**RESEARCH ARTICLES**

**Assessment of COVID-19 linked fear perception in the community of Pakistan, 1 June to 31 July 2020**

Wajiha Waqar Ali1, Amber Malik2, Rabia Basray1, Wajiha Haq3, Muhammad Wasif Malik1, Muazam Abbas Ranjha1, Ambreen Chaudhry4, Nosheen Ashraf1, Hussain Ali1, Mumtaz Ali Khan1, Jamil A. Ansari1 & Aamer Ikram1

1 National Institute of Health, Islamabad, Pakistan

2 COMSATS University, Islamabad, Pakistan

3 National University of Science & Technology, Pakistan

4 Field Epidemiology & Laboratory Training Program, Pakistan

**Abstract**

*Introduction:* Fear is the normal response to any perceived threat, especially when it comes to contracting a new disease, resulting in stress and anxiety. This study was conducted during the peak epidemic phase of COVID-19 in Pakistan to assess fear level among the Pakistani population regarding COVID-19.

*Method:* A cross-sectional study was conducted during June-July 2020 in Pakistan. A pre-designed questionnaire based on “Fear of COVID-19 Scale” was distributed through email and social media platforms using voluntary response sampling. Descriptive analysis was conducted and frequencies were calculated. Each response was scored as 1 (strongly disagree) to 5 (strongly agree). The fear level was categorized as high (>20 score), Moderate (14-20 score) and low (<14 score). Inferential analysis was carried out using multiple logistic regression, at 95% confidence interval and *P*<0.05.

*Results:* A total of 489 individuals were contacted and 404 individuals participated in this study (Response Rate: 83%). Mean age was 29 years (SD: ±14.5), 54.5% were males, literacy rate was 90.1%, employment rate was 89.1%, 49.5% were previously infected with COVID-19, and 58.4% were unmarried. Out of total, 45% of the population showed a moderate level of fear. Chi-square analysis revealed that factors including gender, education, marital status, occupation and province of residence were associated with different levels of fear. Multiple logistic regression analysis showed that individuals previously infected with COVID-19 (OR: 2.18, 95% CI: 1.65-3.71, *P*=0.004), and males(OR: 2.09, 95% CI: 1.82-3.70, *P*=0.01) were significantly more likely to have a high level of fear. Higher education level had a protective association against “Moderate (OR: 0.38, 95% CI: 0.18–0.811, *P*=0.01)” and “High (OR: 0.33, 95% CI: 0.17–0.66, *P*=0.002)” fear levels. Similarly, married persons had lower odds of having high fear (OR: 0.55 95% CI: 0.21–0.69, *P*=0.001)

*Conclusion and Recommendations:*It is evident that a COVID-19 linked fear exists in different groups of the Pakistani community, especially among males and previously infected cases. Therefore, there is a need to conduct health awareness and education campaigns for high risk groups focusing on psycho-social issues. It is also recommended to design, develop and implement different public health interventions for mitigation of COVID-19 linked fear in the society.

**Key words:** Fear, COVID-19, FCV-19S, Epidemic, Pakistan, Contracting

**Introduction**

 The novel coronavirus, now known as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), emerged from Wuhan, China in December 2019, and has been expanded from an epidemic to pandemic with continuously rising cases and deaths worldwide.(1)(2) With a high transmission rate and moderately high

mortality rate worldwide, people started fearing COVID-19. It has been documented that most people are afraid of coming in contact with the persons who are infected by SARS CoV-2, which leads to stigmatization. One peculiar contrasting feature of infectious diseases, as compared to other ailments is “fear”, which is connected to disease transmission rate as well as with increased risk of death and disabilities.(3) The current mitigation strategy of COVID-19 worldwide is centered on disease control, successful immunization, and clinical management modalities. The psychosocial aspect still has not drawn much attention(4)(5). Thus, countries must take considerable steps to promote psychological wellbeing and alleviate the individual fear to achieve a society free of COVID-19 disease and minimize its post-recovery psychological effects.(6) Different studies had been conducted in Iran(6) and Eastern Europe(7) on fear perception in the context of COVID-19. In Pakistan, a study was conducted using the Fear of COVID-19 Scale to assess the fear among nurses(8) along with another study using the URDU translated version of the same scale in general population of KPK province.(9) Keeping psychosocial impacts of disease in consideration, we conducted a cross-sectional study using the pre-design “Fear of COVID-19 Scale” (FCV-19S) with the objective to evaluate the level of fear and its factors among the Pakistani population.

