

# Psychological Implications of The Late Phase of COVID-19 Pandemic among Medical Undergraduates, Attending Clinical Wards Rotations in Tertiary Care Hospitals of Rawalpindi, Pakistan: An Online Survey-Based Study

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## ABSTRACT

COVID-19 is proving to be a double-edged sword for health care professionals. It is not only causing physical malfunctioning but mental suffering among medical undergraduates. This study demonstrates the psychological impact and various predisposing factors causing mental distress. This is a descriptive cross-sectional study involving 157 medical undergraduates of Third, Fourth, and Final year MBBS being trained in tertiary care hospitals of Rawalpindi, Pakistan in September 2020, when the graph of COVID-19 was flattening. Data was collected through a self-designed questionnaire for demographic details and DASS-21. The mean and standard deviation was calculated for depression, anxiety, and stress levels. Frequencies and percentages were calculated for the severity of DASS-21 and predisposing factors. Data analysis was done through SPSS. V. 25. Out of 157 students, there were 80(51%) males and 77 (49%) females. The mean age was 22.52 (SD=1.60). The overall mean score of anxiety was  $7.43 \pm 4.53$ , depression was  $7.75 \pm 4.12$ , and stress was  $8.15 \pm 4.53$ . This study found that the most common reason for stress and anxiety among students attending wards was the fear that they might infect their family members 42 (26.8%), followed by the fear of getting infected themselves 39 (24.8%). This study doesn't exhibit a significant mental burden of grave concern however, the anxiety level was high among the Third year and depression level was high among Final year students. Fear of infecting family members and contracting the virus themselves were common reasons for distress.

**Keywords:** Anxiety, COVID-19, depression, stress, wards rotations.

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## I. INTRODUCTION

COVID-19, also known as coronavirus disease in 2019, a wave of uncontrolled destruction that originated in the city of Wuhan, China in late 2019 and spread in the whole world like a bush on fire in no time [1]. On January 30, 2020, it was officially declared as a public health emergency by the World Health Organization (WHO) at an international forum. [2] However, on March 12th, 2020 after a careful

assessment it was announced by the world health organization (WHO), that this world is going to face another pandemic. [3] A wide range of clinical spectrum was observed in people tested positive for COVID-19, ranging from asymptomatic carriers to severe acute respiratory syndrome (SARS) and multiorgan failure, [4] however, the most commonly observed symptoms are fever, fatigue, and dry cough. As it is a respiratory tract infection, COVID-19 spreads mainly by respiratory droplets, respiratory

secretions, and direct contact with an infected person, thus human-to-human transmission is documented as a source of spread for COVID-19 also named as SARS-CoV-2 (severe acute respiratory syndrome-coronavirus-2) [5]. In light of such events, it was imperative to enforce preventive measures among the general population around countries to break the chain of transmission by maintaining social distancing, wearing masks, washing hands, restricting movements, and finally by abiding the restrictions implemented by the local governments [6].

However, every pandemic has its psychological impact in terms of depression, anxiety, stress, and sometimes post-traumatic stress disorder (PTSD) on the mental health of the community facing it [7]. But health care professionals (HCPs) including specialist doctors, house-officers, postgraduate trainees, medical undergraduates, and paramedical staff are the most affected population of the community in such pandemics because they are the only armed forces to fight against deadly pandemics in terms of management of diseased patients. In the given situations multiple factors substantially influence the performance of health care professionals including the fear of contracting the disease, lack of experience to handle such situations, fear of transmitting the virus to family and friends, lack of resources, lack of social support, and finally, poor attitude of the community towards the health care providers [8].

COVID-19, previously known as (SARS-COV) is proving to be a double-edged sword for health care workers as evident from a report showing the statistical analysis from Italy, that in April 2020 a total of 10,000 health care providers were exposed to COVID-19, and 74 deaths were reported, [9-10] similarly it is also affecting the mental health of health care professionals as reported in China where health care workers who were attending COVID-19 patients directly, are reporting the tremendous amount of stress, anxiety and insomnia symptoms as compared to other community workers in China [11-12-13]. Hence, it is a need of time to evaluate and address all those factors responsible for various psychological illnesses among health care professionals and hindering their working capabilities in this pandemic.

