Fear of Corona and Depression in Graduate Students: Mediating Role of Stress and Anxiety

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ABSTRACT

Suicide is more likely in those who suffer from depression, which is a debilitating condition. College students and recent graduates from countries where the Corona Virus Disease 2019 (COVID-19) pandemic has been particularly severe are particularly at risk because of the rigorous lockdown measures they confront and the limited resources they have to deal with it. The study's goal was to determine how much depression, stress and anxiety graduates experienced during lockdown due to the dread of the COVID-19 pandemic virus. A total of 120 graduates (44% females, 56% males) between 20 and 38 years old were surveyed. The sample involved 68% students from public universities, and 32% from private universities. It was found that the average levels of depression, stress and anxiety were all higher than those considered normal. Fear of COVID was linked to depression, stress and anxiety in a statistically positive relationship. The dread of COVID and depression are inextricably linked through the mediating role of anxiety and stress. In addition, there was no difference in males and females' degrees of fear of COVID-19 and depression. The findings of this study illustrate the critical role that fear, stress, and anxiety play in the onset of depressive symptoms and how they might be taken into account in programs aimed at avoiding and treating this disorder. Some general techniques for minimizing stress and fear of COVID-19 are proposed, as are programs geared specifically to regulate and overcome graduate anxiety.

Keywords: COVID-19, Depression, Fear, Stress, Anxiety, Graduate students.
1. INTRODUCTION

Depression is a major cause of impairment in today's modern civilizations (Dong et al., 2020; Nuggerud-Galeas et al., 2020). Long-term depression is more common in those who have been affected by epidemics or natural disasters than in the general population (Mak et al., 2009; Lee et al., 2018; Morganstein & Ursano, 2020). Depression can also be predicted by a person's inability to cope with life's most distressing occurrences (Zou et al., 2018). The SARS-CoV-2 virus has put the world in a precarious position right now, and this has significantly contributed to the rise in depression levels around the globe. The frightening scenario is the one in which some countries' populations, as those in a number of Asian countries, have been seriously impacted by the pandemic and have limited ability to deal with it. An in-depth investigation of the etiology of depression in vulnerable populations is needed to effectively treat and prevent depression in the future, given the current pandemic situation.

The SARS-CoV-2 virus is extremely contagious and has a long incubation period, making it particularly dangerous to the respiratory system. An infectious illness known as Corona Virus Disease 2019 has been identified by the World Health Organization (WHO) (COVID-19; Wu et al., 2020). Although this disease was first discovered in Wuhan (China) in 2019, the World Health Organization (WHO) has declared it a pandemic due to its rapid spread and worldwide effect (Rothan & Byrareddy, 2020). When it comes to global health and quality of life, this disease has become a major concern in recent years (Nicola et al., 2020). COVID-19 can cause a full-blown mental health crisis, which has been demonstrated in several studies to have an influence on people's well-being. This is especially true in nations where there are large populations impacted by the virus (Fiorillo & Gorwood, 2020). In people affected by COVID-19, some researches have already begun to examine mental health issues including depression (e.g., Duan & Zhu, 2020; Gao et al., 2020; Huang & Zhao, 2020). Depressive symptoms include feelings of poor morale, despair, melancholy, self-doubt as well as worthlessness, which lead to a decrease in one's self-esteem and an absence of interest in one's own life. The disorder is directly associated to a lesser likelihood for persons who suffer from it to achieve important life objectives, to deteriorating health and to attempted suicides (Antnez & Vinet, 2012; Roh et al., 2020; Siegrist & Wege, 2020; Zhuo et al., 2020). As a precautionary measure during this current crisis and in the future following COVID-19, it is important to identify and treat depression and researcher needs to examine the aspects that contribute to this disorder.

