Impact of Covid-19 Pandemic on Mental Health of Medical Students of Rawalpindi Medical University: A Cross-Sectional Study

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Author’s Contribution

¹,²,³,⁴ Conception of study
¹,²,⁴ Experimentation/Study conduction
² Analysis/Interpretation/Discussion
³ Manuscript Writing
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Abstract

Background: Medical personnel have been greatly affected in the face of the catastrophic health emergency owing to COVID-19 pandemic, which, according to WHO, caused about 1,397,139 deaths worldwide. The objective of this study was to determine the percentage of medical students screened positive for mental health problems at Rawalpindi Medical University during COVID-19 pandemic and the association of positive screening with gender, year of study and family income.

Material and Methods: A descriptive, cross-sectional study was conducted on medical students of Rawalpindi Medical University during two months, i.e. May-June, 2020. Data were collected through an online questionnaire containing demographic details and self-reporting questionnaire (SRQ-20). Statistical analyses were carried out using SPSS v.23.0, and a p-value of less than 0.05 was considered statistically significant.

Results: Overall, 87 (33.7%) students were screened positive for mental health problems as per individual SRQ-20 score. Positive screening was found to be higher among female students (34.9% vs 31.4%). Mental health was significantly associated with the year of study (p-value=0.046) but not with family income (p-value=0.119). Multivariate binary logistic regression analysis revealed an adjusted odds ratio of 1.161 (95% CI, P=0.608), 0.841 (95% CI, P=0.032), 0.662 (95% CI, P=0.208) for gender, year of study and family income respectively.

Conclusions: About one-third of medical students are screened positive for mental health problems. Female students are relatively more prone to develop such mental health issues. Students with low family income and those studying in the first and second year of MBBS have a high propensity towards mental health problems during COVID-19 pandemic.

Keywords: COVID-19, Mental Health, Students, Medical.
Introduction

In 2019, a new coronavirus (COVID-19, also known as 2019-nCoV or SARS-Sov-2) was detected, causing an outbreak in Wuhan city in China. Tens of thousands of infections have been reported in China and the rest of the world, resulting in thousands of deaths. Despite the extreme efforts and sacrifices made to control this pandemic, the number of cases has been rapidly increasing across the globe. Thus, the outbreak of COVID-19 has been declared a global health emergency by the World Health Organization (WHO, 2020, January 30).

Close contact between people is the primary cause of virus transmission. As this disease is highly contagious, and no vaccine is available yet, the only prevention is a quarantine which is the restriction of movement of healthy people to see if they get the disease or not. WHO has launched a global fight against COVID-19; as it is not only affecting the physical health but also triggering many mental health issues in medical practitioners as well as in the general public. Social distancing, self-isolation, exhaustion, fear of contact from exposed persons is causing mental health problems like stress, anxiety, depression, insomnia, negative emotions among medical personnel which is significantly affecting their ability to fight against this pandemic, and it may also have long-term effects on their wellbeing.

Usually, ordinary contact among people can result in the transmission of viral infections, and thus severe public panic can be triggered by outbreaks. In particular, anxiety levels are more likely to be raised by novel, exotic threats than familiar threats. Moreover, emotions among individuals are incredibly vulnerable during public health emergencies, and the fear of a mysterious and terrifying new illness might affect their mental health negatively. This is verified by a study depicting higher emotional distress among female nurses than males. It was predicted in 2018 that the next major outbreak might not be due to a lack of preventive technologies but emotional contagion, which could erode trust in government, causing severe economic and social disruption.

According to a study conducted on Australian Medical students, 68% reported a decline in mental health due to COVID-19 pandemic. One quarter of medical students showed symptoms of depression (during COVID-19 pandemic) in a study carried out on Saudi medical students. Another study conducted on US college students reported that 91% students showed an increase in stress and anxiety due to fear from COVID-19. 34% of Pakistani Universities students were reported to be suffering from moderate to severe anxiety.

Medical staff have been affected dramatically in the face of the catastrophic health emergency caused by COVID-19, by different kinds of subjective and objective factors like increased workload, fear of catching an infection and spreading it to their families, friends and colleagues. Their work, life, and emotions tend to be regularly abnormal due to this unique environment. Medical students, on the other hand, are more prone to impaired mental health due to shut down of medical schools, postponement of their examinations, restricted social gatherings and complete lockdown.

