

Psychosocial and Biochemical Impact of COVID-19 Pandemic on Mental Health of Medical Students

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ABSTRACT

Background: COVID-19 (Coronavirus Disease 2019) is a highly contagious illness that originated in Wuhan, China, in December 2019 and rapidly spread to over 200 countries. The pandemic has impacted both physical and mental health globally. Among those affected, medical students have experienced significant psychological challenges, including anxiety, fear, and depression, along with disruptions to their academic progress.

Objective: This study aims to evaluate the psychosocial and biochemical impact of the COVID-19 pandemic on the mental health of medical students at Sheikh Zayed Medical College, Rahim Yar Khan.

Methods: An analytical cross-sectional study was conducted involving medical students from all five academic years at Sheikh Zayed Medical College during the period from July 2022 to December 2022. A total of 208 students (109 females and 99 males) participated by completing an online questionnaire assessing demographic data and psychosocial parameters, including depression levels using the PHQ-9 scale. Data analysis was performed using SPSS version 21, and results were presented in tabular and graphical formats.

Results: Among the 208 respondents, most were boarders (76.4%) and under the age of 21. Depression symptoms varied across gender and residential status. Among day scholars, 91.84% reported no depressive symptoms, while among boarders, 86.79% had no signs of depression. Mild to severe depression was slightly more prevalent among females compared to males. Overall, the majority of students did not exhibit significant depressive symptoms.

Conclusion: While a minority of medical students reported symptoms of depression during the COVID-19 pandemic, the overall mental health impact was notable. Academic performance and emotional well-being were affected, underscoring the importance of institutional mental health support during such crises.

Keywords: COVID-19 Pandemic, Mental Health, Medical Students, psychological challenges, depression

INTRODUCTION

Coronaviruses (CoVs) are a diverse group of viruses that can cause illnesses ranging from the common cold to more severe respiratory diseases. In December 2019, a novel coronavirus—later named SARS-CoV-2—was identified as the causative agent behind a cluster of pneumonia cases in Wuhan, China. The disease it caused, COVID-19, soon escalated into a global pandemic, resulting in significant morbidity, mortality, and disruption of daily life².

On January 30, 2020, the World Health Organization (WHO) declared the outbreak a Public Health Emergency of International Concern. By March 11, 2020, due to the exponential rise in cases and deaths globally, COVID-19 was officially declared a pandemic. As of October 2021, over 234 million confirmed cases and 4.79 million deaths had been reported, making it one of the most devastating health crises in modern history⁸.

The rapid human-to-human transmission of the virus, combined with a lack of definitive treatment early on, placed immense strain on global healthcare systems. Preventive measures such as lockdowns, social distancing, and mask-wearing were implemented to curb the spread. However, these necessary public health responses also brought forth significant psychological and social challenges, particularly among vulnerable populations—including medical students^{6,12}.

Medical education was severely disrupted, with institutions shifting to online learning, suspending clinical rotations, and postponing exams. Medical students faced increased stress from academic uncertainty, social isolation, financial pressures, and fear of infection^{3,11}. Globally, studies have documented rising levels of anxiety, depression, and distress among students during the pandemic^{4,5}. In particular, female students and those in their initial or final years of study appear to be disproportionately affected¹⁰.

A review of international research reveals consistent evidence of COVID-19's mental health impact on medical students, with variations in depression and anxiety rates observed across different countries and academic settings¹³. Yet, data from Pakistan remains scarce, and there is a critical need to explore the unique psychosocial burden faced by Pakistani medical students during the pandemic⁷.

Objectives:

1. To examine the effects of the COVID-19 pandemic on the mental health of medical students at Sheikh Zayed Medical College, Rahim Yar Khan.
2. To evaluate gender-based differences in the psychological impact of COVID-19 among medical students.
3. To assess whether students in different years of the medical program experienced varying levels of psychological stress during the pandemic.

METHODOLOGY

Study Design: It was analytical cross-sectional epidemiological study.

Study Place: Sheikh Zayed Medical College Rahim Yar Khan

Duration of Study: The duration of our study was from July 2022 to December 2022.

Study Population: The study was conducted on the medical students of five years of SZMC.

Ethical Issue: Informed consent was taken from all the participants.

Sample Size: A sample of 208 participants taken from all the participants.

Eligibility Criteria: Medical students of MBBS of Sheikh Zayed Medical College, Rahim Yar Khan.

Inclusion Criteria: Willing students actively participating.

Exclusion Criteria:

- 1 Unwilling students
- 2 Non-medical students

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Data Collection:

After taking informed consent, data was collected from online questionnaire. Questionnaire include 6 sections:

- 1 Section 1 includes demographic details.
- 2 Section 2 includes health status questions such as chronic illness, psychological illness, addiction, effects of COVID-19 on subject and his/her family, regarding quarantine isolation and mortality
- 3 Section 3 includes source of information about COVID-19.
- 4 Section 4 includes fear and anxiety evaluation about SOPs, vaccination, and academic progression during COVID-19.
- 5 Section 5 includes public health questionnaires, which ask about depression, fear, lack of optimism, appetite, sleep disturbance, suicidal thoughts, and emotions.
- 6 Section 6 includes support system questions about medical, financial, and emotional support.

Data Analysis: The data were analyzed using SPSS Version 21; the frequency was calculated, and tables and figures were created
Operational Definitions: PHQ is a public health Questionnaire, which is used to screen the depression among people. Person who screens positive should be further evaluated with PHQ-9 to determine whether they meet criteria for depressive disorder or not.

