Level of Fear and Its Determinants in the Indian Population Due to COVID-19 Disease

Siddharth M. Lodha 1, Shubho Acharya 1, Gurmeet Singh 1, Sumit Kumar 1, Sharanya Kohli 1, Pragya Sharma 1

1. Department of Community Medicine, Maulana Azad Medical College, New Delhi, IND

Abstract

Background

The novel coronavirus disease 2019 (COVID-19) infection was declared a global health emergency by the World Health Organization. A total of three waves across most of the states in India have been reported to date, during which strict lockdown was imposed and conditional relaxations were offered between the subsequent waves. Amid the high morbidity and mortality, there has been severe psychological distress among people which has led to mental health impairment.

Methodology

We investigated the level of fear in the Indian population due to COVID-19 using the Fear of COVID-19 Scale (FCS-19) and various factors influencing it. A cross-sectional study was undertaken across India among participants more than 18 years of age by recruiting participants through social media platforms such as WhatsApp and Instagram. Along with the FCS-19 questionnaire, sociodemographic information about the participants, preexisting history of comorbidities, and psychiatric illnesses were collected. The study sample was drawn by convenience technique, and the data were collected over two months from October 2021 to December 2021.

Results

A total of 419 participants (212 females and 207 males) participated in the study. The mean FCS-19 score of the population was 18.29 ± 6.43 (SD). Participants with a history of COVID-19-related deaths in their own family or surrounding areas had a significantly higher FCS-19 score than those without a history of COVID-19-related deaths. The mean FCS-19 score for healthcare professionals was also significantly lower than for other professions. FCS-19 scores were significantly higher among participants with psychiatric conditions than those without.

Conclusions

The study showed a positive association between a preexisting mental health disease and FCS-19 score and a negative association if the participant was a healthcare professional. While other factors such as age, gender, residential area, and preexisting comorbidity did not show a significant association with fear associated with COVID-19.

Introduction

Since the novel coronavirus disease 2019 (COVID-19) infection was declared a global health emergency by the World Health Organization (WHO) on January 30, 2020, it has significantly impacted people’s physical and mental health[1]. The first confirmed case was reported in December 2019 from Wuhan, China, which later spread worldwide, with the first case detected in India in January 2020. Consequently, the first nationwide lockdown was initiated in March 2020, intended for 21 days but stretched significantly longer as COVID-19 cases continued to rise. A total of three waves have been reported to date, during which strict lockdown was imposed and conditional relaxations were offered between the subsequent waves. Amid the high morbidity and mortality, repetitive cycles of lockdown resulting in the loss of jobs and disruption of businesses have led to substantial financial losses, resulting in psychological distress and mental health impairment. Repetitive lockdowns have caused a surge in the number of victims of domestic violence as they cannot get away from their abusers [2].

Schools and colleges were shut down, leading to disruption in education, reduced physical activity besides loss of friends and classmates, resulting in increased boredom, lack of personal space at home, disruption of daily routines, increased parental pressure to study, and increased family violence, all of which contributed...
to increased anxiety, anger, depression, and other forms of mental distress [3].

Quarantine and self-isolation, the measures people had to undertake after they got infected by COVID-19, also affected their livelihood and increased feelings of loneliness and anxiety. Fear of getting infected and stress regarding family members’ health led to constant stress among common people. Due to the highly contagious nature of the virus, regular hand washing and masks were the important preventive actions mandated to break the chain of transmission. Repetitive thoughts of virus in the surroundings leading to repeated, compulsive hand washing and sanitizing cycles also led to a higher predisposition to obsessive-compulsive disorder (OCD) [4].

Because COVID-19 had higher mortality in older adults, concern about their own health, besides their family members' health and the disease's financial impact, contributed to psychological stress in older adults. Moreover, this age group experienced loneliness, age discrimination, and excessive worry. Studies have indicated that the female and elderly populations have been under severe psychological stress, which was way higher than expected [5].