The objective of this study is to determine the effect of COVID-19 pandemic on the overall mental health of medical students of Rawalpindi Medical University that would help to recognize unnoticed mental illnesses. Although there is much ongoing research, mental health-related issues in medical students due to COVID-19 have still not been studied to a great extent. Moreover, we have found the association of demographic factors like gender, year of study and family income with the mental health status of medical students during COVID-19 pandemic.

Materials and Methods

This is a descriptive, cross-sectional study conducted on 276 medical students at Rawalpindi Medical University, Rawalpindi, Pakistan during two months from May-June, 2020. Informed consent was taken from all the participants. Data were collected through an online questionnaire containing demographic details including age, gender, year of study, family income, and questions based on self-reporting questionnaire (SRQ-20) which has good reliability for the screening of mental disorders in men and women. It was predicted in 2018 that the next major outbreak might not be due to a lack of preventive technologies but emotional contagion, which could erode trust in government, causing severe economic and social disruption.

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We divided the participants into two groups, i.e. those who screened positive and those who were screened negative as per their SRQ-20 scores. The cut-off score for men was 8, with sensitivity and specificity of 0.69.
and 0.65 respectively while for women it was 10, with sensitivity and specificity of 0.81 and 0.80 respectively.15

The percentage obtained by the students in their last professional exam and module exam (for first-year medical students) was asked. Accordingly, students were classified into two groups i.e. “low achievers” including those who obtained exam scores of up to 70%, and “high achievers” comprising of participants who obtained exam scores above 70%.

Statistical analyses were carried out using SPSS v-23.0. Descriptive statistics were applied to determine the frequencies and percentage of distribution of age, gender, year of study, socioeconomic status, and boarding status. Cross-tabulation of gender, boarding status and family income with study variables was done, and a chi-square test was applied. Pearson’s correlation was applied to see the strength of association. Independent samples t-test was applied to find out the difference of study variables according to gender and boarding status of students. One-way ANOVA was applied to see if the mean SRQ-20 score differs according to the year of study of students. The ability of explanatory variables to predict mental health was assessed using the multivariate binary logistic regression model. P-value of less than 0.05 was considered statistically significant.

Results

Data were collected from 276 students, out of which 18 students did not satisfy the inclusion/exclusion criteria. Of the remaining 258 individuals, 86 (33.3%) were male, and 172 (66.7%) were female. Mean age of the participants was 21.29 ± 2.46 years. Overall, 87 (33.7%) students were screened positive for mental disturbances as per SRQ-score. According to gender, positive screening was found to be higher among female students as compared to male students (34.9% vs. 31.4%). However, there was no significant association of positive screening with gender (p-value=0.339). Family income and screening status were also not significantly associated (p-value=0.119). Screening status was significantly associated with the year of study (p-value=0.046) (Table 1).

| Parameters              | Category          | Screening status for mental health problems | P-value |
|-------------------------|-------------------|---------------------------------------------|---------|
|                         |                   | Positive | Negative                     |         |
| Gender                  | Male (n=86)       | 27 (31.4%) | 59 (68.4%)                   | 0.339   |
|                         | Female (n=172)    | 60 (34.9%) | 112 (65.1%)                  |         |
|                         | <30k (n=15)       | 7 (46.67%) | 8 (53.33%)                   |         |
|                         | 30-70k (n=45)     | 20 (44.44%) | 25 (55.56%)                  |         |
|                         | 70-100k (n=82)    | 21 (25.61%) | 61 (74.39%)                  | 0.119   |
|                         | >100k (n=116)     | 39 (33.6%) | 77 (66.4%)                   |         |
| Family income (per month)| First (n=65)      | 27 (41.5%) | 38 (58.5%)                   | 0.046   |
|                         | Second (n=42)     | 18 (42.86%) | 24 (57.14%)                  |         |
|                         | Third (n=16)      | 1 (6.25%) | 15 (93.75%)                  |         |
|                         | Fourth (n=29)     | 10 (34.49%) | 19 (65.51%)                  |         |
|                         | Final (n=106)     | 31 (29.25%) | 75 (70.75%)                  |         |