Many countries have been compelled to establish harsh regulations in effort to stop the epidemic from spreading further and farther (Adhikari et al., 2020). People in the worst-affected countries—China, Pakistan, Italy and Spain have been compelled to stay at home for lengthy periods of time as a result of the government's decrees of self-isolation or lockdown. Living conditions in these nations have deteriorated dramatically as a result of this, this has been certainly relevant in nations with limited resources like South Asia. In the
lack of a vaccine to combat the illness, the general public has grown more fearful of its spread, development, and immunity among those who have been affected (Orellana & Orellana, 2020; Ornell et al., 2020; Rodriguez-Rey et al., 2020). Anxieties triggered by perceived danger have been documented in earlier outbreaks such as the SARS virus (Reynolds et al., 2008). As a result of the COVID-19 outbreak's global impact on human health, well-being, survival, as well as development, Ahorsu et al. (2020) devised a fear scale to measure the degree to which people are afraid of the virus. The Fear of COVID-19 Scale was developed to evaluate fear of the COVID-19 virus based on existing scientific investigation (FCV-19S). A wide variety of countries have used this scale, including Iran (Alyami et al., 2020), Bangladesh (Sakib et al., 2020), Italy (Soraci et al., 2020), Turkey (Satici et al., 2020), Russia and Belarus (Reznik et al., 2020), Israel (Tzur Bitan et al., 2020), Peru (Huarcaya-Victoria et al., 2020), and Paraguay. (Barrios et al., 2020). According to Mertens et al. (2020), those who are anxious or depressed are more likely than others to be fearful of COVID-19 (DASS-21). Fear of COVID-19 has lately been found to be linked more to stress and anxiety than to depression (Tzur Bitan et al., 2020). Suicides linked to COVID-19 fear have been observed in the general community, despite the apparent weaker link between anxiety and depression (Mamun & Griffiths, 2020). Mood disorders can emerge as a result of the media’s constant barrage of information and the reasonably high incidence of new cases and fatalities that it subjects individuals to (Duan & Zhu, 2020; Gao et al., 2020). Researchers in China detected moderate to severe signs of depression, anxiety and stress in the Chinese populace during the beginning of the epidemic (Huang & Zhao, 2020).

A long-standing link between depression, anxiety, as well as stress has been recognized in scientific literature for quite some time. Psychosocial stress is linked to internal biological processes that cause depression, according to theoretical theories that are backed by empirical data (e.g., Slavich & Irwin, 2014; Park et al., 2019). Stress is also linked to depression in young individuals, according to long-term studies (e.g., Agoston & Rudolph, 2011). In stressful situations, anxiety and depression are associated directly (Daz et al., 2012), for example, in patients with PTSD, who frequently display elevated levels of anxiety and fear (Forbes et al., 2010). It is also recognised that anxiety and depression have a positive correlation, (Jansson-Fröjmark & Lindblom, 2008) and both serve as predictors of the other (Jacobson & Newman, 2017; Hovenkamp-Hermelink et al., 2019). It is becoming clear that there is distinct gender as well as age inequalities in how the epidemic has affected the current situation. It has been found that COVID-19 has a greater impact on women than on males (Huang & Zhao, 2020; Sandn et al., 2020). Studies on health workers (Pappa et al., 2020) have been the most common, thus little is known about the experiences of adolescents and young adults. Researchers have shown that graduate students are more frightened of COVID-19 than their undergraduate peers. As additionally, several research suggest that social isolation and school lockdowns are contributing to an increase in the prevalence of depression and anxiety among these adolescents (Chen et al., 2020; Mazza et al., 2020; Santini et al., 2020).
CURRENT STUDY

It is obvious that additional study is needed on the probable predictors of depression after examining the developing literature on the worldwide pandemic caused by COVID-19. In this study, the researchers are primarily interested in university graduates, a group that has the appearance of being particularly susceptible. These psycho-social factors are linked together in Pakistan, where high levels of stress and fear, incredibly stringent considerations of social distancing as well as lockdown in place, with high new incidence and mortality, or where the health and government authorities confront significant difficulty addressing the health requirements of the people, were studied in this research. Stress, Anxiety and depression were investigated as potential mediators between fear of COVID19 and depression in this study. The researchers also looked for gender variations in these variables. The hypothesis of this current study are: 1) Females are more likely to suffer from COVID-19 fear, stress, depression and anxiety than males; 2) the fear of COVID-19 has a positive association with stress and anxiety; and 3) depression and fear of COVID mediate each other.

2. MATERIALS AND METHODS

PARTICIPANTS

The sample was consisted of 120 (N=120) graduate students from public and private universities of Pakistan. Due to the ease with which students may access the study, the sampling was purposive. In all, 44 percent of the participants were females (n = 53), whereas 56 percent were males (n = 67). The participants were between the ages of 20 and 38 years. From the total sample, 68% students were from public universities (n = 82) and 32% were from private universities (n = 38).

