Stress vulnerability in Medical Health Care Professionals of Pakistan during the COVID-19 pandemic

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Abstract

Background: The novel coronavirus SARS-CoV-2 originated in China, crossed borders, and infected countries all over the world. The virus has sparked widespread public concern, with media outlets across the globe reporting on the public health crisis. Due to heavy workloads, long working hours, and limited resources, pandemics like these can be a source of high stress for health care professionals. As a result, it is critical to assess our frontline warriors' mental health. This study aims to assess stress vulnerability in Pakistan's medical sector during the COVID-19 pandemic.

Method: The stress vulnerability questionnaire was used in an observational online survey using the convenience sampling technique. There were 329 responses in total.

Results and Conclusion: A total of 329 responses were collected, with males (45.3%) outnumbering females (54.7%). All of the participants were over the age of 15 and of Pakistani origin. General practitioners (5.8%), consultants (4.9%), dentists (12.5%), residents and interns (12.2%), undergraduate medical students (51.7%), basic sciences faculty (7%), clinical faculty

(6.1%), and medical researchers (6.1%) participated in the study. To interpret these subjects' psychiatric condition, various parameters related to their daily lives were analysed.
Several frontline Pakistani soldiers were vulnerable to stress and depression during the COVID-19 pandemic, according to our research. As a result, our government should take immediate steps to alleviate their burden and ensure that health care professionals' mental health is regularly monitored.
Key Words: COVID-19, stress vulnerability, medical sector

Introduction

Emerging infectious diseases like severe acute respiratory syndrome (SARS), swine flu, Ebola virus, and avian influenza are posing a threat in the twenty-first century. Extremely contagious disease outbreaks can happen anywhere in the world. It's crucial to comprehend the effect of pandemics on the psyches of our frontline soldiers, particularly in the case of diseases that can be communicated quickly and readily from person to person (Wu et al. 2009). An outbreak in Wuhan, China, in December 2019 garnered attention from throughout the world (Wang et al. 2020). The novel coronavirus illness, which the World Health Organization (WHO) officially classified as COVID-19 on February 11, 2020, emerged originally as a cluster of inexplicable pneumonia cases. As of right now, it is a global pandemic that has spread to every country (Zu et al., 2020).
Medical professionals, such as doctors, paramedics, and nurses, are put through a great deal of physical and mental strain during the COVID-19 pandemic (Wang et al., 2020). Due to the increased workload, job stress, weariness, and fear of getting infected, medical staff are more susceptible to stress during the pandemic, which can exacerbate preexisting psychological pressure and mental diseases (Kang et al., 2020; Verma et al., 2004). The coronavirus family includes both COVID-19 and SARS. SARS-associated coronavirus (SARS-CoV) is a coronavirus responsible for the respiratory sickness known as SARS, while the coronavirus responsible for COVID-19 is named SARS-CoV-2. Pandemic SARS was the first ever caused by a coronavirus (Booth & Stewart, 2003).

All those affected by this pandemic will carry its effects with them forever (Walton et al. 2020). Many members of the medical staff are experiencing psychological effects as a result of the

apocalypse (Booth Stewart 2003). Anxiety and stress can be caused by a number of circumstances, including the high psychological stress responses in the medical sector during a pandemic (Wong et al., 2005). A person's mental health might suffer if they worry about contracting an illness, feel helpless to prevent it, are preoccupied with the well-being of their loved ones, and are cut off from them (Wong et al. 2005). Aside from the increasing volume of patients, the paucity of beds, medicines, and PPEs has added to the strain on the medical community (Chan-Yeung 2004). During the epidemic, all these variables combined to create a perfect storm of emotional turmoil, culminating in feelings of isolation and hopelessness (Chan-Yeung, 2004).

In the wake of the pandemic's spread, medical professionals have proven their dedication to their patients (Salopek-Iha et al., 2020). Many nations other than Pakistan are verifying an increasing number of confirmed and suspected cases. The pandemic may cause a variety of psychological issues (Anjum et al., 2020). Because of the gravity of the situation, gauging the mental health of the medical staff is crucial. In light of the recent COVID-19 outbreak, this research examines the medical community's susceptibility to stress. Every single person working on the front lines in this industry is put in a position where they are constantly threatened, which leads to increased levels of stress, anxiety, and depression (Ren Guo 2020). Because of the increased likelihood that they will come into contact with coronavirus patients, hospital employees in departments such as pulmonology, emergency medicine, intensive care, and infectious disease are at increased risk for developing stress, anxiety, and depression. These people need access to effective methods of enhancing their mental health.

