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ORIGINAL ARTICLE

COVID'S Impact on Medical Students' Performance

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ABSTRACT

Objective: To find out the impact of COVID-19 on the mental health of medical students and its repercussions on academic achievement.

Methodology: Present cross-sectional study was carried out amongst the medical students of Islamabad, Karachi, and Lahore. A sample size of 123 medical students filled a questionnaire-based survey of 21 questions, which were specifically designed to find the relationship between COVID-19, mental health, and its effect on medical education. The data was analyzed using SPSS version 23.

Results: Out of all the participants, 70.7% received their education online. 67.6% had a negative impact on their mental health during the pandemic, and 26.8% had a mixed response of both positive and negative impacts. A total of 80.5% of students documented that their learning experience worsened over the last two years, and 48.8% of participants had a poor academic performance. 26.8% of the medical students experienced mixed academic performance, showing both improvements and decline. Out of the 26.8%, 45.4% of the students experienced challenges adapting to the new medium of learning, and 54.6% had reduced motivation and focus. There is a strong association between mental health and academic prowess, and the new medium of learning, lack of motivation, and declined focus are contributing factors to poor academic performance.

Conclusion: It can be concluded that there is a strong relationship between mental health, learning experience, and academic achievement in medical students. The pandemic and isolation led to increased levels of mental stress, which then affected medical studies. For the majority of the students, there was a decline in mental health, academic learning, and academic performance.

Keywords: COVID-19, mental health, stress, medical students, pandemic

INTRODUCTION

The coronavirus disease (COVID-19) emerged from Wuhan, China, and is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). On the 11th of March, 2020, WHO declared a COVID-19 pandemic after it spread to 113 countries.[1] As a result, the world went into a state of lockdown, with approximately 3.9 billion individuals quarantined at home.[2] Amongst the quarantined were medical students, who had to resort to online education. The lockdown, isolation, and quarantine had several effects on medical students' mental well-being and psychological status, and hence their academic performance.[3] Thus, this study aims to gauge the pandemic's impact on medical students, their mental health, and academic progress.

Medical students were specifically chosen for this study because they already have high levels of stress and anxiety, which affects their cognitive functioning, making them more emotionally disturbed than the general population.[4] Stress is the process through which individuals cope with threatening changes in their environment, and the coping mechanisms are unique to every person.[5] There are many consequences of impaired mental well-being, including lack of self-esteem, depression, sleep disturbances, and low academic performance.[6] In this study, the stress or the stimulus is the pandemic, lockdown, quarantine, and the resultant online education, and the response is seen through psychological and academic repercussions. Therefore, medical students are a high-risk group for acquiring the complications of pandemic-associated stress. Using medical prowess as in indicator, this research wishes to investigate medical students' journey through COVID-19.

METHODOLOGY

A cross-sectional study was conducted among Pakistan's medical students from the first to the final years of Islamabad, Lahore, and Karachi. A questionnaire-based survey of 21 questions was used to assess the mental health, academic learning, and academic performance of medical students. The questionnaire was distributed online, and data was collected. The questionnaire comprised of qualitative, open-ended questions to analyze an in-depth perspective of medical students about the pandemic, online education, and academic progress. The questions explored the following concerns: (1) the impact of COVID-19 on mental health (2) online learning experience during the pandemic, and (3) academic achievements. The responses were analyzed and divided into themes, and SPSS version 23 was used to interpret the patterns between the themes.

RESULTS

During the study, 123 students participated and 100% of them completed the survey. 34.1% were males and 65.9% were females. However, no significant difference was found in the results from each gender. 70.7% of the participants received their education online during these past two years. The results showed that among these students, the lockdown had a negative impact on the mental health of 67.6% of them. A strong link was seen between mental health and academic performance. As the mental health worsened, academic performance also worsened. Through the questionnaire-based survey, it was seen that 80.5% of the students felt that their academic learning worsened during the lockdown and through online education. Only a minority of 9.8% claimed that their studies were left unaffected throughout the tenure of online education.

After inquiring about the mental health and academic learning, the survey moved onto academic achievement. The results presented that though the academic learning experience was impaired in 80.5% of the students, the overall academic achievement was worsened in 48.8% of the participants. This showed that somehow, students learned how to cope with online education over the 2 year long pandemic. However, 48.8% is still a significant percentage, indicating that mental health, academic learning, and academic performance are closely related. 26.8% of the medical students experienced a mixed form of academic performance, showing both improvements and decline. Out of the 26.8%, 45.4% of the students experienced difficulty in adjusting to the new medium of learning, i.e. online education and 54.6% had reduced motivation and focus.

Table 1: Percentages showing the impact of lockdown on mental health and academic performance.

