

Fear of Covid-19 and Depression: Mediating Role of Anxiety and Stress Among University Students

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Cover Page Footnote

Great thanks to the participants of the study

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FEAR OF COVID-19 AND DEPRESSION: MEDIATING ROLE OF ANXIETY AND STRESS AMONG UNIVERSITY STUDENTS

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ABSTRACT

Fear of COVID-19 and psychological health issues are most common in general population, health professionals and students after emerging the COVID-19 infection. The literature review elaborated the correlation among fear of COVID-19, stress, depression and anxiety among students at different levels. The current study was conducted with two objectives. First aim was to assess the relationships among fear of COVID-19, stress, anxiety and depression among university students. The second objective was to measure the mediating role of anxiety and stress between the relationship of fear of COVID-19 and depression. Total 500 Government and private university students were selected through convenient sampling technique to obtain the online data. Fear of COVID-19 Scale and Depression, Anxiety & Stress Scale were used as measuring tool to collect data. The results depicted that fear of COVID-19, stress, depression and anxiety had statistically significant positive relationships with each other. Mediation analysis also indicated the anxiety and stress as mediators with significant value (FCV with depression = $p \geq .05$) and direct effect (-, +) in the presence of the mediators (anxiety and stress). The current study indicated the dire need of counseling services for students in order to reduce the fear of COVID-19 and symptoms of psychological disturbance.

Keywords: Fear of COVID-19, depression, stress, anxiety, university students.

Abbreviations: SARS: Severe Acute Respiratory Syndrome, WHO: World Health Organization, COVID: Corona Virus Disease, FCV-19: Fear of Covid-19

INTRODUCTION

Now a day's coronavirus disease-19 also called SARS (Severe Acute Respiratory Syndrome) has become the most common contagious disease. It is the most pernicious, devastating and challenging universal health crisis in all over the world from last one year. World Health Organization (2021) reported that it has been affected 224 countries and caused the deaths of more than two million people globally since January 2021. Its symptoms vary from person to person and range from mild to severe level. It can lead to the physical as well as psychological complications of the individual who

suffers from COVID-19 infection. WHO (2020) also describes that it also can get neurological and mental health complications. It does not only affect the physical condition but also interfere in healthy mental functioning of the society members (Banerjee 2020; Brooks et al., 2020; Kang et al., 2020). It also causes the fear of COVID-19 (FCV-19) and psychological health issues in health professionals, general population as well as students of the affected areas (Bakioglu et al., 2020; Chandu et al., 2020; Islam et al., 2020; Machado et al., 2020; Khan et al., 2020; Mertens et al., 2020; Rodriguez-Hidalgo et al., 2020; Salari et al., 2020; Secer et al., 2020). The high infection and

death rate in all over the world naturally create FCV-19.

During the present pandemic of COVID-19, fear has been the most common psychological response in the population (Wang et al., 2020). This response or reaction has its importance because people are worried about their health (Lin, 2020). It is the most common physiological and emotional reaction in response of major social or societal issues such as pandemics or arise, which leads to psychologically distressing (Ahorsu et al., 2020; Towers et al., 2015; Shultz et al., 2015). While having a “contagion effect” on others, it may also drive behavior (Towers et al., 2020; Lara et al., 2012). It also has association with high levels of anxiety which may lead towards irrational thinking. Such situations can create mental health issues during pandemic condition in the health care professionals as well as general population (Ahorsu et al., 2020). The psychological health problems are increasing at higher level in colleges and universities campuses (Rubin, 2008). Because, up to 60% of university students left university without finishing their studies which causes depression, anxiety and maladjustment in one’s life (Ovuga et al., 2006). During the COVID-19 pandemic outbreak, the greater vulnerability of psychological issues was also found in women as compared to men as well as higher levels of stress, anxiety, and depression (Liu et al., 2020; Rossi et al., 2020). In China, 53.8% participants had moderate to severe psychological disturbance; 16.5% had moderate to severe depressive symptoms; 28.8% had moderate to severe anxiety symptoms and 8.1% showed moderate to severe stress levels during the first stage of pandemic (Wang et al., 2020). Female gender, postgraduate level of education and other occupations were significant independent factors for higher level of depression, anxiety and stress (Othman, 2020). The FCV-19 also has the relationships with stress, anxiety and depression (Bakioglu et