Materials and methods

A digital cross-sectional observational survey was carried out in Pakistan. A convenient sampling technique was used. An online questionnaire was created using Google Forms. A consent form was attached to it. The link to the questionnaire was shared with undergraduate students through emails sent by the student affairs administration. Apart from this, the form was shared with the medical community through WhatsApp, Facebook, and other social media sites via the investigator's contact. The participants were requested to share the survey link with their medical community. Thus, the link was shared through all the main sources of communication to

reach many subjects. On clicking the link, the participants were directed to the consent section of the study. After they agreed to the survey, they first filled in the demographic details, which included age, gender, occupation, and the area they work in. Then a set of questions would appear in a sequence, which the participants would have to answer.

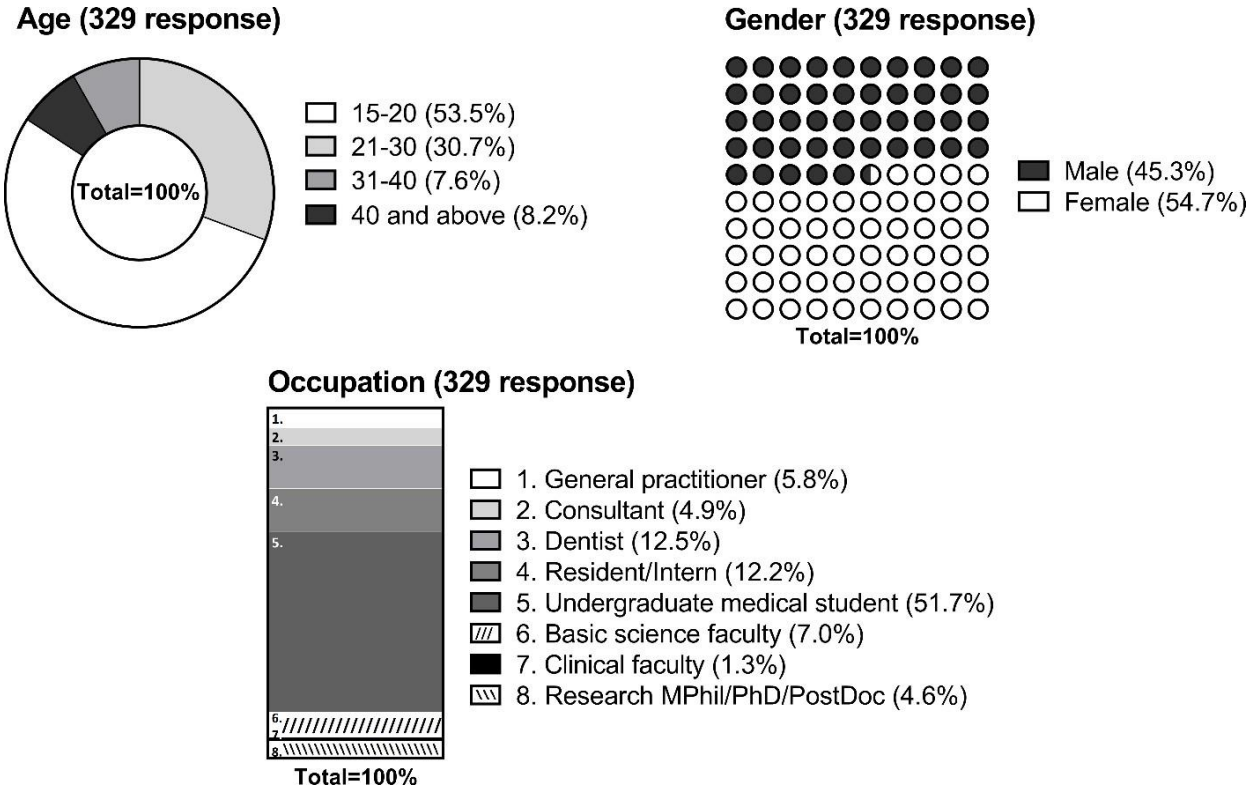
It was an online study, and the participants with internet access were able to participate in the study. Undergraduate medical students, medical doctors, dentists, residents, interns, consultants, teaching faculty of medical colleges and universities, and medical researchers were included in the study. The data collection was started by sharing the link with the investigator's contacts on the 12th of August 2020 at 7:32 p.m., and the portal was closed on the 25th of August at 9:45 a.m., after which no responses were accepted. The survey was closed after 14 days.