In this study we analyzed the psychosocial behavior of medical students using the PHQ-9 scale against the current situation of pandemic. Our results are based on following criteria:

Depression Severity**Score Analysis**

0-4: None

5-9: Mild

10-14: Moderate

15-19: Severe

RESULTS

During the period of inquiry, a total of 208 students were questioned regarding anxiety, depression, fear, academic progress, addiction and practices followed during evolving COVID-19 situation through online questionnaires. The participants were selected through convenient sampling from MBBS program at Sheikh Zayed Medical College Rahim Yar Khan, years one to five.

Out of 208 respondents, 109 were females and 99 were males. The age of participants ranged from 17 to 26 with majority lying under 21 years age bracket. A majority of participants 159(76.4%) were boarders. As per objective of the study, measurements of consequences of COVID-19 pandemic on psychosocial aspects of participants were made. It was measured by using PHQ-9 Index.

It was observed that among 49-day scholars: 3 (6.12%) were mildly depressed, 1(2%) was moderately depressed, none of them (0%) was severely depressed and most of them 45 (91.84%) were having no depression symptoms.

It was observed among boarders, 11(6.87%) participants were mildly depressed, 6(3.75%) were moderately depressed, 4 (2.5%) were severely depressed and most of them 138 (86.79%) were having no symptoms of depression and were contented in their life.

Table 1: Data distribution among Boarding and non-Boarding

Category	Non-depressed	Mildly depressed	Moderately depressed	Severely depressed
Boarder (159)	138(86.78%)	11(6.87%)	6(3.75%)	4(2.5%)
Non-boarder (49)	45(91.84%)	3(6.125%)	1(2.04%)	0(0%)
Total (208)	183(87.98%)	14(6.73%)	7(3.37%)	4(1.92%)

Table 2: Gender wise Data Distribution

Gender	Non-depressed	Mildly depressed	Moderately depressed	Severely depressed
Male	89(88.89%)	6(6.06%)	3(3.03%)	1(1.01%)
Female	94(86.23%)	8(7.34%)	4(3.67%)	3(2.75%)
Total	183(87.98%)	14(6.73%)	7(3.37%)	4(1.92%)

The results found among 99 males were as: 6(6.06%) males were mildly depressed, 3(3.03%) were moderately depressed, 1 (1.01%) were severely depressed and 89(89.89%) among them were having no symptoms of depression.

Data that was collected among 109 female showed results as follows: 8(7.34%) females were mildly depressed, 4(3.67%) were moderately depressed, 3(2.75%) were severely depressed and 94(86.23%) were having no symptoms of depression.

DISCUSSION

The COVID-19 pandemic has resulted in significant mental health impairment. The level of anxiety, depression and other mental health problems have been dangerously rising since the declaration of COVID-19 as pandemic^{2,8}. The effect of disease on medical students is expected to be higher since they are more vulnerable group and at risk of exposure more than the general population^{6,12}.

Our results show that 12.02% of our sample containing 208 medical students of Sheikh Zayed Medical College Rahim Yar Khan had symptoms of depression and anxiety while 87.98% had no symptoms of depression. These data are in line with previous studies confirming that COVID-19 pandemic increased mental health disorders among medical students^{5,6,10}.

They found it difficult to attend physical fitness sessions and exercise. A significant factor that affects the medical student's career is the pandemic's impact on the study. Some students found it challenging to adapt to the new teaching methods such as online classes and online meeting apps, which is an additional anxiety and stress source^{3,11}.

Having affected family members was the most concerning scenario for our medical students. The financial impact of the disease is an important issue to be considered. This resulted in reduction of sources of income and students may feel anxious and stressed about paying their tuition and courses fee^{7,12}.

As medical students have a better perception and sufficient information from reliable sources about COVID-19 transmission, course and prognosis, this in turn, should contribute to a reduced level of anxiety and fear¹³.

This study also demonstrated a relationship between gender and anxiety level confirming previous studies in which females tend to develop more anxiety symptoms in reaction to health emergencies and imposed quarantine than their male counterparts^{4,10}.

It is becoming a significant priority to improved students' mental wellbeing^{8,9}.

Considering the web-based distribution, no data were collected regarding non participating students. Limitation of our analysis is that it is related to reliance on self-reported measures rather than clinical diagnosis of anxiety and depression¹⁰.

CONCLUSIONS

During this research it was observed that psychosocial consequences of COVID-19 pandemic on mental health were slightly more in females as well as boarder students of the SZMC.

Overall results show that mildly & moderately depressed cases are slightly more than severely depressed cases.

Hence, it is concluded that there are significant psychosocial consequences on the mental health of medical students of SZMC with factors like gender and boarding aggravating the situation.

Suggestions

- Proper screening and diagnosis of mental disorder, (resulting from long periods of lockdown) among students should be done
- Psychiatric department of medical college should indulge in provision of targeted psychosocial interventions for all of the students, especially for those who are at high risk of psychological morbidity (e.g., generalized anxiety disorders, panic attacks, PTSDs)
- Improved communication, robust counselling will be the silver lines of this pandemic.
- Engaging in self-care, taking breaks from media coverage will be helpful.
- Quarantine period is boring and making students more depressed, so online tournaments and healthy competitions should be conducted to engage the students.
- Students should be facilitated by university on examination and grading grounds.
- Financial support for those students who are facing mental health issues due to financial problems because this pandemic has distorted the thriving economy of Pakistan on unpredictable terms.
- Inter institution and inter college sharing of strategies for coping methods will also be helpful.

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