**Methods**

*Study design*

 This was a cross-sectional study using voluntary response sampling technique to recruit respondents.

*Study population*

 People living in Pakistan are included in the study population which is estimated to be 220,892,331 at mid-year of 2020, with 51.96% males and 60.83% between the ages of 15 and 64 years.[[[1]](#footnote-2)](https://population.un.org/wpp/)

*Inclusion criteria*

 Individuals having social media access and the capacity to comprehend and read English were included in the study. Participation was voluntary and filling of the questionnaire signifies informed consent.

Study duration

 This study was conducted from 1June 2020 to 31July 2020.

*Study tool*

 The questionnaire, based on “Fear of COVID-19 Scale” developed by Ahorsu et al(6), was made available online for the participants. The FCV-19S comprises of seven questions that were designed to assess fear of COVID-19 infection. A 5-point Likert scale was used for scoring questions ranging from 1 (strongly disagree) to 5 (strongly agree). The total score of the scale ranged from 7 to 35, hence quantifying the level of fear.

*Sampling technique*

 Voluntary response sampling has been used; online questionnaire was sent to a total of 489 individuals out of whom 404 responded.

*Data collection*

 The link to the online questionnaire was disseminated through social media platforms including WhatsApp, Facebook, and Twitter. The data was collected regarding basic demographics and fear perceptions and factors. The data was compiled and managed in MS Excel for analysis.

*Data analysis*

 Descriptive statistics were conducted for demographic variables. The mean score was calculated for the responses against the seven FCV-19S items. A score <14 was graded as low level fear, a score ranging between 14 and 20 was moderate level, and a score >20 was high level fear. Statistical Package for Social Sciences (SPSS) software was used for carrying out descriptive analysis. Odds Ratio (OR) had been calculated and multivariate analysis was carried out using multiple logistic regression, at 95% confidence interval and *P*<0.05, to analyze the significant association between the demographic variables and level of fear. STATA software was used for carrying out multiple logistic regression.

**Results**

 The online questionnaire was shared with a total of 489 individuals, of which 404 responded voluntarily (Response Rate: 83%). Participants have been categorized in four groups on the basis of age in years as 1-20, 21-40, 41-60 and > 60 years with the mean age as 29 years ±14.5 SD. Two hundred and twenty (220,54.5%) were males (Figure-1) and the majority of the participants (236, 58.4%) were unmarried. A total of 316 participants (78.2%) had a high level of education (graduates and postgraduates), whereas 48 respondents (11.9%) had education up to secondary and higher secondary level. A total of 89.2% were employed, and majority of respondents (33.6%) were healthcare workers, followed by government employees (20.8%). The majority (192, 47.5%) of participants were from Sindh province followed by Punjab (20.8%). Of the total participants, 200 (49.5%) were infected with COVID-19 previously. Socio-demographic variables of the study participants are presented in Table-1.

 The scale depicted a great Cronbach's Alpha proportion of interior consistency or reliability (0.900).The total score of the scale ranged from 7 to 35. The mean score calculated for the seven FCV-19S items was 17 (± 3.03). In the full sample, 45% of the population showed a moderate level of fear. Table-2 describes the frequency analysis of responses towards the seven item COVID-19 fear scale.

 Different factors affecting fear levels of respondants were studied. Chi square test showed that factors including gender, education, marital status, occupation and province of residence were associated with the different level of fears. The results are tabulated in Table-3. Multiple regression analysis was employed to control for confounding and to observe association of different factors with fear levels. This analysis revealed that high level of fear was significantly associated with being male (OR: 2.09, 95% CI: 1.82-3.70, *P*=0.01) and a history of COVID-19 infection (OR: 2.18, 95% CI: 1.65-3.71, *P*=0.004), while higher education was observed to have a protective association against moderate (OR: 0.38, 95% CI: 0.18–0.811, *P*=0.01) and high (OR: 0.33, 95% CI: 0.17–0.66, *P*=0.002) fear levels as compared to other education group. Married persons had lower odds of having high fear (OR: 0.55 95% CI: 0.21–0.69, *P*=0.001). Results of multiple logistic regression are presented in Table-4.