Inclusion criteria were: A) 15 years of age or older; B) living in Pakistan; and C) related to the medical sector. The participants voluntarily responded to the survey. One respondent was out of Pakistan during the outbreak, thereby being excluded from the study. Stress vulnerability during the COVID-19 pandemic was assessed using the Stress Vulnerability Scale by analysing different parameters (Table 1), which were rated on a 5-point Likert scale ranging from almost always to never by Lyle H. Miller and Alma Dell Smith. The data was automatically downloaded from the created survey on Google Forms to an Excel spreadsheet, which was analysed accordingly.

Results

A total of 329 responses were recorded, males (45.3%) and females (54.7%). All the participants were over 15 years old and of Pakistani origin. The participants who had internet access were included in the study. The study participants were recruited from all four provinces of Pakistan, i.e., Punjab, Sindh, Baluchistan, and especially Khyber Pakhtunkhwa. The study participants were related to the medical sector, i.e., general practitioners (5.8%), consultants (4.9%), dentists (12.5%), residents/interns (12.2%), undergraduate medical students (51.7%), basic sciences faculty (7%), clinical faculty (6.1%), and medical researchers (6.1%), as shown in figure 1.

Figure 1: Showing the age, gender, and occupation of the participants included in the study.



Drawing from the data given in Table 1, about 48.6% (160 respondents) reported normal eating habits, and 4.3% (14 respondents) replied that they could not prepare their daily meals properly. Approximately 40.5 percent (133 respondents) of the participants stated a proper sleeping

pattern, while 7.6 percent (25 respondents) had disturbed sleep due to being worried about the pandemic. About 38.6% (127 respondents) said that they had some relative around 50 miles away to rely on, and 29.5% of participants reported being worried for themselves as they did not have any close relatives nearby to rely on during the ongoing pandemic. About 45 percent (148 respondents) of the participants were not involved in any healthy physical activity, while only 18% (61 respondents) reported working out at least twice a week. Among the participants, 31.2 percent (102 respondents) were satisfied with their monthly income during the pandemic to meet the family's basic expenses, and 20.5 percent (67 respondents) could not meet their basic expenses because of job insecurity and salary deductions due to economic instability. Most of the frontline workers, or 45.3% (149 respondents), avoided social activities, partying meetings, and gatherings because of the fear of getting infected during the COVID-19 pandemic, while 18.2% (60 respondents) had social gatherings once in a while even during the pandemic. Around 35.4% (116 respondents) of the participants confided in their friends, and 23.4% (77 respondents) had a limited network of friends during the pandemic. Only 14.9% (49 respondents) were observed to manage their time effectively. Around 21% (69 respondents) of the health care professionals (HCPs) reported receiving affection in health care centers during the COVID-19 pandemic, as shown in **table 1.**

Table 1 shows the responses of the questionnaire-based survey, indicating a 5-point Likert scale with almost always, sometimes, once in a while, rarely, and never, along with the percentage responses for each scale question.