INSTRUMENTS

Using the FCV-19S (Ahorsu et al., 2020) English version (Huaracaya-Victoria et al., 2020), the researchers assessed participants' responses to 7 statements such as, “My hands tingle when I think about Coronavirus” (COVID-19). The instrument has a good level of reliability (α = 0.72) in the research sample. Also included in our study was the English version (Fonseca-Pedrero et al., 2010), of the DASS-21 (Lovibond & Lovibond, 1995) which assesses stress (inability to relax, edginess and irritability), anxiety (nervousness as well as physical stress), and depression (a lack of interest in one's daily routine, one's surroundings, or one's own existence) among students of university. Anxiety, stress, and depression are all measured by this instrument, which has three subscales, each with seven items: F1 = Stress (for example, I found it difficult to relax), F2 = Anxiety (for example, my mouth felt dry), & F3 = Depression (— for example, I was unable to feel any happy emotions at all despite my best efforts). The instrument's reliability was high in the sample of the study (α = 0.70). All the instruments used in this study were original.
PROCEDURE

Researchers contacted teachers at several Pakistani institutions who, under normal circumstances, provided face-to-face lectures but were temporarily teaching online owing to the COVID-19 closure. After then, the researchers set aside a day for the lecturers to reply to the online surveys. Additionally, the researcher met with them in person through videoconferencing to address any questions they had concerning the surveys. All participants over the age of 18 signed a written informed consent form before to data collection. All study participants were made aware that no individual findings or information that may distinguish them as participants in the study would be made public. It was expressly stated to those who participated in this study that the data they supplied was completely voluntary, anonymous, and confidential, and that they were free to withdraw at any moment, without requiring an explanation or penalty. It takes around 15 minutes to fill out the questionnaires on their own. Ethical considerations were taken into account when conducting the study.

DATA ANALYSIS

Pearson product moment correlation was used to examine the relationship between anxiety, stress, depression and the fear of acquiring COVID (See Table 1).

Table 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>N (120)</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of COVID</td>
<td>19.20</td>
<td>2.61</td>
<td>-</td>
<td>.33**</td>
<td>.27**</td>
<td>.31**</td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>11.20</td>
<td>3.71</td>
<td>-</td>
<td></td>
<td>.42**</td>
<td>.49**</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>11.70</td>
<td>3.53</td>
<td>-</td>
<td></td>
<td></td>
<td>.53**</td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>11.20</td>
<td>3.53</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. M= Mean, SD= Standard Deviation, ***p<.001. **p<.01. *p<.05.

The results found that there is a positive correlation between fear of COVID, stress, anxiety and depression which describes that with the increase in fear of COVID, anxiety, depression and stress increase. Moreover, stress also showed positive correlation with anxiety and depression which means that with the increase in stress levels, anxiety, and depression also increased. It was also found that anxiety had a significant positive relationship with depression which showed that if anxiety increases depression also increased.

To investigate mediation of stress and anxiety in between the relationship of COVID fear and depression, mediation through PROCESS analysis was performed (See Figure 1).
To access possible mediating effects of stress and anxiety, we test mediation according to the criteria of Baron and Kenny criteria (Figure 1). In mediation model, the regression of fear of COVID with depression, ignoring stress and anxiety, was significant, \( b = -0.42, t (11) = -3.58, p < 0.001 \). Moreover, mediation model showed that the regression of fear of COVID on depression with stress and anxiety was not significant \( b = -0.15, t (10) = -1.42, p = 0.15 \). Further, mediation process showed that stress (mediator 1), controlling for fear of COVID and anxiety was significant, \( b = -0.27, t (0.7) = -3.51, p < 0.001 \) and anxiety (mediator 2), controlling for fear of COVID, and stress was also significant, \( b = -0.38, t (0.8) = 4.73, p < 0.001 \). A Sobel test was conducted and found full mediation in model for mediation. So, it was found that stress and anxiety fully mediate the relationship between depression and fear of COVID.