In this study, we aimed to evaluate the impact of various psychological parameters i.e. depression, anxiety, and stress on medical undergraduates currently enrolled in clinical curriculum and attending their clinical wards rotations, mostly occupied with COVID-19 patients in three different tertiary care hospitals of Rawalpindi, Pakistan. we also aimed to enumerate the various documented reasons for their apprehension on attending the clinical wards including medicine, surgery, and their sub-specialties in this COVID-19 pandemic.

## II. MATERIALS AND METHODS

### A. Study Design and Period

It is a hospital-based descriptive cross-sectional study conducted in teaching hospitals of Rawalpindi Medical University, Rawalpindi, Pakistan. The study was conducted from 15 September 2020 to 15 October 2020 when the graph of COVID-19 was flattening in Pakistan.

### B. Study Population and Study Setting

The study population included all the medical undergraduates who were currently enrolled in clinical years that consisted of the third year, fourth year and final year medical students performing their wards duties in Tertiary care hospitals of Rawalpindi. They were asked to attend the clinical wards rotations in two major medical specialties medicine and surgery as well as their sub-specialties. All those students who were previously healthy and those who did not contract COVID-19 in past were included. The study was carried out on medical undergraduates of three different teaching hospitals of Rawalpindi Medical University named as Holy Family Hospital (HFH), Rawalpindi, Benazir-Bhutto Hospital (BBH), Rawalpindi is previously known as Central-Hospital, and District-Headquarter Hospital (DHQ).

### C. Sample Size and Sampling

A sum of 157 medical undergraduates enrolled in the clinical curriculum were selected based on sample size calculated by the world health organization (WHO) calculator and keeping the confidence level of 95% and taking 5% margin of error. A simple random sampling technique was followed while collecting the sample population, hence there was an equal chance for every student to be selected in the study population.

### D. Data Collection and Data Analysis:

The data collection was done through a carefully structured, self-administered Questionnaire constituted of (1): Demographic details which consisted of gender, age, boarder, non-boarder, and clinical year of study (2): English version of the Depression Anxiety Stress Scale -21 (DASS-21). DASS-21 is a 21-item self-report validated instrument designated to measure the three related negative emotional states, which are: depression, anxiety, and stress having Cronbach's alpha value of 0.83, 0.80, and 0.82 for each subscale of DASS-21 [14,15]. (3): The online form also included various reasons, students thought were predisposing factors for depression, anxiety, and stress while working in clinical wards. The collected data was analyzed using the Statistical package for social science (SPSS) Version 25.0 (IBM Corp, Armonk, NJ). Mean and standard deviation (SD) were calculated for the score of anxiety, stress, and depression. Frequencies and percentages were calculated for the severity of DASS-21 and reasons predisposing students to depression, anxiety, and stress.

## III. RESULTS

The mean age was 22.52 (SD=1.60). Out of 157 students, there were 80 (51%) males and 77 (49%) females. The majority of the students were boarders 85 (54.1%), while there were 70 (44.6%) non-boarders. The year-wise distribution of students was 48 (30.6%), 54 (34.4%), and 55 (35%) in the 3<sup>rd</sup> year, 4<sup>th</sup> year, and a final year respectively. The overall mean score of anxiety was  $7.43 \pm 4.53$ , depression was  $7.75 \pm 4.12$ , and stress was  $8.15 \pm 4.53$ .

The study found the most common reason for stress and anxiety among medical students attending wards was fear of infecting their family members 42 (26.8%), followed by the fear of getting infected themselves 39 (24.8%). Table I

shows the frequency of anxiety, depression, and stress among students (n=157). Table II shows the reasons for stress,