Factors/Parameters tested	Almost always %	Sometimes %	Once in a while %	Rarely %	Never %
1. I eat at least one hot, balanced meal a day.	48.6	21.9	17.9	7.3	4.3
2. I get 7 to 8 hours of sleep at least 4 nights a week.	40.5	20.4	18.3	13.1	7.8
3. I have at least one relative within 50 miles on whom I can rely.	38.6	14.3	7.9	9.7	29.5
4. I exercise to the point of perspiration at least twice a week.	18.5	5.5	14.3	16.7	45
5. I smoke less than half a pack of cigarettes a day.	10.3	0.3	2.1	0.6	66.6
6. I have an income adequate to meet my basic expenses.	31.2	16.8	23.2	8.3	20.5
7. I regularly attend club or social activities.	5.5	6.4	18.2	24.6	45.3
8. I have one or more friends to confide in about personal matters.	35.4	23.5	14.3	11.6	15.2
9. I have a network of friends and acquaintances.	24.9	22.5	23.4	18.2	10.9
10. I am able to organize my time effectively.	14.9	19.1	30.7	20.1	15.2
11. I give and receive affection regularly.	21	27.4	32.6	12.5	6.4

Descriptive statistics, using GraphPad Prism 6.01, were performed to analyse the individual parameter's findings. One sample t-test was run on the collected data from the 5-point Likert scale, and the statistical analysis of each parameter was performed, as shown in table 2. A one-way ANOVA and the Brown-Forsythe test were further performed to observe the significance of

the data, and it was found that the differences in the means of the answers (from never to always) for each of the parameters were statistically significant, as the P value was 0.0001. This finding shows that the tested parameters for stress vulnerability in Pakistan's medical sector during the COVID-19 pandemic were severely impacted, and the pandemic situation altered the routine lives and mental health of medical professionals.

Table 2: Showing the statistical interpretation of the answers (1–5) on a 5-point Likert scale within a single parameter

Factors/Parameters tested	Mean of answer/s	Lower 95% CI of mean	Upper 95% CI of mean	Std. Deviation
1. I eat at least one hot, balanced meal a day.	1.967	1.841	2.125	1.159
2. I get 7 to 8 hours of sleep at least 4 nights a week.	2.268	2.092	2.411	1.316
3. I have at least one relative within 50 miles on whom I can rely.	2.772	1.841	2.125	1.709
4. I exercise to the point of perspiration at least twice a week.	3.641	2.092	2.411	1.536
5. I smoke less than half a pack of cigarettes a day.	4.529	1.841	2.125	1.247
6. I have an income adequate to meet my basic expenses.	2.700	2.092	2.411	1.495
7. I regularly attend club or social activities.	3.979	1.841	2.125	1.178
8. I have one or more friends to confide in about personal matters.	2.479	2.092	2.411	1.452
9. I have a network of friends and acquaintances.	2.683	1.841	2.125	1.319
10. I am able to organize my time effectively.	3.015	2.092	2.411	1.265
11. I give and receive affection regularly.	2.669	1.841	2.125	1.472

To fine-tune which of the tested parameters is highly influenced and which one is influenced a little, the results of the entire eleven tested factors were cross-observed and interpreted, for mean, standard deviation, and confidence interval (CI), as shown in table 3. As a result, we found that all the tested factors for the stress vulnerability in the medical sector of Pakistan during the COVID-19 pandemic were highly influenced, with slight differences.

Table 3 displays the results of the crossed analysis of all tested parameters' data.

Factors/Parameters tested	Mean	Lower 95% CI of mean	Upper 95% CI of mean	Std. Deviation
1. I eat at least one hot, balanced meal a day.	20.00	-1.8070	41.81	14.840
2. I get 7 to 8 hours of sleep at least 4 nights a week.	15.98	4.5640	35.48	28.590
3. I have at least one relative within 50 miles on whom I can rely.	20.00	3.3270	36.67	8.412
4. I exercise to the point of perspiration at least twice a week.	20.00	1.5740	38.43	16.280
5. I smoke less than half a pack of cigarettes a day.	20.00	-19.5200	51.48	9.689
6. I have an income adequate to meet my basic expenses.	19.98	9.5550	30.45	5.654
7. I regularly attend club or social activities.	20.00	-0.2101	40.21	6.410
8. I have one or more friends to confide in about personal matters.	19.98	7.9700	32.03	10.670
9. I have a network of friends and acquaintances.	20.00	12.9600	27.00	14.840
10. I am able to organize my time effectively.	15.98	12.0400	27.96	28.590
11. I give and receive affection regularly.	20.00	6.7270	33.23	8.412

Discussion

Pandemics are a recurring phenomenon that present numerous challenges to any country's medical sector. Pandemics commonly result in fear, depression, and anxiety in any community (Ljivo et al. 2020). The negative impact of such pandemics is severe; it may have a negative impact on the mental state of any country's front-line warriors. During a pandemic, caregivers' mental health is influenced by their workload and job stress. Previous research in the context of the SARS epidemic found increased psychological stress among hospital staff (Xu et al. 2020). As a result, our study attempted to assess the stress vulnerability of Pakistan's medical sector during the COVID-19 pandemic.