**Discussion**

 People having infectious diseases are more prone to fear due to its virulence, high transmissibility and unexpected deaths which reduces rational thinking leading to stigmatization and social isolation.(10) Its consequent complications and deaths increase negative feelings and thoughts(11)(12)(13) and these apprehensions can lead to sleep deprivation, outrage, irritability, posttraumatic stress disorder, anxiety and depression.(14)(15) There are several socio-demographic and psychosocial factors associated with mental health problems in the COVID-19 pandemic like age, gender, marital status, education, and economic challenges, including unemployment, loss of income, or reduction in economic opportunities due to lockdown or other social measures.(16)(17)(18)(19)

 Schools and universities have remained closed, while working hours in private workplaces, public institutions, restaurants, and entertainment places are restricted so that the infection can be contained. When the psychological aftermath of home isolation during the pandemic is explored, it is inferred that this practice has protective effect on physical health though has adverse psychological and economic consequences.(20) Studies have shown that staying at home increases depression, health anxiety, financial concern, and loneliness.(21)(22) All limitations and practices have further increased the fear and anxiety of individuals for COVID-19.(10) A 39 year old COVID-19 infected man with a complicated psychiatric disorder, diabetes and obesity died alone at home in March 2020 in Italy.(23)Hence, it became utmost important to analyze the effect of fear among population of Pakistan. Our investigation featured the underlying psychological responses to the fear against theCOVID-19 pandemic during the period of highest reported cases in Pakistan i.e. 1 June to 31 July 2020.

 Irrespective of norms, our study results revealed males showing higher levels of fear as compared to females. This is interesting as literature has shown that females are more inclined towards stress, depression and anxiety.(24)(25) Likewise, a study conducted in India showed females had 1.29 times essentially higher chances to fear COVID-19 in contrast to their male counterparts.(26) The female gender is more prone to suffer from mental health problems in several studies.(27)(28)(29)(30)One possible justification for our study finding could be that males had more outdoor activities(31) and more chances of interaction with others which subsequently made them to be more afraid as they could possibly carry the pathogen to their homes.

 Expectedly, fear level among COVID-19 affected individuals came out to be high when compared with uninfected individuals. This study is conducted during the peak epidemic time,[[[2]](#footnote-3)](https://github.com/CSSEGISandData/COVID-19) hence fear of contracting the disease, and chance of transmitting it to their beloved ones and elements of stigmatization, all lead to excessive perception of fear against COVID-19 which is in accordance with a study conducted in Iraq(32) and India.(33) Empirical studies implied that patients who contracted COVID-19 had experienced adverse mental health consequences.(34)(35)(36) Moreover, a case from India suggests that COVID-19 may critically impact psychosocial wellbeing and influence suicidal attempts among the infected individuals, which may also aggravate if the patient has other comorbidities.(37)

 High levels of fear were observed among highly educated individuals which might be due to the reason that they use social media more frequently as compared to their less educated counterparts(38) hence have the tendency to acquire unnecessary worry about the unusual consequences of COVID-19 disease.(39) Several studies have depicted that exposure to COVID-19 related social media contents or mass media news have adverse effects on mental health amid COVID-19.(35)(40)  Lei and colleagues reported that low education was associated with poor mental health outcomes.(41) In contrast, Zhou and colleagues found that students in senior high school and having higher grades had a greater prevalence of depressive and anxiety symptoms.(27) Similarly, Wang and colleagues reported that those with a bachelor's degree group had a depression risk of 0.39 times compared to those with a master's degree or above.(37) This evidence highlights that education may have some protective roles as seen in the study by Lei or Liang and colleagues, but later studies emphasized that the added academic stress may affect mental health during this pandemic.

**Figure-1.** Age and gender-wise distribution of study participants (n=404) from community of Pakistan from 1 June to 31 July 2020.