The increasing number of cases also posed an increase in demand for the health system and a lot of pressure and burnout in healthcare professionals. Healthcare professionals have increased depression and anxiety, severely impacting their quality of life (QoL) [6].

Overall, panic and stress have led to poor mental health conditions across all age groups and professions. Thus, this study was conducted to assess the level of fear among people due to COVID-19 and the different factors and patterns that contributed to anxiety and mental health issues.

Materials And Methods

Study design and participants
A cross-sectional study was undertaken across most states in India among participants over 18 years of age and both genders from October 2021 to December 2021 using social media. As the research was conducted during the COVID-19 pandemic, social media was preferred to ensure proper social distancing. The sample was drawn by convenience sampling, and the data were collected over two months from October 2021 to December 2021.

Data collection and procedure
Data were collected on a semi-structured questionnaire, pretested and authenticated along with a validated Fear of COVID-19 Scale (FCS-19) [7] questionnaire through social media platforms such as WhatsApp, Gmail, and Instagram. The questionnaire was divided into two parts. The first part covered the consent and sociodemographic details of the participants, along with some other specific information regarding medical history, COVID-19 vaccination, etc. The second part included the FCS-19. A total of 419 people responded to the questionnaire.

The FCS-19S, based on the Protection Motivation Theory, is an open-source questionnaire with a unidimensional factor structure. The FCS-19S has been confirmed to have reliability and validity in various countries such as Bangladesh, Iran, Israel, Italy, New Zealand, Russia and Belarus, Saudi Arabia, Turkey, and Vietnam. It has come to have more widespread use than other coronavirus-related measures. Results obtained using FCS-19 can be associated with various factors, including sociodemographic and residential environments.

The participants indicate their level of agreement with the statements using a five-item Likert-type scale. Answers included strongly disagree, disagree, neutral, agree, and strongly agree. The minimum score for each question is 1, and the maximum is 5. A total score can be calculated by adding each item score (ranging from 7 to 35).

Statistical analysis
The data were analyzed using the SPSS for Windows version 26.0 (IBM Corp., Armonk, NY, USA). The descriptive data analysis used numbers, percentages, arithmetic mean, standard deviation (SD), and minimum and maximum values. The relationship between the independent groups with normal distribution was analyzed using the independent sample t-test and association tests. The significance level for statistical analysis was accepted as a P-value of <0.05.

Ethical consideration
Ethical permission was taken from the Institutional Ethics Committee of Maulana Azad Medical College to conduct the study (F.1/IEC/MAMC/87/05/2021/No.523). The participants were informed about the motive of the study and data confidentiality, and only after taking their consent, data were collected.
Results

Of the 419 study participants, 50.6% were females. The majority (50.1%) of the respondents were aged between 20 and 29 years, followed by more than 50 years (15%), between 40 and 49 years (13.4%), 30-39 years (13.4%), and ≤20 years (13.4%) (N = 41). More than half (52.3%) of the participants were students, followed by service, including both government and private jobs (30.8%), business (9.1%), and 1.2% were unemployed. The majority (91.6%) of the respondents were urban dwellers. Of these, 44.2% were from Delhi, followed by Haryana (20.5%), Uttar Pradesh (6.9%), Karnataka, and West Bengal (4.8%). Less than one-fifth (18.6%) of the study participants were from other states. The majority (79%) of the respondents were not healthcare professionals (Table 1).

