

# Apprehension and Stress Associated with Covid-19 Pandemic – A Population Based Study

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## ABSTRACT

**Introduction:** Public health outbreak due to communicable diseases may cause apprehension and fear in the population. Coronavirus disease (COVID-19) is one of the worst pandemics the world has seen in recent years, which might have caused apprehension and mental stress. It is prudent to explore the psychological implications associated with this highly infectious disease. However, there is a dearth in the literature regarding the nature and magnitude of psychological impact in the Indian population. Hence, the present study was conducted to assess the apprehension, fear and perceived stress related to the COVID-19 in the adult population.

**Methods:** We conducted a descriptive cross-sectional semi-structured questionnaire-based study. A total of 295 adults from different parts of India completed the online questionnaire. Psychological impact was assessed using two reliable and validated scales: the Fear of COVID-19 scale (FCV-19) and Perceived Stress Scale (PSS-10). The psychological impact was compared between respondents with positive and negative history of COVID-19 infection.

**Results:** The mean score for fear of COVID-19 was 20.28 (SD=5.536) in participants with a positive history of SARS-CoV-2 infection and 18.33 (SD=5.302) in COVID negative individuals, with a *p* value of 0.006. However, the mean value for the perceived stress score was 19.17 (SD=6.264) and 18.26 (SD=5.826) for COVID positive and negative participants, respectively. Female subjects had significantly higher fear than their male counterparts. Participants who were relatively younger and those with a positive history of SARS-CoV-2 infection in their family were found to have a significantly higher perceived stress.

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**Conclusion:** *The present study highlighted complex relationships between fear, stress and COVID-19. The COVID-19 pandemic was associated with fear and stress among women and relatively younger adults who participated in the study. So, along with older population, psychological support should also be provided to younger adults during the times of pandemic. This should be taken into account in programs aimed at preventing and alleviating the psychological impact.*

**Keywords:** COVID-19, pandemic, FCV-19S, PSS-10.

## INTRODUCTION

The World Health Organisation (WHO) had declared the outbreak of novel coronavirus disease (COVID-19) a public health emergency of international concern on 30 January 2020, and a pandemic on 11 March 2020 (1). COVID-19 is an infectious disease caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), that can rapidly spread among humans. Coronavirus is a member of the Coronaviridae family which can infect humans, causing a wide range of diseases from common cold to severe illnesses which may be fatal.

The most common symptoms associated with COVID-19 are fever, cough, headache, body ache, breathing difficulty, expectoration, altered smell and taste sensation, myalgia or fatigue. COVID-19 affects the lung primarily and chest computed tomography (CT) findings show characteristics dense, ground-glass opaque structures such as the presence of multiple lesions in lung lobes that occasionally coexist with consolidation shadows (2).

More than a year since COVID-19 was declared a pandemic, the deadly SARS-CoV-2 continues to disrupt public life across the world. India experienced a deadly second wave surge of the virus, which had a heavy impact on the local population as the number of cases and mortality *per day* had increased dramatically. For India, the first and second waves were separated by about five months. The peak of the first wave was in September 2020, with around 0.1 million cases *per day*. The number of daily cases decreased until mid-February 2021, after which it exhibited a sharp increase. In the second wave, the number of new cases reached a peak in May 2021, with more than 0.4 million cases *per day*, which was more than four times of the first peak value. The number of daily cases is again showing

a descending trend, which may be due to increased vaccination and effective response measures.

Due to the lack of effective treatments for COVID-19, several protective measures, including self-isolation, wearing of mask, following social distancing guidelines, refraining from social interaction, and partial or complete lockdown, have been recommended to inhibit the spread of the virus. These strict measures resulted in isolation, disruption of daily life activities, financial problems etc, which had a negative effect on psychological wellbeing (3, 4). This has led to sadness, worry, fear, anger, annoyance, frustration, helplessness, loneliness and nervousness associated with poor mental and physical health, which may have increased the likelihood of common mental disorders, substance abuse and cognitive decline (5, 6). Diminished physical activity because of home isolation may increase a wide range of negative cardio-metabolic and mental effects (7).