**

**Table-1.** Socio-demographic characteristics of study participants (n=404) from community of Pakistan from 1 June to 31 July 2020.

|  |  |
| --- | --- |
| **Socio-demographic variables** | **Participants** **n (%)** |
| Marital statusMarriedUnmarried | 168 (41.6)236 (58.4) |
| Educational StatusSecondary + Higher SecondaryGraduate + PostgraduateOthers | 48 (11.9)316 (78.2)40 (9.9) |
| OccupationStudentGovernment employeePrivate employeeHealthcare professionalsHouse wifeUnemployedOthers | 64 (15.8)40 (9.9)8(2.0)136 (33.7)12 (3.0)44(10.1)100(24.7) |
| Infected by Covid-19YesNo | 200 (49.5)204 (50.5) |
| Provincial statusSindhPunjabKhyber PakhtunkhuwaBalochistanIslamabadGilgit BaltistanAzad Kashmir | 192 (47.5)84 (20.8)29 (5.9)20(5.0)76 (18.8)4 (1.0)4 (1.0) |
| **Total** | **404(100)** |
|  |  |

**Table-2**. Frequency analysis of responses from community of Pakistan towards COVID-19 fear (n=404) from 1 June to 31 July 2020.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No** | **Questions** | **Strongly** **Agree (5)** **n(%)** | **Agree (4)** | **Neither Agree** **nor Disagree** **(3)** | **Disagree (2)** | **Strongly** **Disagree (1)** |
| 1 | Do you feel fear of Covid-19 | 48(11.9) | 140(34.6) | 108(26.7) | 64(15.8) | 44(10.8) |
| 2 | Does it make you restless when you think about Covid-19 | 48(11.9) | 96(23.7) | 112(27.7) | 72(17.8) | 76(18) |
| 3 | Do your hands become cold when you think about Covid-19 | 4(0.9) | 16(3.96) | 44(10.8) | 164(40.5) | 176(43.6) |
| 4 | Do you feel difficulty in sleeping because you worry a lot about Covid-19 | 8(1.9) | 12(2.9) | 40(9.9) | 144(35.6) | 200(49.5) |
| 5 | Do you fear of losing your life because of Covid-19 | 8(1.9) | 64(15.8) | 112(27.7) | 88(21.7) | 132(32.6) |
| 6 | Do you become anxious while watching news on TV or social media about Covid-19 | 52 (12.8) | 124 (30.6) | 120 (29.7) | 44 (10.9) | 64 (15.8) |
| 7 | Do you feel your heart beat getting fast when you think about getting Covid-19 | 28 (6.9) | 56 (13.8) | 52 (12.8) | 108 (26.7) | 160 (39.6) |

**Table 3.** Risk perception analysis of community of Pakistantowards COVID-19 (n=404) from 1 June to 31 July 2020.

|  |  |  |
| --- | --- | --- |
|  | **Fear level** |  |
|  | Low | Moderate | High | *P*-value |
| **Gender** |  |  |  |  |
| male | 51 | 96 | 72 | <0.002\* |
| female | 72 | 60 | 52 |  |
| **Covid infection** |  |  |  |  |
| infected | 69 | 78 | 52 | 0.08 |
| uninfected | 54 | 78 | 72 |  |
| **Education** |  |  |  |  |
| group 1 | 4 | 20 | 4 | <0.0001\* |
| group 2 | 111 | 124 | 100 |  |
| group 3 | 8 | 12 | 20 |  |
| **Marital status** |  |  |  |  |
| married | 56 | 72 | 40 | <0.03\* |
| unmarried | 67 | 84 | 84 |  |
| **Occupation** |  |  |  |  |
| student | 20 | 24 | 20 | <0.0001\* |
| govt. employee | 19 | 16 | 4 |  |
| private employee | 0 | 8 | 0 |  |
| Health care professionals | 32 | 52 | 52 |  |
| house wives | 8 | 4 | 0 |  |
| unemployed | 20 | 8 | 16 |  |
| others | 24 | 44 | 32 |  |
| **Provinces** |  |  |  |  |
| Islamabad | 24 | 28 | 24 | <0.0001\* |
| Sindh | 76 | 64 | 52 |  |
| Punjab | 15 | 40 | 28 |  |
| KPK | 8 | 8 | 8 |  |
| Balochistan | 0 | 12 | 8 |  |
| Gilgit | 0 | 4 | 0 |  |
| AJK | 0 | 0 | 4 |  |

**Table 4.** Multivariate analysis of different factors and fear levels (n=404) among community of Pakistan from 1 June to 31 July 2020.

