



## Original Article

## Impact of COVID-19 Pandemic on Medical Education: Predictors of Educational Difficulties and Poor Academic Performance

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## ABSTRACT

COVID-19 is causing multiple psychological problems directly influencing the ability of learning among students. **Objectives:** To investigate the impact of COVID-19 pandemic on medical education and to explore the influence of different predictors of educational difficulties and poor academic performance. **Methods:** This cross-sectional study was conducted in Multan Medical & Dental College, Multan, over a period of one month. Through convenient purposive sampling, all the enrolled students from all specialties who agreed to fill the online survey questionnaire voluntarily were included. A self-developed, reliable and validated research instrument was used as a data collection tool to inquire about the demographic details, psychological predictors and educational difficulties. **Results:** A positive and significant correlation was observed between the psychological distress due to COVID-19 and students' educational learning difficulties in medical setting. It was found that depression and obsessive-compulsive disorder ( $p \leq 0.05$ ) significantly influenced the students' education and learning but anxiety and posttraumatic stress disorder had no significant impact. Females and students with psychiatric history showed higher level of psychological distress and educational difficulties as compared to males and students without psychiatric history. **Conclusions:** COVID-19 pandemic has tremendously affected the medical education as strong positive correlation has been observed between psychological predictors and students' educational learning difficulties. However, during this pandemic learning hazard were more significantly perceived in students with depression and obsessive compulsive disorder.

## INTRODUCTION

The existing outbreak of the Corona Virus Disease (COVID-19) pandemic has caused severe mental health problems [1]. In the last few months, enormous research has been published concerning the levels of anxiety and depression among psychiatric patients and general people due to COVID-19 [2, 3]. The methods of isolation like seclusion and communal distancing which have been advised to be executed worldwide in order to diminish the risk of contamination, may itself signify a tense life pattern. Many

adverse mental health consequences have been reported due to parting from the loved ones, loss of self-sufficiency and feelings of uncertainty [4]. It has also been reported that individuals with pre-existing mental illnesses are additionally predisposed to setbacks, avoiding medicines, anxieties, disgrace and reduced self-care behaviors during pandemics. This may add on to 'therapeutic mistrust', suspicion and hopelessness [5]. In this context of current pandemics, the major group affected is the students

whose learning capabilities were greatly disturbed due to the symptoms of petulance, wakefulness, expressive agony, panic, and anxiety, because of uncertain flow of education, monetary apprehensions, frustration and dullness, deficiency in provisions and deprived communication during this pandemic [5-9]. Furthermore, if such apprehensions are sustained, they might increase the chance of severe and disabling mental health situations, temperament or stress disorders, trauma-related conditions and Obsessive Compulsive Disorder (OCD). This concern is predominantly apparent in Italy, the very first hit European country in which the lockdown continued for a much more extensive time period [10, 11]. Additionally, amongst the extensive variability of obsessions and obligations, fear of germ contactivity, sensitivity of being infected and undue hand washing are commonest factors affecting around 50% of the patients [12]. Similarly, the threat of infection and the continuous talk on different precautionary measures and consequences of COVID-19 by health advisories may further deteriorate the symptoms of OCD [13, 14]. Known risk factors for Post-Traumatic Stress Disorder (PTSD) may include broadcast of increased mortality, insights of danger, involvement with infected patients, nutrition and reserve uncertainty. Such factors were felt by individuals with prior communicable disease occurrences such as Ebola as well as during the COVID-19 pandemic [15]. This comprehensive concern was similarly revealed in widespread media reporting which was serious and distressing, leading to aggressive communal response [16]. In the same context, it is also reported that the more the media coverage a disease receives, the more likely the students and young individuals will take it as an extortion whatever the factual health risk is there in it [17]. Unfortunately, the non-serious attitude towards this foremost mental health concern among learning students and their educational capabilities adds a lot to the problem statement [18]. Some studies also stated that although anxiety disorders give good results to pharmacotherapy and psychotherapy, it may deteriorate in presence of strains and mental pressures because of environmental prompts [19, 20]. Likewise, undergoing or perceiving suffering associated with COVID-19 may end up in high occurrence of mental conditions leading to severe distress and incapacity among fighters, family members, first aids providers and the common public [21]. Many descriptive studies have confirmed that multiple mental health issues occurred more commonly amongst the fighters of the disease, families of the survivors, medical specialists, front line workers and in the general community after an outbreak of widespread communicable disease like SARS, MERS, Ebola, flu, HIV/AIDS [22]. COVID-19 being a life-

threatening disease is producing multiple psychological problems that are directly influencing the ability of learning among students. While reviewing the literature, there are not ample evidences providing association of the impact of COVID-19 pandemic on medical education and to explore the influence of different predictors of educational difficulties and poor academic performance.