| Characteristics               | N = 419 | Percentage (%) |
|-------------------------------|---------|----------------|
| **Age groups**                |         |                |
| ≤19 years                     | 41      | 9.8            |
| 20–29 years                   | 210     | 50.1           |
| 30–39 years                   | 49      | 11.7           |
| 40–49 years                   | 56      | 13.4           |
| ≥50 years                     | 63      | 15.0           |
| **Sex**                       |         |                |
| Male                          | 207     | 49.4           |
| Female                        | 212     | 50.6           |
| **Occupation**                |         |                |
| Student                       | 219     | 52.3           |
| Service (government + private)| 129     | 30.8           |
| Business                      | 38      | 9.1            |
| Unemployed                    | 5       | 1.2            |
| Others*                       | 28      | 6.6            |
| **Place of residence**        |         |                |
| Urban                         | 384     | 91.6           |
| Rural                         | 35      | 8.4            |
| Delhi                         | 185     | 44.2           |
| Haryana                       | 86      | 20.5           |
| Uttar Pradesh                 | 29      | 6.9            |
| Karnataka                     | 21      | 5.0            |
| West Bengal                   | 20      | 4.8            |
| Other states**                | 78      | 18.6           |
| **State of residence**        |         |                |
| Yes                           | 88      | 21             |
| No                            | 331     | 79             |

**TABLE 1: Sociodemographic characteristics of the study participants.**

*Homemakers, retired.

**Assam, Bihar, Gujarat, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Kerala, Lakshadweep, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttarakhand.

***Doctors, nurses.

The vaccination preference of the participants varied. Overall, 44.9% of the participants thought all of them were equally effective, 33.7% went with Covishield, 13.4% with Covaxin, and 6.4% with Sputnik. The majority (49.9%) of the participants relied on social media for information regarding COVID-19, 20.8% on newspapers, and 29.4% on television (Table 2).
### TABLE 2: Vaccination preference and the source of information regarding COVID-19 in the study population.

| Category                              | Subcategory  | N = 419 | Percentage (%) |
|---------------------------------------|--------------|---------|----------------|
| Preferred COVID-19 vaccine            | Covaxin      | 56      | 13.4           |
|                                       | Covishield   | 141     | 33.7           |
|                                       | Sputnik V    | 27      | 6.4            |
|                                       | All are effective | 188  | 44.9           |
|                                       | None of them are effective | 7   | 1.7            |
| The major source of information regarding COVID-19 | Newspaper | 87      | 20.8           |
|                                       | Social media | 209     | 49.9           |
|                                       | Television   | 123     | 29.4           |

**COVID-19:** coronavirus disease 2019

Out of all the participants, 9.8% suffered from hypertension, 7.2% from diabetes, 5.5% from hypothyroidism, and 4.5% from obesity (Table 3).

### TABLE 3: Preexisting comorbidities in the study population.

| Comorbidities                  | N = 419 | Percentage (%) |
|-------------------------------|---------|----------------|
| Diabetes                      | 30      | 7.2            |
| Hypertension                  | 41      | 9.8            |
| Hypothyroidism                | 23      | 5.5            |
| Obesity                       | 19      | 4.5            |
| Others*                       | 16      | 3.7            |
| Anxiety                       | 26      | 6.2            |
| Depression                    | 32      | 7.6            |
| Other mental health conditions** | 9      | 2.14           |

*Steroid use, asthma, patients on chemotherapy, polycystic ovarian disorder, heart problem.

**Attention-deficit hyperactivity disorder, bipolar disorder, complex post-traumatic stress disorder.

The mean FCS-19 score of the population was 18.29 ± 6.43 (SD). Participants with a history of COVID-19-related deaths in their family or surrounding areas had a significantly higher FCS-19 score than those without a history of COVID-19-related deaths. The mean FCS-19 score for healthcare professionals was also significantly lower than for other professions. FCS-19 scores were significantly higher among participants with psychiatric conditions than those without (Table 4).
Factors | Sub-factors | Mean FCS-19 score | P-value
--- | --- | --- | ---
Sex | Male | 18.63 | 0.291
| Female | 17.96 | 0.384
Area | Rural | 19.20 | 0.384
| Urban | 18.20 | 0.384
Death due to COVID-19 in the family or area | Yes | 18.82 | 0.037
| No | 17.48 | 0.342
Healthcare professional* | Yes | 16.42 | 0.002
| No | 18.79 | 0.342
Health insurance | Yes | 18.46 | 0.342
| No | 17.76 | 0.342
Comorbidity | Yes | 17.52 | 0.195
| No | 18.51 | 0.195
Psychiatric condition | Yes | 21.28 | 0.000
| No | 17.82 | 0.000
Employment status during the pandemic | Yes | 18.30 | 0.981
| No | 18.28 | 0.981
Smoking | Yes | 18.91 | 0.386
| No | 18.17 | 0.386

**TABLE 4: T-test analysis of various factors and their association with the mean FCS-19 score.**

*Doctors, nurses.