		Impact of lockdown on your mental health			Total
		Positive	Negative	Mixed	
Academic performance during the last two years	Improved	3	0	3	6 (5.8%)
	No change	3	15	6	24 (23.5%)
	Worsened	6	33	6	45 (44.1%)
	Improved at some points and worsened at others	0	21	6	27 (26.4%)
Total		12 (11.7%)	69 (67.6%)	21 (20.5 %)	102

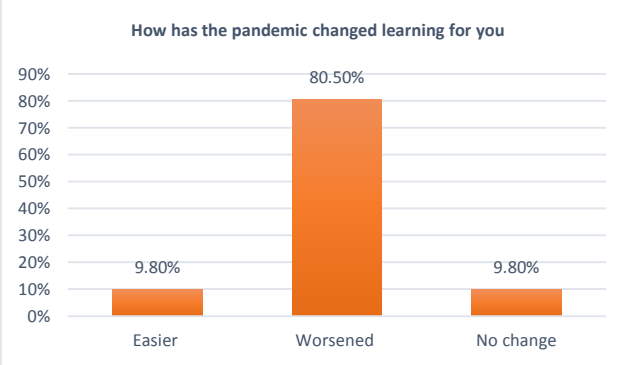

Figure 1: Percentages showing the impact of the pandemic on medical learning

Table 2: Percentages showing academic performance

Academic Performance	Frequency	Percentage
Improved	6	4.9
No change	24	19.5
Worsened	60	48.8
Improved at some points and worsened at other	33	26.8
Total	100	100

When the results and statistics regarding mental health and academic performance were linked together, a significant finding was that of all the individuals whose mental health deteriorated throughout the pandemic, none of them said that their academic performance improved. This fact is shown in figure 4 below.

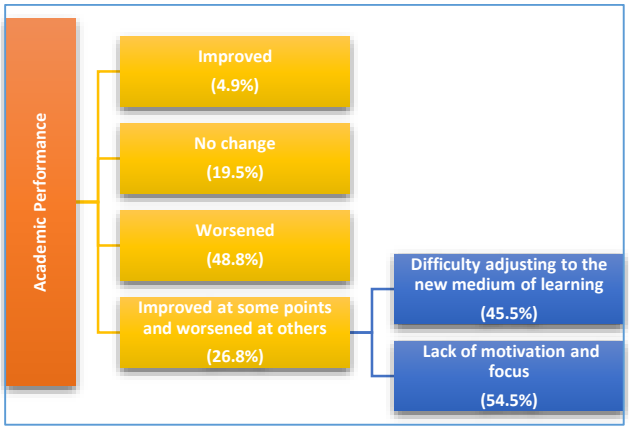

Figure 2: Academic performance variations during lockdown

Overall, the results for this descriptive concluded that when students are not mentally motivated or focused for their studies, there is a decline in learning experiences and academic achievement.

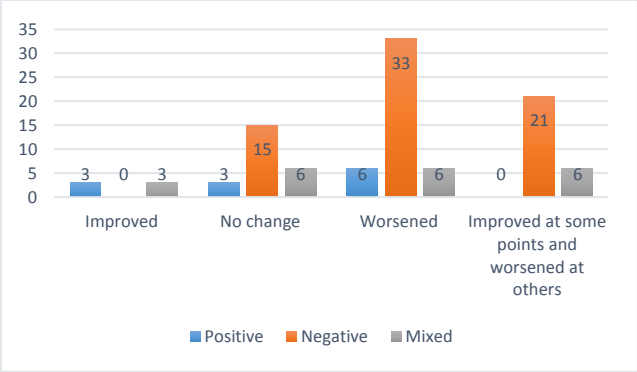

Figure 3: Relation between mental health and academic performance

DISCUSSION

The present study confirmed the hypothesis that the pandemic was a stressful setting for a group as high-risk as medical students. The stress had an adverse impact on medical student's well-being, which in-turn affected both learning experience and academic outcome. Various researches done in the past two years are presented in this discussion, all of which are consistent with the findings of this research.

Studies carried out in Pakistan[7-10] showed that there was an increase in anxiety, stress, and depression and a decrease in academic performance in medical students during the pandemic. According to Baloch et al.[7], a baseline increase in anxiety, stress, depression, and disrupted sleep patterns during the lockdown all contributed to poor mental status in medical students. Zafar et al.[8] stated that there was more anxiety amongst those medical students who were not fully aware of the characteristics of COVID-19 and medical students in their earlier years were more depressed that their seniors. Analyzing these two

researches gives a conclusion that altered mental well-being is closely related to the pandemic, and that awareness is an important factor in reducing pandemic-associated anxiety. Another Pakistani research showed that out of all their participants, 62.6% had symptoms of mild to severe depression during lockdown and more than half of the participants experienced different levels of anxiety and stress.[9] The last Pakistani research for this discussion showed that more than 2/3rd of their participants had worsened emotional and mental state.[10] When the participants compared their mental health with pre-COVID times, it had altered significantly with more anxiety, sadness, and insecurity after the lockdown. Female medical students were more affected than males, and students which a previous psychiatric history experienced more symptoms of depression and anxiety. The statistics showed that 1 out of 5 medical students had suicidal thoughts. All these Pakistan-centered researches clearly display the psychological impact of COVID-19 on medical students.