## METHODS

This cross-sectional study was conducted over one month (September 2021) at Multan Medical & Dental College, Multan, Pakistan. Permission to conduct the study was obtained from the Institutional Review & Ethical Board of the same institution (IRB/MDC/-06). Through non-probability convenient purposive sampling, all the currently enrolled students of all specialties (Medicine, Dentistry, Nursing, Nutrition and Physiotherapy) were approached. Out of 500 enrolled students, a total of 416 students returned the sent online questionnaire and were therefore included in the study. A reliable and validated research instrument/questionnaire was used as a data collection tool to inquire about the demographic details, psychological/stress predictors (depression, anxiety, OCD, PTSD) and educational difficulties (delayed question solving time, mistakes in solving questions, unable to adapt to a changing, trouble in remembering, inability to focus) faced by the students during COVID-19 pandemic. The analyses were carried out through Statistical Package of Social Sciences (SPSS) version 21. Independent samples Student's t-tests were employed to identify the differences and mean scores of study variables were compared with respect to demographic characteristics (gender, history of psychiatric disorder) by using t-test. Pearson correlation was used to explore the relationship between depression, anxiety, OCD, PTSD and educational difficulties, whereas; predictors of educational difficulties were investigated using multiple regressions. The p-value of  $\leq 0.05$  was considered as statistically significant at the 95 % confidence level while power of the test was kept at 80%.

## RESULTS

A total of 416 students were included in the study. Among them 144 were males and 272 were females. Mean age of the students was found to be 22.5 years. Table 1 describes the mean comparison of depression, anxiety, OCD, PTSD and educational difficulties between male and female students of medical discipline. Females significantly showed more depression, anxiety, symptoms of PTSD and educational difficulties as compared to males. In addition, there was no significant difference between males and females in relation to OCD during COVID-19.

Variable	Gender	N	Mean ±SD	Df	t-test	p-value
Depression	Male	144	16.0764±6.20746	414	-3.299	.001
	Female	272	18.1765±6.15948			
Anxiety	Male	144	12.3056±5.64978	414	-3.410	.001
	Female	272	14.2610±5.51766			
Obsessive Compulsive Disorder	Male	144	9.0278±3.66030	414	-1.685	.093
	Female	272	9.6728±3.74160			
Posttraumatic Stress Disorder	Male	144	6.2727±2.53755	414	-2.356	.019
	Female	272	6.9816±3.09082			
Educational Difficulties	Male	144	15.3194±6.17309	414	-2.176	.030
	Female	272	16.6176±5.57546			

**Table 1:** Comparative Scores of Male and Female students for Depression, Anxiety, OCD, PSD and Educational difficulties

Correlation matrix showed positive and significant correlation between depression, anxiety, OCD, PTSD and the students' educational difficulties (Table 2).

Scale	Mean ±SD	1	2	3	4	5
Depression	17.5215±6.32272	1				
Anxiety	13.6292±5.66903	.818**	1			
Obsessive Compulsive Disorder	9.4641±3.75508	.588**	.595**	1		
Posttraumatic Stress Disorder	6.7626±2.95702	.658**	.658**	.739**	1	
Educational Difficulties	16.2225±5.86178	.676**	.568**	.494**	.518**	1

**Table 2:** Correlation Matrix between Depression, Anxiety, OCD, PSD and Students' Educational Difficulties during COVID-19

\*\*= positive and significant correlation

Results showed that those students who have had the history of psychiatric disorder were more depressive, had severe level of anxiety, symptoms of OCD & PTSD and problems related to educational learning (Table 3).

Variable	Psychiatric Disorder	N	Mean ±SD	Df	t-test	p-value
Depression	Yes	71	21.1690±5.77182	416	5.520	.000
	No	347	16.7752±6.17670			
Anxiety	Yes	71	16.9014±5.13296	416	5.524	.000
	No	347	12.9597±5.54577			
Obsessive Compulsive Disorder	Yes	71	10.4085±3.57602	416	2.338	.020
	No	347	9.2709±3.76650			
Posttraumatic Stress Disorder	Yes	71	7.9014±3.18099	415	3.614	.000
	No	347	6.5289±2.85810			
Educational Difficulties	Yes	71	18.6197±6.21603	416	3.844	.000
	No	347	15.7320±5.67218			

**Table 3:** Basic Statistical Scores of Depression, Anxiety, OCD, PSD and Educational difficulties with Respect to Pre-existing Psychiatric Disorders

Multiple regressions described the predictors (depression, anxiety, OCD, posttraumatic stress disorder) of educational difficulties and found that depression and OCD ( $p \leq 0.05$ ) significantly influenced the students' educational and learning difficulties due to COVID-19 but anxiety and PTSD had no significant impact on the learning (Table 4).