|  |  |
| --- | --- |
|  | **Levels of fear** |
| **Variables** | **Moderate level OR (95% CI) *P*-value** | **High OR (95% CI) *P*-value** |
| **Gender** |  |  |
| Male Base outcome: female | 0.99 (0.54–1.78) 0.97  | 2.09 (1.82 – 3.70) 0.01**\***  |
| **COVID-19 infection** |  |  |
| Yes Base outcome : No | 1.47 (0.84-2.58) 0.17  | 2.18 (1.65–3.71) 0.004\*  |
| **Education** |  |  |
| Group-2 (graduate and post graduate education)  | 0.38 (0.18–0.811) 0.01\* | 0.33 (0.17–0.66) 0.002\* |
| Group-3(other education) Base outcome: Group-1 secondary and higher secondary education | 1.34 (0.62–2.91) 0.46 | 1.08 (0.52–2.29) 0.819 |
| **Marriage** |  |  |
| Married Base outcome: unmarried | 0.34 (0.19\_-1.62) 0.0001 | 0.55 (0.21–0.69) 0.001\* |

 Married people had more sense of responsibility and they become distressed easily, hence more likely to become anxious and afraid. But surprisingly, an intriguing finding of our study was that the unexpected heightened fear was found among unmarried as compared to married individuals which is contradictory to the findings of a study conducted in Bangladesh.(42) Marital status was associated with mental health status among individuals experiencing mental health problems during COVID-19. In a study, it has been depicted that insomnia was related to marital status among medical staff in Ningbo, China.(30) Another study reported that the severity of psychiatric symptoms in the workforce returning to the workplace was significantly associated with marital status.(27)

**Conclusion and Recommendations**

 As depicted earlier, this study revealed association of

COVID-19 fear levels with different factors in Pakistani

population. Stigmatization had been created because of

the infodemic which had a profound negative effect on

the control of the pandemic. In order to deal with this

situation, it is recommended that efforts should be made

to provide precise and valid information to the public

along with the updated guidelines and recommendations

about quarantine and isolation protocols. Moreover, risk

assessment, risk communication and community

engagement (RCCE) regarding psychological effects of

COVID-19 among vulnerable population should be the

focus of the concerned authorities. There is also a dire

need to design, develop and implement different public

health interventions for mitigation of COVID-19 linked

fear in the society which will eventually help the

government to cope with the COVID-19 pandemic crisis.

**Limitations**

 There are certain limitations in our study, such as voluntary response sampling technique, recruitment of people with smart phone, internet accessibility and good comprehension of English. Hence, the results could not be generalized as they depict a large proportion of responses from educated persons. Since the fear level of uneducated person might be different, a need arises to use the translated version of this fear scale.

**Implications of the study**

 Our study suggests that there is a need to conduct a more comprehensive prospective study with a bigger sample size and including all socio-economic segments of the society to probe deeply into the fear levels and other relevant psychological issues among the masses. Though FCV-19S is a simple and convenient tool to evaluate fear level, but it is desirable to formulate more relevant psychological health assessment tools which may be more brief with high accuracy and specificity.

**Conflict of interest**

Authors declare no conflict of interest

**Ethical approval**

 Ethical approval for this study was obtained from

the Institutional Review Board of National Institute

of Health.