FCS-19: Fear of COVID-19 Scale; COVID-19: coronavirus disease 2019

**Discussion**

This study aimed to determine the level of fear of COVID-19 and its determinants in the Indian population by employing the FCS-19 scale. Specifically, the study investigated the association of the level of fear with various factors such as age, gender, presence of a comorbid condition, residential area, occupational status, smoking, and history of preexisting mental illnesses such as depression, anxiety, and bipolar disorder. Further, it was also analyzed whether any death in the family or neighborhood or occupation influenced the level of fear. Several studies have shown that the female gender is more predisposed to experience anxiety and various other forms of mental disorders [8-10]. In previous studies using the FCS-19 scale, some studies showed a positive association with the female gender [11] while others showed no association [12,13]. However, in our study, there was no significant association between the FCS-19 score and gender. This can be due to the timeframe in which the study was conducted. During this time, the cases had decreased, there was no state of emergency/lockdown, and the fear had subsided with the evolution of the pandemic across the last three waves. Research has shown that college students are generally more vulnerable to the impact of COVID-19 [14]. This study did not show a significant deviation in the score of students compared to other population segments, probably because of more urban participation, which included a more aware population regarding COVID-19 implications and vaccination. Several studies have shown a significant exacerbation of fear and anxiety among healthcare workers [15-19]. Our study has shown results contradicting the previous studies. The mean FCS-19 score of the healthcare workers was significantly lower compared to the remaining population. It might be due to the continuous exposure of the healthcare workers for the past two years to the COVID-19 pandemic and its ramifications that have led to desensitization to the fear and anxiety associated with their close work with infected patients. In addition, our research was conducted during a low infectivity period, and by this time, healthcare workers had adapted to the panic and fear and were duty-bound toward patient care. The primary source of information of the participant did not significantly impact the fear, which may be due to the lack of any significant difference between the information passed on by different platforms regarding COVID-19. However, a study showed...
that people who relied on news on television as a significant source of information had a greater level of fear and anxiety [12]. Smoking did not have any significant effect on the fear of COVID-19. However, one research that used the FCS-19 scale showed a positive association with smoking [20]. This can be due to the study design and tool, which limits participation from rural areas. The level of fear among participants with preexisting comorbid conditions was almost similar to those with no comorbid conditions, which shows that comorbidity does not increase the levels of fear in the study participants. However, some studies have shown that an underlying comorbid condition significantly impacts the outcome associated with the infection [21,22]. However, another study conducted at the beginning of the pandemic contradicts our findings, showing a positive association between underlying comorbidity and fear and anxiety [23]. History of pre-existing mental health illnesses (such as depression, anxiety, and bipolar disorder) is positively associated with FCS-19 scores. This is because the person is already in a more vulnerable state and in times of severe distress with high mortality occurring globally due to COVID-19 might have created a sense of insecurity and fear in an individual who is already at high risk. Various other studies have also shown that people with previous psychiatric illness history showed significant exacerbation with the onset of the pandemic, which was associated with aggravated fear [24-27].

This study was limited by the questionnaire being only available in English; thus, participation was limited to the English-comprehending section of the population. Along with this, there was a disproportionate level of participation from people residing in urban areas, which might have caused the study to show a decreased level of fear when compared to the ground level, as the urban population segment tends to be more aware and has access to better healthcare facilities compared to the rural segment. To avoid physical contact during the time of the pandemic, the participants were only recruited through online modes, which might have impacted the sample size of the study.