To investigate the gender differences in levels of fear of COVID, stress, depression and anxiety, independent sample t-test was processed (See Table 2).
Table 2

Independent Sample t-test Comparing Fear of COVID, Stress, Anxiety, and Depression between Genders. (N=120)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Male (n=115)</th>
<th>Female (n=85)</th>
<th>95%CI</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of COVID</td>
<td>19.38</td>
<td>18.96</td>
<td>2.61</td>
<td>-52</td>
<td>1.37</td>
</tr>
<tr>
<td>Stress</td>
<td>11.04</td>
<td>11.41</td>
<td>3.64</td>
<td>-1.74</td>
<td>1.00</td>
</tr>
<tr>
<td>Anxiety</td>
<td>11.86</td>
<td>11.49</td>
<td>3.62</td>
<td>-91</td>
<td>1.66</td>
</tr>
<tr>
<td>Depression</td>
<td>11.68</td>
<td>10.60</td>
<td>3.34</td>
<td>-1.9</td>
<td>2.36</td>
</tr>
</tbody>
</table>

Note: SD= Standard Deviation; LL= Lower Limit; UL= Upper Limit*** p<.001. **p<.01. *p<.05.

The results found that there is no gender difference in levels of fear of COVID, stress, depression and anxiety. It is found that both genders have same levels of in levels of fear of COVID, stress, depression and anxiety.

3. DISCUSSION

In this study, the major goal was to examine the role of anxiety and stress in the association between the fear of COVID-19, depression, and possible gender differences. Depression, anxiety and stress are all present in high levels in this study's participants as a whole. The measured values for each of these conditions are also higher than those found in previous studies including young graduates (e.g. Román et al., 2016). Depression, anxiety and stress have been shown to be prevalent among university students during COVID-19's closure, which is congruent with the Chinese population's moderate to severe indications of these illness at this timeframe (Huang & Zhao, 2020).

Studying how stress and anxiety affect the link between fear of COVID as well as depression was a major focus of this investigation. As a result of an analysis of the prior scientific literature, researchers developed a model that was then compared to the data. The findings indicated that the model was quite accurate. Both women and men found the model to be a good fit. According to the model, anxiety and stress were important mediators of depression, which in turn were linked to a fear of COVID-19. Researchers have already shown a link between depression and the fear of COVID-19 (Ahorsu et al., 2020; Alyami et al., 2020; Tzur Bitan et al., 2020). Concern about the COVID-19 virus and other psychological problems has been studied in separate studies (Mertens et al., 2020; Janson-Fröjmark and Lindblom, 2008; Jacobson and Newman, 2017); a relationship between anxiety and depression has also been established (Chen et al., 2020a; Hovenkamp-Hermelink et al, 2019). This is the first study to describe the link between fear of COVID-19 and depression, which was then further mediated by anxiety. It is also consistent with prior
research that found a link between depression and stress (Agoston & Rudolph, 2011; Slavich & Irwin, 2014; Park et al., 2019). Previous research has shown that stress may lead to anxiety and stress can lead to depression (Daz et al., 2012; Chen et al., 2020a). However, there is no previous research on the impact of fear of COVID on depression, which is then exacerbated by anxiety and stress, as a result of the pandemic's widespread social isolation. Fear of COVID’s indirect influence on depression, anxiety and stress was less than the indirect effect of stress.

The third hypothesis was ruled out. The fear of COVID-19 was felt by both genders, as has been shown in other nations where similar investigations have been conducted. Gender differences in levels of depression, anxiety and stress were also found to be nonexistent in this study, which contradicts the findings of certain research conducted during the pandemic (e.g., Huang & Zhao 2020; Sandin et al., 2020). These findings add to the growing body of information on this problem, which has primarily been researched in health care professionals rather than recent college grads (Pappa et al., 2020). Regardless of gender, students’ learning and assessment processes are affected by the academic pressures of university education as well as the uncertain future, leading to feelings of anxiety, depression and stress, according to a recent study.