al., 2020; Machado et al., 2020). The positive correlation between socially vulnerable respondents, fear and mental health consequences was also explored (Fitzpatrick et al., 2020). Further depressive symptoms were on average and more than 25% sample of the study had moderate to severe anxiety. Significant positive correlation was also found between FCV-19, intolerance of uncertainty, depression, anxiety and stress. A negative relationship was found between FCV-19 and positivity (Bakioglu et al., 2020). Further uncertainty, anxiety, depression and stress were also observed as mediators between FCV-19 and positivity. Anxiety and stress also played role as mediators between the relationship of FCV-19 and depression among undergraduate students (Rodriguez-Hidalgo et al., 2020). In current study, FCV-19 and mental health issues were explored among students of Pakistani universities.

On 26 February 2020, the first patient with COVID-19 was diagnosed in Pakistan (Kaleem, 2020). The situation or scenario of the pandemic escalated rapidly. Complete and smart lockdown was implemented by the government keeping in mind the COVID-19 pandemic situation. However, in order to control COVID-19 effectively, all the educational institutions were directed to be completely closed during the academic session. It is indisputable that the disease is inducing great fear, anxiety, depression and stress among people with all ages and different economic background. Students have been facing many problems for almost one year due to COVID-19 not only in Pakistan but in all over the world, education systems are at great risk to collapse. The depression and anxiety were also found among Pakistani university students (Salman et al., 2020). In addition, the anxiety score was substantially higher for those with a family member, friend or acquaintance afflicted with the disease. Therefore, FCV-19 and mental

health issues (depression, anxiety & stress) among University students were explored in current study. Study was designed with two objectives. The first objective was to explore the relationships between FCV-19, stress, anxiety and depression among university students. Second objective was to examine the anxiety and stress as mediators between the relationship of FCV-19 and depression among university students.

METHOD

Current cross sectional study was conducted to observe the mediating roles of anxiety and stress between the relationship of FCV-19 and depression among university students. The data were collected from two Government and two private sector universities of Pakistan by using convenient sampling technique as because of lockdown, probability sampling was not possible. Total 500 students of private and public sectors universities completed online form.

Inclusion and Exclusion Criteria

Students (male & female) enrolled in any private or public sector university of Pakistan and falling in age group from 18 to 30 years were included in the study. The students who had any physically or psychological illness and suffered from COVID-19 in past or present were excluded from the sample. Further, any student who was doing some job in addition of the study was also excluded from the study.

Measures

Following measures were used to collect the data of current study:

Demographic Questionnaire

Online consent form was taken from the participants after informing about the purpose and objectives of study. The

demographic Questionnaire was consisted of demographic variables such as age, gender, University name, educational level, semester, department, residential area, family system, socioeconomic status, relative / family member or other relative with COVID-19 infection and level of relation.

Fear of COVID 19 Scales (Ahorsu, et al., 2020)

Fear of COVID-19 (FCV-19S) was developed to test the fear emotional reaction towards the pandemic. It is composed of 7 questions. The response pattern is based on 5 point likert scale (strongly disagree to strongly agree). The score of the scale fall from 7 to 35. The high scores indicate the high FCV-19 and low scores indicate lower level of FCV-19. The FSV-19S had high reliability with 0.82 Cronbach's alpha. In present study, the cronbach's alpha for FSV-19S was 0.88 which represented high reliability.

Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995)

The Depression, Anxiety and Stress Scale (DASS-21) was developed to measure the three dimensions of mental health. It is a 21 items scale (7 items in each subscale). The Scores for depression, anxiety and stress are obtained by summing up the scores of the related items. The item no: 3,5,10,13,16,17, and 21 are added in the DASS – Depression while DASS - Anxiety items consist of 2,4,7,9,15,19, and 20 and DASS-Stress items are 1,6,8,11,12,14, and 18. It is 4 point likert scale ranging from 0-3 (did not apply to me at all to apply to me very much). The high scores indicate higher level of depression anxiety and stress while low scores indicate lower level of depression anxiety and stress. It had high internal consistency with 0.94 Cronbach's alpha.