**References**

1. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. International Journal of Antimicrobial Agents. 2020.
2. James JJ. COVID-19: From Epidemic to Pandemic. Disaster Med Public Health Prep. 2020;14(6):e3–5.
3. Satici B, Gocet-Tekin E, Deniz ME, Satici SA. Adaptation of the Fear of COVID-19 Scale: Its Association with Psychological Distress and Life Satisfaction in Turkey. Int J Ment Health Addict. 2020;
4. Ahmed MZ, Ahmed O, Aibao Z, Hanbin S, Siyu L, Ahmad A. Epidemic of COVID-19 in China and associated Psychological Problems. Asian J Psychiatr. 2020;
5. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. Int J Environ Res Public Health. 2020 Mar;17(5).
6. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The Fear of COVID-19 Scale: Development and Initial Validation. Int J Ment Health Addict. 2020;
7. Reznik A, Gritsenko V, Konstantinov V, Khamenka N, Isralowitz R. COVID-19 Fear in Eastern Europe: Validation of the Fear of COVID-19 Scale. International Journal of Mental Health and Addiction. 2020.
8. Khattak SR, Saeed I, Rehman SU, Fayaz M. Impact of Fear of COVID-19 Pandemic on the Mental Health of Nurses in Pakistan. J Loss Trauma [Internet]. 2020;0(0):1–15. Available from: <https://doi.org/10.1080/15325024.2020.1814580>
9. Mahmood QK, Jafree SR, Qureshi WA. The Psychometric Validation of FCV19S in Urdu and Socio-Demographic Association with Fear in the People of the Khyber Pakhtunkhwa (KPK) Province in Pakistan. Int J Ment Health Addict. 2020;
10. Koçak O, Koçak ÖE, Younis MZ. The psychological consequences of COVID-19 fear and the moderator effects of individuals’ underlying illness and witnessing infected friends and family. Int J Environ Res Public Health. 2021;18(4):1–15.
11. Alyami M, Henning M, Krägeloh CU, Alyami H. Psychometric Evaluation of the Arabic Version of the Fear of COVID-19 Scale. Int J Ment Health Addict. 2020;
12. Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic. The Lancet Psychiatry. 2020.
13. Bakioğlu F, Korkmaz O, Ercan H. Fear of COVID-19 and Positivity: Mediating Role of Intolerance of Uncertainty, Depression, Anxiety, and Stress. Int J Ment Health Addict. 2020;
14. Shigemura J, Kurosawa M. Mental Health Impact of the COVID-19 Pandemic in Japan. Psychol Trauma Theory, Res Pract Policy. 2020;
15. Pappas G, Kiriaze IJ, Giannakis P, Falagas ME. Psychosocial consequences of infectious diseases. Clinical Microbiology and Infection. 2009.
16. Liang L, Ren H, Cao R, Hu Y, Qin Z, Li C. Liang2020\_Article\_TheEffectOfCOVID-19OnYouthMent.pdf. 2020;(1163):841–52.
17. Özdin S, Bayrak Özdin Ş. Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: The importance of gender. Int J Soc Psychiatry. 2020;66(5):504–11.
18. Tan W, Hao F, McIntyre RS, Jiang L, Jiang X, Zhang L, et al. Is returning to work during the COVID-19 pandemic stressful? A study on immediate mental health status and psychoneuroimmunity prevention measures of Chinese workforce. Brain Behav Immun. 2020 Jul 1;87:84–92.
19. Zhang C, Yang L, Liu S, Ma S, Wang Y, Cai Z, et al. Survey of Insomnia and Related Social Psychological Factors Among Medical Staff Involved in the 2019 Novel Coronavirus Disease Outbreak. Article [Internet]. 2019;11:1. Available from: [www.frontiersin.org](http://www.frontiersin.org)
20. Flanagan EW, Beyl RA, Fearnbach SN, Altazan AD, Martin CK, Redman LM. The Impact of COVID-19 Stay-At-Home Orders on Health Behaviors in Adults. Obes | Vol [Internet]. 2021;29(2). Available from: [www.obesityjournal.org](http://www.obesityjournal.org)
21. Medical Association A. Suicide Mortality and Coronavirus Disease 2019-A Perfect Storm? 2020; Available from: <https://suicidology.org/wp-content/uploads/>
22. Okuhara T, Okada H, Kiuchi T. Predictors of Staying at Home during the COVID-19 Pandemic and Social Lockdown based on Protection Motivation Theory: A Cross-Sectional Study in Japan. Available from: [www.mdpi.com/journal/healthcare](http://www.mdpi.com/journal/healthcare)
23. Chevance A, Gourion D, Hoertel N, Llorca PM, Thomas P, Bocher R, et al. Ensuring mental health care during the SARS-CoV-2 epidemic in France: A narrative review. Encephale. 2020 Jun 1;46(3):193–201.
24. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. General Psychiatry. 2020.