Conclusions

This study showed that having a preexisting mental health illness significantly impacted fear and can create an increased level of anxiety and a feeling of vulnerability in a person. Even though this study was conducted after the culmination of the second wave of COVID-19 in India, when cases had significantly dipped, the fear had not decreased in proportion to the cases and situation in participants with a preexisting mental health illness. Thus, a more thorough evaluation is needed in this population segment to recognize the impact of the pandemic on this vulnerable section, and more awareness among the general population not affected by any mental health illness to help the affected people around them in times of such uncertainty. The negative association of fear when the participant works in the healthcare sector shows that people in this sector have calmed down after the initial exponential increase in workload and unpredictability due to the lack of information about the novel COVID-19. This decrease in fear will probably lead to better patient management and handling of the situation. The decrease in fear shows the healthcare industry’s increased hold on the pandemic with declining cases and mortality across the globe.

Additional Information

Disclosures

Human subjects: Consent was obtained or waived by all participants in this study. Institutional Ethics Committee, Maulana Azad Medical College, New Delhi issued approval F.1/IEC/MAMC/87/05/2021/No. 523.
Animal subjects: All authors have confirmed that this study did not involve animal subjects or tissue.
Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following: Payment/services info: All authors have declared that no financial support was received from any organization for the submitted work. Financial relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. Other relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. COVID-19 public health emergency of international concern (PHEIC) global research and innovation forum . (2020). Accessed: June 5, 2022: https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-(pheic)-global-rese-
2. Kumar A, Nayar BK: COVID 19 and its mental health consequences. J Ment Health. 2021, 30:1-2. 10.1080/09638237.2020.1757052
3. Patra S, Patro BK: COVID-19 and adolescent mental health in India. Lancet Psychiatry. 2020, 7:1015. 10.1016/s2215-5066(20)30461-2
4. Banerjee DD: The other side of COVID-19: impact on obsessive compulsive disorder (OCD) and hoarding . Psychiatry Res. 2020, 288:112966. 10.1016/j.psychres.2020.112966
5. Venugopal VC, Mohan A, Chennabasappa LK: Status of mental health and its associated factors among the general populace of India during COVID-19 pandemic. Asia Pac Psychiatry. 2022, 14:e12412. 10.1111/appy.12412
6. Suryavanshi N, Kadam A, Dhimal G, et al.: Mental health and quality of life among healthcare professionals during the COVID-19 pandemic in India. Brain Behav. 2020, 10:e01837. 10.1002/brb3.1837
7. Ahorsu DK, Lin CY, Imani V, Safiari M, Griffiths MD, Pakpour AH: The Fear of COVID-19 Scale: development and initial validation. Int J Ment Health Addict. 2022, 20:1537-45. 10.1007/s11469-020-00270-
8. 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:e924609. 10.12659/MSM.924609

9. Gao J, Zheng P, Jia Y, et al.: Mental health problems and social media exposure during COVID-19 outbreak. PLoS One. 2020, 15:e0231924. 10.1371/journal.pone.0231924

10. Bühler A, Teufel M, Musche V, et al.: Increased generalized anxiety, depression and distress during the COVID-19 pandemic: a cross-sectional study in Germany. J Public Health (Oxf). 2020, 42:672-8. 10.1093/pubmed/fda3106

11. Reznik A, Gritsenko V, Konstantinov V, Khmanenka N, Izralowicz R: COVID-19 fear in Eastern Europe: validation of the Fear of COVID-19 Scale. Int J Ment Health Addict. 2021, 19:1905-8. 10.1007/s11469-020-02885-5

12. Wakashima K, Asai K, Kobayashi D, Koika K, Kamoshida S, Sakuraba M: The Japanese version of the Fear of COVID-19 scale: reliability, validity, and relation to coping behavior. PLoS One. 2020, 15:e0241958. 10.1371/journal.pone.0241958