Procedure

Current study was conducted from June 2020 to August 2020. After explaining the purpose and objectives of the study in written form, permission was taken from participants. They were assured about the privacy and confidentiality of information obtained through participants. Data were collected through Google Form by using the FCV-19 and mental health questionnaires. On average it took 10-15 minutes to complete the online questionnaires. Participants were allowed to leave the survey at any time, they desired.

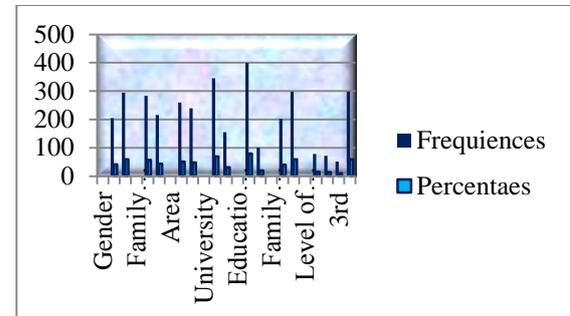
Data analyses were performed using the statistical package of SPSS v-21 and Process Hayes v. 3.4. Descriptive statistics of frequencies and percentages were used to describe the demographic characteristic of sample. Pearson correlation was run to find the relationships of FCV-19, stress, depression and anxiety on SPSS. Further mediator analysis was also run using model 4 through Process Hayes.

RESULTS

Of the 500 participants, there were 205 (41%) males and 295 (59%) females. There were 284 (56.8%) participants who lived in nuclear family as compared to 216 (43.2%) participants who had joint family system. Further, 345 (69%) participants were studying in Government universities and 155 (31%) only were getting their education from private universities. Furthermore, there were only 101 (20.2%) graduate students and 399 (79.8%) undergraduate students. Overall, 298 (59.6%) participants had no family member with COVID-19 and 202 (40.4%) had family member with COVID-19. From 202 participants, 79 (15.8%) had first degree relationship, 72 (14.4%) had second degree relationship and 51 (10.2

%) had third degree relationship with COVID-19 infected member.

Graph1: Demographic Characteristics of University Students (n= 500)



From 500 respondents, 88 (17.6%) had mild depression, 91 (18.2%) had moderate depression, 1 (0.2%) severe depression and 320 (64%) reported no symptoms of depression. Further, 53 (10.6%) participants reported mild anxiety, 67 (13.4%) moderate anxiety, 74 (14.8%) had severe anxiety, 3 (0.6%) had extreme severe anxiety and 303 (60.6%) had no symptoms of anxiety. Furthermore, 55 (11%) reported mild stress, 18 (3.6%) had moderate stress and 427 (85.4%) had no stress. Pearson correlation was run to observe the relationships among FCV-19, anxiety, stress and depression. The result depicted that FCV-19, depression, stress and anxiety had statistically significant positive relationships ($\leq .001$) with each other.

To find the role of anxiety and stress as mediators between the relationship of FCV-19 and depression, mediation analysis was conducted using Hayes 4 model of moderation and mediation through Process Hayes. Table 2 depicted the anxiety and stress as the mediators between the relationship of FCV-19 and depression among university students (for conceptual and statistical model # 4 of Hayes).

Table 1: Correlation Coefficient among FCV-19, Depression, Stress and Anxiety among University Students (N=500).

Variables	FCV-19	Depression	Anxiety	Stress
FCV-19	-	-	-	-
Depression	.576**	-		
Anxiety	.595**	.897**	-	
Stress	.600**	.905**	.899**	-

*Note: *p≤05, **p≤01, FCV-19= Fear of COVID-19*

Table 2: Anxiety and Stress as a Mediator between FCV-19 and Depression among University Students through Process Hayes (N=500).