Mean SRQ-20 score was higher in females compared to males with statistically significant difference (p-value=0.035). According to family income, mean SRQ-20 score was higher in students having family income less than 30,000 per month (p-value=0.012). Students of first-year showed the highest mean SRQ-20 score followed by second-year, fourth-year, final-year and third-year students (p-value=0.012) (Table 2).
Table 2: Mean SRQ-20 score difference among categorical variables

| Parameters                | Gender   | Mean SRQ-20 score | SD   | P-value |
|--------------------------|----------|-------------------|------|---------|
|                          | Male     | 5.65              | 4.81 | 0.035   |
|                          | Female   | 7.08              | 5.24 |         |
|                          | <30k     | 8.67              | 6.42 | 0.012   |
| Family income (per month)| 30-70k   | 8.22              | 4.7  |         |
|                          | 70-100k  | 5.48              | 5.18 |         |
|                          | >100k    | 6.50              | 4.9  |         |
| Year of study            | First    | 7.89              | 5.01 | 0.012   |
|                          | Second   | 7.52              | 5.12 |         |
|                          | Third    | 4.18              | 4.8  |         |
|                          | Fourth   | 7.07              | 5.36 |         |
|                          | Final    | 5.69              | 4.98 |         |

SD= standard deviation

Multivariate binary logistic regression analysis revealed an adjusted odds ratio of 1.161 (95% CI, P=0.608), 0.841 (95% CI, P=0.032), 0.662 (95% CI, P=0.208) for gender, year of study and family income respectively (Table 3).

Table 3: Mean SRQ-20 score difference among categorical variables

| Parameters         | Significance | Adjusted odds ratio (AOR) | 95 % CI | Parameters |
|--------------------|--------------|---------------------------|---------|------------|
| Gender             | 0.608        | 1.161                     | 0.656   | Upper      |
| Year of study      | 0.032        | 0.841                     | 0.718   |            |
| Family income      | 0.208        | 0.662                     | 0.349   |            |

Discussion

Students enrolled at medical colleges are under constant threat of various triggers that affect their mental health severely, and COVID-19 ended up further enhancing this threat. Our research was targeted upon highlighting this newly emerging problem. We aimed to define how COVID-19 is affecting the mental wellbeing of medical students. We found that one third (positive screening status being 33.7%) of medical students were suffering from the negative impact of COVID-19 on their mental health.

Another study on health professional students at Sichuan University, China, showed the presence of COVID-19 related psychological distress in 27% of participants, which is slightly lower than in our study population. It may be assumed that they had access to better approachable support groups. A similar study was carried out in King Saud University, Kingdom of Saudi Arabia, where it was found that one-fourth of the medical students who participated in the study felt depressed. A similar study was carried out in King Saud University, Kingdom of Saudi Arabia, where it was found that one-fourth of the medical students who participated in the study felt depressed.9 We surveyed several causes that may be leading to the decline of mental wellbeing in medical students during this pandemic, including the year of study and socioeconomic class, in order to correlate the risk factors causing depression and anxiety in students.

It was not surprising to see a higher trend of negative psychological impact on females as compared to males (34.9% vs 31.4%) as the same effect was seen in a study done at Seoul National University at South Korea, showing poorer mental health outcomes among females. Another study conducted in Australia also demonstrated a similar pattern, with females showing worse mental health outcomes due to COVID-19 as compared to males. This study also placed more students in the “very high” distress category, as compared to other studies.8 This is likely due to the female gender being associated with higher levels of anxiety and stress, resulting in more inferior mental health status during the pandemic.19

During this global pandemic, we have witnessed permanent closures of several businesses and firms that have led to a severe downfall in the economy. We investigated the correlation between socioeconomic class and the level of mental disturbance. We found that lower-income class, i.e. income below 30k per month had the most positive screening status (46.67%) and the higher income class, i.e. above 100k per month had the least positive screening status for mental health problems (33.6%). This is in synchronization with the study conducted in Spain to evaluate the impact of COVID-19, depicting that participants with higher family income (3,000-3,500 €/month) showed...
lower psychological impact than those whose family income was lower than 2,000 €/month. This trend may be attributed to the serious psychological distress that has been anticipated due to the economic crisis resulting from COVID-19 pandemic.

It was the need of the hour to see the impact COVID-19 might be having on the mental health of medical students so that various coping mechanisms can be devised in order to overcome any long-term effects. Those students affected should be graded for the severity of illness, and dealt with accordingly if they need medical assistance from a psychiatrist, psychologists or any other mental health professional. Students should also be advised to have a healthy daily routine, i.e. wake up and go to sleep at similar times every day, keep up with personal hygiene, eat healthily, exercise regularly, allocate time for working and time for resting, and make time for doing things they enjoy in order to preserve mental well-being.

## Conclusion

About one-third of medical students were screened positive to be further assessed for a mental disorder. Female students are relatively more prone to develop mental disorders. Students with low family income, studying in the first and second year of MBBS have a high propensity towards mental health problems during COVID-19 pandemic.

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