TABLE I: THE FREQUENCY OF ANXIETY, DEPRESSION, AND STRESS AMONG STUDENTS

DASS-21	Depression			Anxiety			Stress		
	3 <sup>rd</sup> year (n=48)	4 <sup>th</sup> year (n=54)	Final year (n=55)	3 <sup>rd</sup> year (n=48)	4 <sup>th</sup> year (n=54)	Final year (n=55)	3 <sup>rd</sup> year (n=48)	4 <sup>th</sup> year (n=54)	Final year (n=55)
<b>Normal</b>	1 (2.1%)	3 (5.6%)	3 (5.5%)	0	0	0	15 (31.3%)	18 (33.3%)	25 (45.5%)
<b>Mild</b>	22 (45.8%)	14 (25.9%)	5 (9.1%)	0	4 (7.4%)	9 (16.4%)	21 (43.8%)	16 (29.6%)	13 (23.6%)
<b>Moderate</b>	24 (50%)	27 (50%)	37 (67.3%)	11 (22.9%)	22 (40.7%)	26 (47.3%)	11 (22.9%)	20 (37%)	15 (27.3%)
<b>Severe</b>	1 (2.1%)	9 (16.7%)	9 (16.4%)	26 (54.2%)	15 (27.8%)	15 (27.3%)	1 (2.1%)	0	2 (3.6%)
<b>Extremely Severe</b>	0	1 (1.9%)	1 (1.8%)	11 (22.9%)	13 (24.1%)	5 (9.1%)	0	0	0
<b>Total</b>	48 (100%)	54 (100%)	55 (100%)	48 (100%)	54 (100%)	55 (100%)	48 (100%)	54 (100%)	55 (100%)

Note: DASS-21: Depression Anxiety Stress Scale.

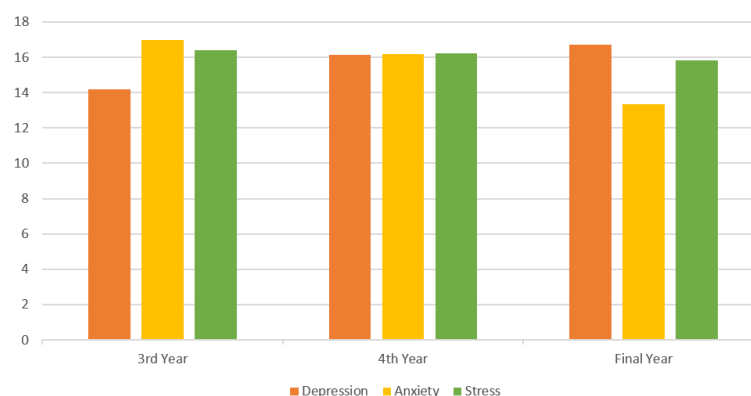


Fig.1. Mean scores of depression, anxiety, and stress distributed year wise. Anxiety level is high among Third-year students while depression level was high among Final year medical undergraduates.

TABLE I: THE REASONS FOR STRESS, ANXIETY, AND DEPRESSION AMONG STUDENTS (N=157)

Predisposing Factors of Mental distress	3 <sup>rd</sup> Year (n=48)		4 <sup>th</sup> Year (n=54)		Final Year (n=55)	
	n	%	n	%	n	%
<b>Possibility of contracting COVID-19</b>	7	14.6	17	31.5	15	27.3
<b>Increased workload</b>	4	8.3	4	7.4	7	12.7
<b>Possibility of infecting their family</b>	12	25.0	11	20.4	19	34.5
<b>Lack of PPE in hospitals*</b>	9	18.8	5	9.3	4	7.3
<b>Inability to follow SOPs*</b>	6	12.5	6	11.1	1	1.8
<b>Lack of awareness on social distancing</b>	6	12.5	8	14.8	5	9.1
<b>Lack of security</b>	4	8.3	3	5.6	4	7.3
<b>Total</b>	48	100.0	54	100.0	55	100.0

\*PPE: Personal Protection Equipment.

\*SOP: Standard Operating Procedures.

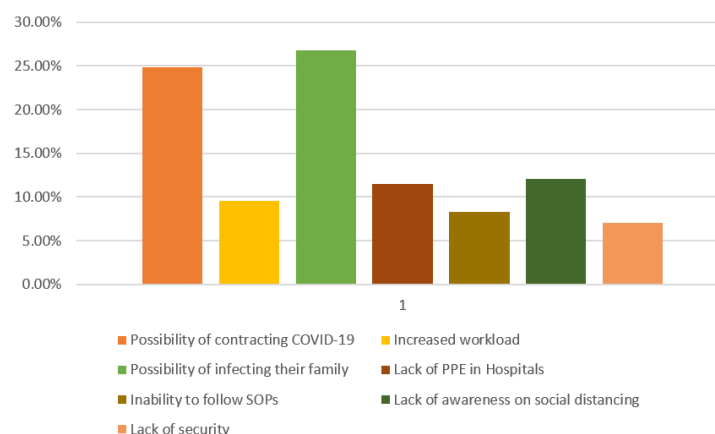


Fig. 2. Showing the overall percentages of reasons predisposing medical undergraduates towards depression, anxiety, and stress during the COVID-19 pandemic.