Model	Unstandardized Coefficients		Standardized Coefficients	T	p-value	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	4.452	.660		6.745	.001	3.154	5.749
Depression	.541	.060	.583	8.964	.001	.422	.659
Anxiety	-.019	.067	-.019	-.285	.776	-.152	.113
Obsessive Compulsive Disorder	.185	.085	.119	2.175	.030	.018	.352
Posttraumatic Stress Disorder	.118	.117	.060	1.009	.314	-.112	.349

**Table 4:** Multiple Regression Analysis for Students' Educational Difficulties

## DISCUSSION

This study was conducted to investigate the impact of COVID-19 pandemic on medical education and to explore the influence of some psychological predictors like depression, anxiety, OSD and PTSD on students' educational difficulties. The major aspect of this study identified a significant positive correlation between the study variables and revealed that hazards in learning were significantly related with psychological predictors in particular with depression and OCD among the medical and allied students during this pandemic. The present study has uncovered the novel phenomena in the discipline of medical science in perspectives of psychological disturbance and its consequences in form of educational difficulties among the medical students of Southern Punjab. Previous studies which were conducted in epidemics and pandemics situation reported psychological effects on work efficiencies of people from different modalities [21, 22]. Likewise, ample evidences from existing literature indicated that educational difficulties are significantly influenced by the symptoms of depression, stress, anxiety and OCD and PTSD triggered by such type of pandemic situations in the past [23]. Also, in the reflection of earlier studies, it was assessed that psychological problems and poor academic grades are positively correlated with each other. Educational difficulties are perceived in negative perspective by these symptoms of obsessive behavior, panic situation, stressful environment and apprehension [24]. Findings of this study indicated that obsessive behavior and depression have greatly influenced the educational inspiration in this pandemic. Depressive symptoms and obsessive-compulsive behavior predict educational difficulties among medical students more significantly as compared to their feeling of apprehension and stress due to COVID-19. Present study also reported that female medical students were found to have more depressive symptoms, anxiousness, obsessive behavior, stress related to trauma and educational difficulties as compared to male students. Furthermore, the association between psychological

problems and pre-existing psychiatric disorders during COVID-19 was also studied and it was observed that all those participants who had positive psychiatric history reported greater psychological problems and educational learning difficulty than those who had no pre-existing psychiatric disorders. This result is supported by one more similar study which reported that in patients with pre-existing psychiatric disorders symptoms may become worse due to spreading fear, anxiety, obsessive behavior, depression and PTSD during COVID-19 pandemic [22]. Exposure and the nature of psychological trauma is considered to be a most reliable and significant predictor of PTSD along with infectious disease. Epidemiologists indicated highest prevalence of PTSD among families of survivors, medical professionals and medical students during COVID-19 [22-24]. Pandemics are more than just mental and physical manifestations. They can have enormous psycho-social consequences. To stabilize the quality of life, it is needed to manage the psychological issues during COVID-19 in developing countries, where the students of medical field are developing the symptoms of OCD, depression, anxiety and PTSD which in turn can damage the ability of educational learning. In the present era, awareness is needed to overcome the obsessions about pandemic. However, to enhance the educational ability of students the psycho-education should be provided, initiative about online psychotherapy must be taken, debunking misinformation and facilitating tele-consultants. It is suggested that an urgent step must be taken to provide mental health services targeted at prevention of depression, anxiety, OCD and PTSD to students and other people exposed to COVID-19. Possible strategies must be utilized which are not limited to psychological problems but effective for general population by providing psychosocial support, systematic desensitization, counseling services and pharmacological treatment.

## CONCLUSIONS

COVID-19 pandemic has tremendously affected the medical education as strong positive correlation has been observed between psychological predictors and students' educational learning difficulties. However, during this pandemic learning hazard were more significantly perceived in students with depression and obsessive compulsive disorder.

## Conflicts of Interest

The authors declare no conflict of interest.

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