Many aspects of life in Pakistan are exceedingly challenging as a result of the epidemic. Young university students may be fearful of COVID-19 because of the disease's rapid spread, the enormous number of persons affected, the rising fatality rate, a lack of faith in the health care system, ignorance, and misinformation. Anxiety may exacerbate the effects of this fear on depression, which has been shown to be a contributing cause. Students who live away from their families and are unable to return home or who live in squalid circumstances where it is difficult to maintain good health and make ends meet may be more fearful when they believe they are in a more susceptible and dangerous situation. Many recent college grads, both men and women, are attempting to figure out what they want to do with their life now that they have finished school and can support themselves without the financial support of their parents. It's worth noting that even prior to the epidemic, most university students in Pakistan were already making significant financial and intellectual sacrifices to ensure that they could attend, complete, and make the most of their university educations. Emigration from Pakistan is a major problem because of the country's low level of living and dire living circumstances, which are only going to worsen as the disease spreads. A shift from face-to-face lectures to online and/or distant education has made it more difficult for university students to access and adjust to the new ways of education and examination. Because of lockdown, many recent graduates who worked part-time to supplement their incomes are no longer able to do so. All of these situations may have contributed to depression by raising stress levels. These long-term, significant shifts that young university students must deal with might either directly cause depressive symptoms or set the stage for worry that may eventually lead to depression. Uncertainty and risk experienced by the graduates, according to the findings of this study, might constitute a fertile breeding ground for anxiety, stress, fear and depression. Students who are struggling with depression may benefit from university intervention programs.
that are specifically tailored to their unique needs and those of their peers. Earlier research has shown that university graduates are more psychologically sensitive during a pandemic and lockdown than university undergraduates (Reznik et al., 2020). The findings of this new study support those earlier findings.

According to certain research, university graduates' anxiety and depression have been exacerbated by lockdown measures (Mazza et al., 2020; Santini et al., 2020). This group of students is particularly vulnerable to COVID-19 fear, according to the results of this study. There are certain drawbacks to this study. In spite of the study's objectives, the cross-sectional design does not allow us to make cause-and-effect assumptions. To better understand the development of depression, future studies should be long-term. The use of self-reports has certain limitations. Because the research was conducted on university students, it is impossible to generalize the findings to the broader public. Because the sample is not balanced in terms of gender, our interpretation of this variable is constrained. Method variation effects and response biases such as socially desired responses are present in all self-report measurements employed in this research. Personal interviews should be used to supplement this data collection method in the future. The self-report battery's verified and psychometrically sound instruments, on the other hand, were viewed as a success. Additional studies might investigate the link between this research as well as anxiety in the future. Anxiety levels can be predicted using long-term studies. Because of the epidemic, we were able to examine the complexities of depression in a locked-down environment. In order to make further progress in future research on the issue, registration measures for additional subject variables linked to economic, job status, housing circumstances, products and/or resources would be preferable to explore. In a complicated system that appears to be intertwined with anxiety, fear and anxiety, these sociodemographic features may give further insight on other factors that may function as defenders or antecedents of depression. In addition, it might serve as a better guide for identifying the most vulnerable citizens of the university student population and maximizing resources for those who are most in need. As a result of the depression pandemic concept, we've come up with some ideas for how to avoid or treat the condition. Running persuasive information campaigns about COVID-19 and providing training in the preventive and effective coping methods would be a good way to minimize the dread of the disease. When people are more confident in their ability to respond to a disease, they are less afraid. When it comes to university students, the fear of contracting COVID-19 may be exacerbated by a sense of helplessness in the face of the pandemic, a lack of resources to deal with a possible disease outbreak, and poverty stricken or limited housing options, especially for those who are away from home for the first time as undergraduates. It's not uncommon for university graduates to contract or see family contracting or dying with COVID-19. To raise the living standards, eating patterns, and living situations of recent graduates, we'll require support strategies that include practical actions. Overcrowding and substandard living circumstances are commonplace for many of them. They should be able to participate in distant education if they have access to high-speed internet and the appropriate technology. These approaches may help them to deal better and/or minimize
the effect of these challenges. "Based on the findings of this study, a novel proposal may be made about stress and anxiety as a mediating factor between depression and fear. To help students deal with worry, an attention and/or psychological training program may need to be implemented. To some extent, relieving the effects of anxiety and stress on depression is feasible with the help of anxiety reduction techniques. For the sake of students' mental health, educational authorities, private organizations, and institutions should come up with and execute solutions quickly. A society near future is jeopardized if it fails to preserve and support the health and development of its young people now.

References


