46.17% of students demonstrated symptoms of moderate to severe levels of anxiety and depression[17]. A recent study conducted in the US reported an alarming 44% of students to have faced depressive thoughts, as well as an increase in the percentage of suicidal thoughts[18]. Similarly, research in Turkey has found that medical undergraduates had higher scores according to the Perceived Stress Scale (PSS), indicating greater perceived and emotional stress[19]. The focal point of our study conducted at Fatima Memorial Hospital College of Medicine and Dentistry, is to shed light on this matter in Pakistan, as well as to compare the mental wellbeing of students in pre-clinical and clinical years in the medical field during this revolutionary yet bizarre era.

As observed medical students suffered from mild to very severe depression during the lockdown period. More than half dealt with various levels of anxiety and faced stress. A study conducted in Morocco perceived 49% stress among students due to imposed distancing in lockdown[20]. These percentages are consistent with similar studies and emphasize the need for medical institutions to accommodate students, by reducing course workload and academic pressure which will allow a smoother transition to online learning[21].

The study witnessed that students of pre-clinical years comparatively experience significant levels of depression, anxiety and stress. However, altogether students of clinical yearsrevealed increased levels of all three ailments; depression, anxiety and stress. This is in accordance with a study done at Changzhi Medical College in China which suggested medical students in clinical years displayed the highest numbers in anxiety, attentional and depressive symptoms[22]. In the current study, amongst third year students that were transitioning from the pre-clinical to clinical setting, 57.7%, experienced signs of depression, the vast majority of which were moderate to severe. When fourth year students were surveyed it was observed that more than half were facing some form of anxiety and had increased levels of stress. Raised levels of anxiety and stress were also noted, with the primary number of participants suffering from a range of moderate to very severe levels. Overall, the students that were in their clinical years of training were found to have a higher DASS score than pre-clinical year students. Findings of another study conducted in Pakistan and Thailand reported a higher level of stress among students in their clinical years of training as opposed to pre-clinical year students.[23,24] The increasing prevalence of depression, anxiety and stress amongst these students illuminates various concerns. Although further in this study, findings may be attributable to multiple factors such as hindrances in clinical year students attaining their desired specialty, and

difficulty in the transition phase from being a student to taking on the role of a physician.[25, 26] Other factors may include increased academic pressure and workload, financial concerns, high stress period of time, sleep deprivation along with the added burden of preparing for professional licensing exams.[27] The postponement of examinations, lack of training hours due to lockdown and isolation in quarantine during the COVID-19 time period have additionally played a role in increasing these psychological ailments. These experiences might evolve to include a broad range of mental health concerns, including distress reactions; insomnia, anger, extreme fear of illness even in those not exposed, change in eating habits, agitation and a sense of irritability[28]. Studies of recent medical school graduates also suggest that distress may negatively affect and on a personal level, distress can be devastating to the individual student by contributing to substance abuse, broken relationships, decline in physical health, poor self-care (e.g., lack of exercise, poor diet),and even suicide[29].

Contrarily, a study carried out at a public university in the United States recorded that almost half of the participants had lower stress levels related to academic pressure and class workload since the pandemic began which may be due, in part, to decisions taken by professors and the university to ease the students into distance learning by allowing them to choose a pass/fail option for each course instead of a regular letter grade[18]. The large differences in results of both studies highlights the importance of changes that must be made in medical institutions to facilitate students amidst this global pandemic.

It is imperative that medical institutions identify high risk individuals, such as those in their clinical years of training, and provide proper guidance and counselling as well as a nurturing environment for the betterment of these pupils. An Epidemiological Study conducted in Morocco mentioned that Seloncesrésultats, Containment was one of the most effective methods of reducing the increased risk of infection[30]. Both the government and health care agencies are responsible for protecting the psychological well-being of health care communities all over the world and ensuring a healthy work environment, they must invest resources to promote the mental health welfare of the future doctors of our generation[31].

CONCLUSION

COVID-19 has caused widespread distress in the lives and consequently mental health of millions of medical students. The findings of this study indicate that depression and anxiety are common morbidities amongst medical students, particularly those in their clinical training years. Academic programs must restructure their curricula and provide support to vulnerable students via targeted psychological interventions. It has now become essential that policy makers spread awareness via campaigns to minimize long term implications and deterioration of mental health of these medical students.

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Authors' contribution

The authors contribution is as follows:

S.No	Authors	Contribution
1.	Dr. Shamaila Hassnain	Idea owner of this study, Writing and submitting manuscript, Editing and approval of final draft
2.	Adila Ahmed	Data gathering, Discussion writing
3.	Muhammad Saad Qayyum	Data gathering, Results scoring analysis
4.	Muhammad Gulraiz Farrukh	Data gathering, Results analysis
5.	Usama Ahsan Nawaz	Data gathering
6.	Hadifa Ahmad	Data gathering

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