Psychological stress impairs a person's ability to work effectively; our study found a higher percentage of people suffering from high stress when compared to studies reported by European epidemiological statistics (Jacobi et al. 2014). Our study found that increased stress levels among HCPs fighting the COVID-19 pandemic had a negative impact on the mental health of caregivers; these findings are consistent with recent literature on the effects of COVID-19 on mental health. Several studies have found that health care workers' psychological resilience was reduced during the pandemic (Karaşar Canl 2020).

According to our findings, females (54.7%), who were on duty during the pandemic, were more vulnerable to stress. Several factors that caused stress among HCPs contributed to the causes of psychological distress. Some of them were concerned about their family's health, particularly the health of their children and elderly relatives, as well as a lack of control over the spread of infection. These findings are consistent with previous research (Wang et al. 2020), which discovered a link between female gender and increased psychological stress. The majority of our study's participants were females between the ages of 20 and 30, and those who worked were

more vulnerable to stress. As a result of this link, female HCPs are more vulnerable to stress and develop post-traumatic symptoms (Sareen et al. 2013). According to a study by Lai et al. (2020), more than 70% of female hospital staff suffer from severe stress. Karasar's study concluded that female HCPs have lower psychological resilience, making them more vulnerable to stress (Karaşar Canl 2020).

According to the current study, a significant number of Pakistani HCPs who worked on the frontlines during the pandemic were stressed. A recent Chinese study on the psychological impact of the pandemic found that 53.8% of the general population experienced moderate or severe stress, while 28.8% of the Chinese population experienced severe anxiety symptoms (Wang et al. 2020). In such public health emergencies, hospital personnel, as the sole caregivers, are always at risk of infection. A Wuhan, China, study on the psychological stress of medical staff found that frontline caregivers who provided COVID-19 treatment were under stress (Mo et al. 2020). During a pandemic, the medical staff of any hospital providing care to patients is subjected to extreme physical fatigue, intense work, and a lack of protective measures, resulting in negative emotions such as anxiety and stress. According to a Henan University study, negative emotions predominated in the medical staff caring for COVID-19-infected patients during the pandemic, while positive emotions emerged gradually over time (Sun et al. 2020).

Similarly, Qiu et al. reported in a Chinese study that 35% of the population displayed symptoms of psychological distress (Qiu et al. 2020). According to a Korean study that compared the psychological outcomes of quarantine, 7% of the population (126 of 1656) reported symptoms of anxiety, and 17% of the population (275) reported feelings of anger (Jeong et al. 2016). According to studies, Pakistan should consider telemedicine and telehealth to eliminate barriers and restore quality care to HCPs, as well as seek assistance and guidance from global healthcare

organisations for providing quality mental health care to their HCPs through international collaborations (Ullah et al. 2020).

Conclusions

Hopefully, the findings of our research will encourage policymakers to put the emotional well-being of healthcare workers at the top of their list of priorities. HCPs experience higher stress levels since they are on the front lines during a pandemic, putting themselves in danger of contracting the disease while also witnessing the daily deaths of innocent people at the hands of the deadly virus. The government should recognise and promote the many avenues of assistance available to medical caregivers for their mental health. The government must take action to implement e-mental health in order to lessen the emotional toll of a pandemic on its citizens (Rehman-Lela 2020). The frontline caregivers in our society should be valued as highly as "gold dust" and given the respect and resources they are due.

Author's contributions: AASB and ST were involved in study design, execution, writing of the manuscript, and analysis of the data. MMT helped with the execution of the data, the writing of the manuscript, and the analysis of the results. RM and UW helped with language revision and polishing. MHZ and SA helped in editing, providing critical comments, discussion, and proofreading. All authors have approved the final version of the manuscript and have no conflict of interest.

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