Variables	B	S.E	R ²	F	P	95%CI	
						LB	UB
Model-I Anxiety as Outcome							
Model-I Constant	-3.57	0.66	0.35	272.39***	0.000	-4.88	-2.26
FCV-19	0.50	0.03			0.000	0.44	0.56
Model-II Stress as Outcome							
Model-II Constant	-3.72	0.67	0.36	280.43***	0.000	-5.05	-2.38
FCV-19	0.52	0.03			0.000	0.46	0.58
Model-III Depression as Outcome							
Model-III Constant	-.08	0.33	0.85	979.76***	0.80	-.74	0.57
FCV-19	0.01	0.01			0.52	-.02	0.04
Anxiety	0.44	0.04			0.000	0.36	0.52
Stress	0.51	0.04			0.000	0.43	0.59

*Note: *p≤05, **p≤01, ***p≤001, FCV-19= Fear of COVID-19*

Table 3: Mediation with Direct, Indirect and Total Effects of FCV-19 on Depression through Anxiety and Stress among University Students (N= 500).

Variables	Effect	UL	LL
Total Effect	0.51	0.57	0.44
Direct Effect	0.01	0.04	-.02
Indirect Effect	0.49	0.55	0.43
Indirect Effect Through Mediators			
Anxiety	0.22	0.29	0.16
Stress	0.27	0.33	0.20

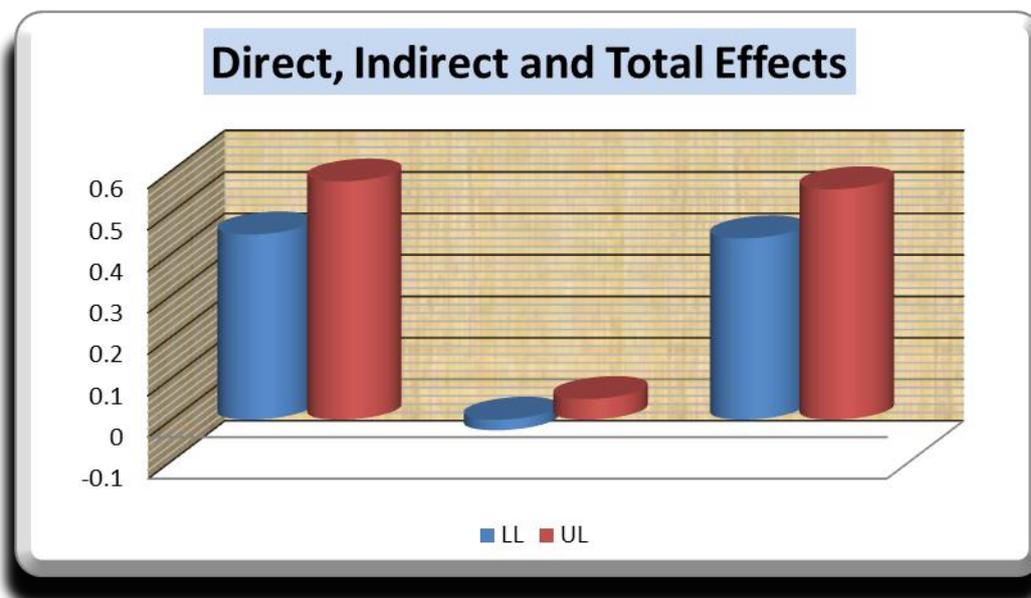
*Note: - = *, UL= Upper Level, LL= Lower Level*

The results depicted that there were statistically significant equations ($F(1,498) = 272.39, p \leq .001$ for anxiety and $F(1,498) = 280.43, p \leq .001$ for stress) with an $R^2 = 0.35$ and 0.36 for anxiety and stress respectively, which indicated that FCV-19 was explaining 35% variance for anxiety and 36% variance for stress in model-I and II. It also described that with increasing the FCV-19 ($\beta = 0.50, p \leq .001$ for anxiety; $\beta = 0.52, p \leq .001$), the anxiety and stress also increased among university students. The model-III also showed the statistically significant equation ($F(3,496) = 979.76, p \leq .001$) with $R^2 = .85$, which represented that predictor variables were explaining 85% variance in depression. As FCV-19, stress, depression and anxiety had relationships with each another independently. But in the model-III, anxiety and stress predicted the depression ($\beta = 0.44$ for anxiety and 0.51 for stress, $p \leq .001$). Further, FCV-19 did not predict ($\beta = 0.01, p \geq .05$) the depression in the presence of mediators which represented

that anxiety and stress played role as a full mediators between FCV-19 and depression among university students.