#### IV. DISCUSSION

The novel coronavirus diseases (COVID-19) not only causing physical implications, but the mental burden is also a common finding among medical professionals including medical undergraduates as well. Medical schools of many countries are promoting their Final semester's students for increasing their manpower to fight against the dreadful COVID-19 [16]. However, due to lack of experience, lack of resources in resource-poor countries, lack of social support, and importantly the fear of getting infected by (SARS-CoV-2) is considered a potent factor that can aggravate distress level among medical students.

In this study, we tried to find the depression, anxiety, and stress levels among medical students currently attending clinical wards in medicine and surgical specialties and reasons causing depression, anxiety, and stress. However, to our surprise, our results were inconsistent with the results from other studies conducted worldwide that showed increased depression, anxiety, and stress levels among health care professionals including medical undergraduates and other paramedical staff. In this study, the overall mean score for depression is 7.43 (SD=4.53), for anxiety is 7.75 (SD=4.12) and the mean value for stress comes to be 8.15 (SD=4.53) that is lesser than a similar study conducted in Pakistan with the mean value for depression to be 18.12 (SD=10.0), for anxiety 19.01 (SD=9.2), and stress 20.12 (SD=12.0) [17]. The possible reason for this major difference in mean values could be the difference in the time frame when these two studies were conducted. The above-mentioned study was conducted during May 2020 when the number of positive cases was on the rise in Pakistan and health care professionals were in direct contact with COVID-19 patients. However, our study was conducted in September when the disease burden was less, and the number of positive cases was declining and the disease curve was about to flatten.

A study conducted in Pakistan in June 2020 didn't show a significant association of medical undergraduates and depression, anxiety, and stress. That study also didn't depict any sort of mental health burden among medical undergraduates, and so, it is inconsistent with our study. [18] In the year of study-wise distribution, the mean anxiety and stress level were high among Third-year medical students as compared to Fourth and Final year as shown by statistics, this is justifiable by because of lack of skills, expertise, and particularly newly induction in clinical curriculum play its role in these circumstances. However, the Mean depression level was high among final year students that could be due to increased work-load in terms of clinical and theoretical perspective [19] and COVID-19 could be an incremental factor towards high depression in this condition.

In this study, we also tried to find out the possible reasons for depression, anxiety, and stress levels among medical students working in tertiary care hospitals of Rawalpindi. Much of the documented reasons were similar to many studies conducted worldwide. Some of the documented reasons were fear of contracting COVID-19, chances of spreading the virus to family and friends, lack of awareness

among the population, negligence in following the SOPs, and lack of security, and resources in Hospitals. A similar study conducted in Karachi, Pakistan also recorded the same reasons for distress among health care professionals, validating our study showing that much of the students were concerned about the transmission of the virus to their families and the second most common reason was fear of getting infected with COVID-19. On one point, the above-mentioned study is validating our findings, and on the other hand, the prevalence of other reasons including lack of security, lack of PPE, and lack of awareness was higher in our study as compared to the previous one [17].

Novelty does exist in our study in terms of the association between variables because as per our knowledge, many studies conducted on mental health-related to COVID-19 nationally and internationally emphasized greatly on the mental health of either the general population or only health care specialist excluding the medical students who were also performing their wards duties. In our study, we tried to classify depression, anxiety, and stress levels against the year of study, and similarly, various documented reasons for mental distress were also plotted against the year of study. But to our surprise, we did not find a significant mental health burden in our study population however, a dire risk of getting mental health illnesses does exist in medical undergraduates that need to be fixed within full capacity by competent authorities.

#### V. CONCLUSION

This study was conducted in September 2020 when the COVID-19 graph was flattening, to find the psychological implications of the COVID-19 pandemic among medical students undertaking training in wards. Our goal was to detect depression, anxiety, and stress levels among medical undergraduates but to our surprise, no significant mental health burden was observed among all three years of study. However, the level of anxiety was higher in Third-year students as compared to the Fourth and Final year but depression level was high among Final year students. The most common documented reason for mental distress was fear of infecting their family members and secondly fear of getting infected themselves though the prevalence of other reasons was also on the higher side as compared to other studies conducted in Pakistan.

#### VI. ACKNOWLEDGMENT

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#### VII. CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.



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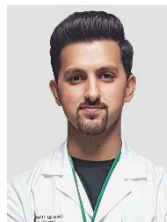
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