13. Sakb N, Bhuiyan AK, Hossain S, et al.: Psychometric validation of the Bangla Fear of COVID-19 Scale: confirmatory factor analysis and Rasch analysis. Int J Ment Health Addict. 2020, 1-12. 10.1007/s11469-020-00289-x

14. Stangier U, Kananian S, Schüller I: Perceived vulnerability to disease, knowledge about COVID-19, and changes in preventive behavior during lockdown in a German convenience sample. Curr Psychol. 2021, 11, 9. 10.1007/s12144-021-01456-6

15. Lai J, Ma S, Wang Y, et al.: Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Netw Open. 2020, 3:e203576. 10.1001/jamanetworkopen.2020.3576

16. Alkhamees AA, Alrashed SA, Alzunaydi AA, Almohimeed AS, Aljohani MS: The psychological impact of COVID-19 pandemic on the general population of Saudi Arabia. Compr Psychiatry. 2020, 102:152192. 10.1016/j.comppsych.2020.152192

17. Labrague LJ, De Los Santos JA: COVID-19 anxiety among front-line nurses: predictive role of organisational support, personal resilience and social support. J Nurs Manag. 2020, 28:1653-61. 10.1111/jonm.15121

18. Xiao H, Zhang Y, Kong D, Li S, Yang N: The effects of social support on sleep quality of medical staff treating patients with coronavirus disease 2019 (COVID-19) in January and February 2020 in China. Med Sci Monit. 2020, 26:e923549. 10.12659/MSM.923549

19. Maunier R: The experience of the 2003 SARS outbreak as a traumatic stress among frontline healthcare workers in Toronto: lessons learned. Philos Trans R Soc Lond B Biol Sci. 2004, 359:1117-25. 10.1098/rstb.2004.1485

20. Nguyen HT, Do BN, Pham KM, et al.: Fear of COVID-19 Scale-associations of its scores with health literacy and health-related behaviors among medical students. Int J Environ Res Public Health. 2020, 17:4164. 10.3390/ijerph17114164

21. Kompaniyets L, Pennington AF, Goodman AB, et al.: Underlying medical conditions and severe illness among 540,667 adults hospitalized with COVID-19, March 2020-March 2021. Prev Chronic Dis. 2021, 18:E65. 10.5888/pcd18.210123

22. Guan WJ, Liang WH, Zhao Y, et al.: Comorbidity and its impact on 1590 patients with COVID-19 in China: a nationwide analysis. Eur Respir J. 2020, 55:640. 10.1183/13993003.00547-2020

23. Bunevicius I, Bunevicius R, Bagdonas S, Bunevicius A: Psychometric properties of the COVID-19 Fears Questionnaire for Chronic Medical Conditions in patients with pre-existing medical conditions. Health Soc Care Community. 2022, 30:e28664-73. 10.1111/hsc.13750

24. Chatterjee SS, Barikar C M, Mukherjee A: Impact of COVID-19 pandemic on pre-existing mental health problems. Asian J Psychiatr. 2020, 51:e102071. 10.1016/j.ajp.2020.102071

25. Rahman MA, Hoque N, Alif SM, et al.: Factors associated with psychological distress, fear and coping strategies during the COVID-19 pandemic in Australia. Global Health. 2020, 16:95. 10.1186/s12992-020-00624-w

26. Quadros S, Garg S, Ranjan R, Vijayasanthi G, Mamun MA: Fear of COVID-19 infection across different cohorts: a scoping review. Front Psychiatry. 2021, 12:708430. 10.3389/fpsyt.2021.708430

27. Taqert M, Luciano S, Geddes JR, Harrison PJ: Bidirectional associations between COVID-19 and psychiatric disorder: retrospective cohort studies of 62,354 COVID-19 cases in the USA. Lancet Psychiatry. 2021, 8:150-40. 10.1016/S2215-0366(20)30462-4