25. Sareen J, Erickson J, Medved MI, Asmundson GJG, Enns MW, Stein M, et al. Risk factors for post-injury mental health problems. Depress Anxiety. 2013;
26. Doshi D, Karunakar P, Sukhabogi JR, Prasanna JS, Mahajan SV. Assessing Coronavirus Fear in Indian Population Using the Fear of COVID-19 Scale. Int J Ment Health Addict. 2020;
27. Zhou S-J, Li ·, Zhang -Gang, Wang L-L, Guo Z-C, Wang J-Q, et al. Prevalence and socio-demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID-19. 2020;29:749–58. Available from: <https://doi.org/10.1007/s00787-020-01541-4>
28. Psychological impact on women health workers involved in COVID-19 outbreak in Wuhan: a cross-sectional study. Available from: <https://pubmed.ncbi.nlm.nih.gov/32366684/>
29. Kang L, Ma S, Chen M, Yang J, Wang Y, Li R, et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study. Brain Behav Immun. 2020 Jul 1;87:11–7.
30. Letter to the Editor Prevalence, risk factors, and clinical correlates of insomnia in volunteer and at home medical staff during the COVID-19. 2020; Available from: <https://doi.org/10.1016/j.bbi.2020.05.008>
31. Shirazi MR. Mapping neighbourhood outdoor activities: space, time, gender and age. J Urban Des [Internet]. 2019;24(5):715–37. Available from: <https://doi.org/10.1080/13574809.2018.1458607>
32. Ahmad AR, Murad HR. The impact of social media on panic during the COVID-19 pandemic in iraqi kurdistan: Online questionnaire study. J Med Internet Res. 2020;
33. Dsouza DD, Quadros S, Hyderabadwala ZJ, Mamun MA. Aggregated COVID-19 suicide incidences in India: Fear of COVID-19 infection is the prominent causative factor. Psychiatry Res. 2020;290(May):17–20.
34. Guo Q, Zheng Y, Shi J, Wang J, Li G, Li C, et al. Immediate psychological distress in quarantined patients with COVID-19 and its association with peripheral inflammation: A mixed-method study. Brain Behav Immun. 2020 Aug 1;88:17–27.
35. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. Psychiatry Res. 2020 Jun 1;288:112954.
36. Hao F, Tan W, Jiang L, Zhang L, Zhao X, Zou Y, et al. Do psychiatric patients experience more psychiatric symptoms during COVID-19 pandemic and lockdown? A case-control study with service and research implications for immunopsychiatry. Brain Behav Immun. 2020 Jul 1;87:100–6.
37. Hossain MM, Tasnim S, Sultana A, Faizah F, Mazumder H, Zou L, et al. Epidemiology of mental health problems in COVID-19: A review. F1000Research [revista en Internet] 2018 [acceso 10 de diciembre de 2020]; 9: 1-16. 2020;1–16.
38. PERRIN A. Social Media Usage: 2005-2015. 2015;(October):2005–15. Available from: www.pewinternet.org/2015/10/08/social-networking-usage-2005-2015/.
39. Lin LY, Sidani JE, Shensa A, Radovic A, Miller E, Colditz JB, et al. ASSOCIATION between SOCIAL MEDIA USE and DEPRESSION among U.S. YOUNG ADULTS. Depress Anxiety. 2016;33(4):323–31.
40. Ni MY, Yang L, Leung CMC, Li N, Yao XI, Wang Y, et al. Mental Health, Risk Factors, and Social Media Use During the COVID-19 Epidemic and Cordon Sanitaire Among the Community and Health Professionals in Wuhan, China: Cross-Sectional Survey. JMIR Ment Heal [Internet]. 2020 May 12;7(5):e19009. Available from: https://mental.jmir.org/2020/5/e19009
41. Lei L, Huang X, Zhang S, Yang J, Yang L, Xu M. Comparison of Prevalence and Associated Factors of Anxiety and Depression among People Affected by versus People Unaffected by Quarantine during the COVID-19 Epidemic in Southwestern China. Med Sci Monit. 2020;26:1–12.
42. Islam SMDU, Bodrud-Doza M, Khan RM, Haque MA, Mamun MA. Exploring COVID-19 stress and its factors in Bangladesh: A perception-based study. Heliyon. 2020;6(7):1–10.

**How to cite this article**: Ali WW, Malik A, Basray R, Haq W, Malik MW, Ranjha MA, Chaudhry A, Ashraf N, Ali H, Khan MA, Ansari JA & Ikram A. Assessment of COVID-19 linked fear perception in the community of Pakistan, 1 June to 31 July 2020. *Global Biosecurity, 2021; 3(1).*

**Published**: November 2021

**Copyright:** Copyright © 2021 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See <http://creativecommons.org/licenses/by/4.0/> .

*Global Biosecurity* is a peer-reviewed open access journal published by University of New South Wales.

1. 1 (United Nations Population Division. World Population Prospects: 2019 Revision) https://population.un.org/wpp/ [↑](#footnote-ref-2)
2. JHU CSSE COVID-19 Data [↑](#footnote-ref-3)