The situation of Indian people who have been severely affected by the pandemic is particularly alarming. In the current pandemic crisis, assessing the level of apprehension, fear and stress and any possible correlation with age, gender, marital status, body mass index (BMI), profession, personal or family history of past SARS-CoV-2 infection in the population can be of great strategic value to help alleviate this illness now and prevent it in the future. □

## MATERIALS AND METHODS

The present study was a cross-sectional study conducted between 12 and 18 June 2021, during the second surge period of COVID-19. When this study was conducted, the second wave was in progress and the lockdown period was ongoing. Hence, participants were contacted through social media platforms such as

WhatsApp, Facebook, email, etc. A semi-structured questionnaire was made on Google form, with links to it being circulated to the target population, and 295 complete responses were received from various parts of India.

The present study was conducted after taking approval from the Institutional Ethical Committee of Mahatma Gandhi Medical College & Hospital, Jaipur, India. Participants had to give their informed consent to participate in the study before proceeding to complete the questionnaire. The questionnaire had four sections. The first one was the introductory section, containing information about the nature of the study, eligibility of participation, voluntary nature of participation and assurance of participants' confidentiality. The second section regarded the socio-demographic profile, comprising age, gender, height, weight, marital status, living with family or alone, profession, personal or family history of SARS-CoV-2 infection. The third section comprised the scale for fear of COVID-19 (FCV-19S), while the last section included the perceived stress scale-10 (PSS-10). All questions of the last two sections were compulsory, while some of the questions in the socio-demographic section were optional. Those who had a positive result for RT-PCR, rapid antigen test, high-resolution computed tomography (HRCT) scan, being considered the subjects who had suffered from COVID-19. The BMI was calculated using weight and height. People aged 18 years and above were included in the study. Persons who were either diagnosed with any psychiatric illness or taking long term psychiatric medication were excluded from the study.

The Fear of COVID-19 scale (FCV-19S) consists of seven item which assess individual fear towards COVID-19 (8). The FCV-19S has been found to be a psychometrically reliable and valid tool to assess the fear of COVID-19 in different populations (9). Participants indicated their level of agreement with the statements using a five-item Likert type scale. Answers included "strongly disagree," "disagree," "neither agree nor disagree," "agree," and "strongly agree". The minimum score possible for each question is 1, and the maximum 5. A total score is calculated by adding up each item score (ranging from 7 to 35). The higher the score, the greater the fear of coronavirus-19.

The 10-item Perceived Stress Scale (PSS-10) is a classical self-reported stress assessment tool. The tool, developed in 1988 by Cohen, is widely used for assessing how various situations affect our feelings and our perceived stress (10). Questions in this scale ask about personal feelings and thoughts during the last month. The scale includes two categories of questions: 1) negatively phrased questions (*i.e.*, question numbers 1, 2, 3, 6, 9 and 10), and 2) positively phrased questions (*i.e.*, question numbers 4, 5, 7 and 8). Participants rate their level of perceived stress on a five-point Likert scale (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, and 4 = very often). Positively phrased questions were scored in a reversed order to obtain the total score. The total score of the PSS-10 ranged between 0 and 40. A higher score indicated a higher level of perceived stress. Previous studies showed that PSS-10 had a high internal consistency and it was negatively associated with mental health in Chinese adults (11, 12).

#### Statistical analysis

Data was collected via questionnaire using Google forms. Analysis was done using Google spreadsheet and SPSS-22. It included percentages, chi-square test. Categorical variables were reported as numbers and percentage, and continuous variables as mean and standard deviation (SD). Inter-group comparison has been performed using X<sup>2</sup>- test for categorical variables, non-parametric Student t-test/Kruskal-Wallis test for continuous variable, and p value ≤ 0.05 was considered statistically significant. □

## RESULTS

A total of 295 complete responses were received and analysed. Out of the total respondents, 183 (62.04%) were aged 24 or less. Most of the participants were male 179 (60.68%) and unmarried 226 (76.61%). Most of the respondents were living with their families 259 (87.8%), out of which 78 (26.44%) had a history of being infected with SARS-CoV-2. Also, 129 (43.73%) subjects had a family history of COVID-19. In terms of profession, 60.68% of all participants were students, out of which 24% were COVID-19 positive. 191 (64.74%) of total participants had normal BMI values, with 40

TABLE 1. Sociodemographic characteristics of participants (n = 295)