There are many reasons that contribute to poor mental status of medical students. For instance, a study conducted in China[11] revealed that the pandemic altered sleep patterns of medical students. Medical students have been trained to follow a routine since their first year, and the irregular timings of classes along with family responsibilities increased the stress levels. The study also exhibited the fact that having friends or family affected by COVID-19 was also a factor for poor mental health amongst these students. Another study that backs up the pandemic-associated mental illness statistics showed an overall level of increase in anxiety, depression, and stress.[12] These studies uncover the reality that the pandemic, mental health, and academic performance are all coupled together, with one affecting the other. The pandemic triggered mental illnesses in many medical students, which affected their studies. In turn, the poor academic outcome further worsened their mental health. Another Chinese research[13] showed that 52% of the participants started using their electronic devices surprisingly more since lockdowns were imposed. Resultantly, sleep, work, and meal patterns were disrupted. In the results, 32.8% of the medical students felt angrier than ever before, having quarrels both face to face and online. 62.7% of the students felt extremely dismal because of the epidemic. Thus, the pandemic uprooted the lives of many medical students. These studies also show the importance of proper routine, sleep, and eating habits for medical students and a lack of discipline and feeling out of control causes multiple mental illness symptoms.

A study conducted in America[14] indicated some stressors contributing to poor mental health, including the fear about their family and friend's physical health, lack of concentration and proper sleeping patterns, decreased social interaction, and isolation. A significant stressor was related to medical education, as agreed by 82% of the participants. Students faced challenges during online classes, changes in syllabus, several technical problems with online education, and quality of online education. All these changes made the experience of virtual learning worse, which then made the medical students anxious and worried. Many medical students also said that their motivation to learn was reduced. One of the questions in our results was also related adapting to the new form of education. Therefore, change is a significant factor in medical students' academic life and if that change reduces the quality of education, it stirs stress and worry.

Keeping online education in mind, studies conducted in Saudi Arabia[15] and Libya[16] presented a consistent pattern with the study done in America. All three countries shared a common view that medical students cannot have the same quality of education virtually as they would on-campus. In Saudi Arabia, the students already faced pandemic-related stress and anxiety, coupled with the uncertainty of online assessment. There were several technological issues, including technophobia. Highlighting technical difficulties in a study is crucial to understand that not everyone in Pakistan has access to high-speed internet or electronic devices. Naturally, medical students worried about their academic progress when they did not have access to the fundamentals of online education. All these factors contribute to mental stress and declined academic function.

In Libya, 64.7% of the participants agreed that e-learning implementation would be difficult and 54.8% said that the clinical aspect of medicine cannot be learned online. Further, in Libya 53.4% agreed that their mental well-being was significantly affected 31.3% of the respondents had depressive symptoms after the lockdown, and 75% of them felt like their time and potential as being wasted because of online teaching. Therefore, with these studies it can be concluded that quality of education is a crucial factor in lowering mental stress.

For COVID-19, the quarantine phase is a challenging intervention to carry out for the safety of public health.[17] Our research demonstrated three important characteristics associated to the pandemic's lockdown, namely a decline is mental well-being, worsened learning experiences, and dysfunctional academic achievements. In the face of the pandemic, medical students had to alter everything they knew about medical education. Once the threat of the pandemic is over, medical students probably will feel differently, and researches should explore the post-COVID-19 era for medical studies.

CONCLUSION

This research suggests that both female and male medical students experienced the adverse effects of the pandemic and isolation. They felt emotionally stressed and drained when medical education shifted from on-campus to online, virtual classes. More than half of the participants felt a decline in their mental well-being during the past two years. A strong association was seen between mental health, learning, and academic outcomes. Medical students generally lacked motivation, with a reduced ability to focus. Disturbed sleep and eating patterns also had their separate implications. All in all, this study is unique because the survey asked for in-depth perspectives about mental health and its association to education. Hence, the study summarized a medical student's journey through the pandemic.

Recommendations: There may be long-term associations and repercussions of this pandemic on the mental health of medical students. Perhaps some students are not able to

recover from their dysfunctional learning behaviors, causing a further decline in psychological well-being. The results of this study may give evidence about the pandemic's influence on mental health and policymakers can produce guidelines for managing stress and learning during quarantine.

Further, the results indicate the importance of psychological interventions to help reduce the pandemic's negative mental impacts. Perhaps the timings for lockdowns can be regulated in a way that favors medical student's learning outcomes. Lastly, medical students should be encouraged to eat and sleep well, exercise regularly, and keep their mind focused on productive habits. This can be achieved through providing them with counsellors and carrying out group discussions on different topics.

Limitations: In this study, most of the students were from private medical colleges and not from public medical colleges. Thus, there was not enough representation for the latter, which may have added a bias to the results. Another limitation is that this study did not compare the COVID-19 experience between pre-clinical and clinical years. Clinical years need to be physically present to learn clinical skills, including interacting and examining patients. Therefore, these students naturally suffered more educational loss than pre-clinical years. Final year medical students have an additional stress about licensing exams and house jobs, which was also not covered in this research.

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