Further, table 3 depicted the total, direct and indirect effects of FCV-19 through anxiety and stress on depression among university students. It indicated that total effects of the FCV-19, stress and anxiety on depression was statistically significant with effect 0.51 , $UL = 0.57$ and $LL = 0.44$. The positive signs of the UL and LL showed the significance of the model. In the direct effect, there was statistically non-significant effect (effect = 0.01) with $UL = .04$ and $LL = -.02$ which indicated that FCV-19 did not directly effect the depression in the presence of anxiety and stress. But, it also elaborated that FCV-19 indirectly effect the depression through anxiety and stress with effect = 0.49 , $UL = 0.55$ and $LL = 0.49$, from which, 0.22 effect ($LL = 0.16, UL = 0.29$) for anxiety and 0.27 effect ($LL = 0.20, UL = 0.33$) for stress on depression.

Graph-2: Direct, Indirect and Total Effects of Fear of COVID-19 on Depression (n=500)



Graph-2 also showed the direct, total and indirect effects of FCV-19 on depression.

DISCUSSION

After the outbreak of COVID-19, although government has taken different steps such as lockdowns, compulsory use of masks

and social distancing in order to control the spread. But not only the reported cases are increasing in numbers but death rate is also alarming.

The present study was conducted with the aim to examine the anxiety and stress as mediators between the relationship of FCV-19 and depression. The data were collected from 500 (205 males & 295 females) students of private and Government universities.

The first objective of the study was to observe the relationships among FCV-19, depression, stress and anxiety among university students. The results of the study showed the statistically significant positive relationships among FCV-19, stress, depression and anxiety ($p \leq .001$) among university students. Many empirical studies supported the results of the current study. FCV-19 was positively linked to mental health consequences such as depression, stress and anxiety symptoms which indicated that greater the FCV-19; higher the level of mental health issues such as depression, anxiety and stress (Fitzpatrick et al., 2020). Another study described the positive relationship among anxiety, stress, depression, intolerance of uncertainty, the FCV-19 and positivity by finding mediators. It indicated statistically significant positive correlation between FCV-19 and intolerance of uncertainty, depression, anxiety, and stress (Bakioglu et al., 2020).

The second objective of the study was to examine the anxiety and stress as mediators between the relationship of FCV-19 and depression. Mediator analysis using Hayes model 4 of moderator and mediators (with two mediators) showed the statistically significant model ($p \leq .001$). The FCV-19 and depression has statistically non-significant relationship in the presence of anxiety and stress. Further, direct effect (+, -) also showed the non-significant relationship in the presence of the two mediators which represented that there were mediations of anxiety and stress in the relation to FCV-19 and depression

among university students. Findings are supported somehow with the study which elaborated that anxiety played the role of mediator between the relationship of FCV-19 and depression among undergraduate students. In the model of their study, the stress was also seen as mediator, but result showed no mediation (Rodriguez-Hidalgo et al 2020).

The present study is a source of addition in the previous knowledge about COVID-19 in Pakistan. In previous studies, only anxiety was described as mediator between FCV-19 and depression among students. But in current study the stress was also observed as mediator with the anxiety between FCV-19 and depression. The second strength of the study is to involve students from both graduate and undergraduate levels.

Current study was conducted during the lockdown phase and all educational institutions were closed. Therefore, some limitations were faced in current study. Data were collected through convenient sampling technique rather probability sampling technique which weakens the generalizability of findings was also one limitation. The sample size was too small. Data were collected through online Google Form rather face to face interaction. Many of the students could not get opportunity to participate in the study due to the problems of connectivity.

Keeping in view the nature of studied variables, a mixed method approach would be suggested for such studies in future. Variables of psycho-social nature may be explored through semi-structured interviews or focused group discussions.

CONCLUSION

It was concluded that anxiety, stress and FCV-19 are important factors in triggering depression among students. Hence, there is a dire need to introduce counseling programs for students in order to reduce the FCV-19 and depression.

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CONFLICT OF INTEREST: Nil

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