Variables	Sub variables	Frequency (n)	Positive history of SARS-CoV-2 infection	Negative history of SARS-CoV-2 infection	P value
Age (years)	≤ 24 years	183	43 (23.5%)	140 (76.5%)	0.174
	> 24 years	112	35 (31.2%)	77 (68.8%)	
Gender	Male	179	48 (26.8%)	131 (73.2%)	0.893
	Female	116	30 (25.9%)	86 (74.1%)	
Marital status	Married	69	22 (31.9%)	47 (68.1%)	0.275
	Single	226	56 (24.8%)	170 (75.2%)	
Living with	Family	259	73 (28.2%)	186 (71.8%)	0.072
	Alone/ non- family	36	5 (13.9%)	31 (86.1%)	
Profession	Professionals	85	24 (28.2%)	61 (71.8%)	0.371
	Technicians & associate professionals	31	11 (35.5%)	20 (64.5%)	
	Students/ unemployed	179	43 (24%)	136 (76%)	
Body mass index (BMI)	< 18.5	21	5 (23.8%)	16 (76.2%)	0.013
	18.5 – 24.99	191	40 (20.9%)	151 (79.1%)	
	25 – 29.99	72	28 (38.9%)	44 (61.1%)	
	≥ 30	11	5 (45.5%)	6 (54.5%)	

Variables	Positive history of SARS-CoV-2 infection (n= 78)	Negative history of SARS-CoV-2 infection (n= 217)	P value
	Mean ± SD	Mean ± SD	
Age (years)	27.19 ± 9.764	25.24 ± 8.130	0.086
BMI	24.350 ± 3.789	23.129 ± 3.501	0.010
FCV-19 scale score	20.28 ± 5.536	18.33 ± 5.302	0.006
PSS-10 score	19.17 ± 6.264	18.26 ± 5.826	0.250

TABLE 2. Relation of the variables with history of SARS-CoV-2 infection

(20.9%) of them having positive history of SARS-CoV-2 infection (Table 1).

According to the results, subjects with a positive history of SARS-CoV-2 infection had a mean age of  $27.19 \pm 9.764$ , while those with a negative history had mean age of  $25.24 \pm 8.130$ , with a p value of 0.086. The mean BMI of participants showed a statistically significant p value difference ( $p= 0.010$ ) between those with positive and negative history of SARS-CoV-2 infection, respectively. In subjects with a positive history of SARS-CoV-2 infection, the p value was

statistically significant ( $p=0.006$ ) for the FCV-19 scale but statistically non-significant ( $p=0.250$ ) for the PSS-10 (Table 2).

Statistical analysis showed that the mean score for FCV-19 scale had a significant relationship with female participants, those living with their families and subjects who had a positive history of SARS-CoV-2 infection, with a p value of 0.037, 0.004 and 0.006, respectively. Participants who were relatively younger, those with a positive family history of SARS-CoV-2 infection and subjects who were unemployed showed a

TABLE 3. Correlation between demographic variables and mental health

Variables		FCV-19 scale score		PSS-10 score	
		Mean ± SD	P value	Mean ± SD	P value
Age group	≤ 24 years	18.89 ± 5.403	0.879	19.14 ± 5.792	0.018
	> 24 years	18.79 ± 5.483		17.46 ± 6.074	
Gender	Male	18.32 ± 5.436	0.037	18.09 ± 5.790	0.145
	Female	19.66 ± 5.326		19.13 ± 6.155	
Marital status	Married	19.54 ± 5.609	0.229	17.91 ± 6.041	0.348
	Unmarried	18.64 ± 5.362		18.68 ± 5.921	
Living status	Family	19.19 ± 5.359	0.004	18.48 ± 5.896	0.883
	Alone/ non-family	16.42 ± 5.342		18.64 ± 6.393	
History of SARS-CoV-2 infection	Positive	20.28 ± 5.536	0.006	19.17 ± 6.264	0.250
	Negative	18.33 ± 5.302		18.26 ± 5.826	
Family history of SARS-CoV-2 infection	Positive	19.15 ± 5.303	0.404	19.54 ± 5.855	0.008
	Negative	18.61 ± 5.521		17.69 ± 5.910	
Body mass index (BMI)	< 18.5	19.00 ± 5.225	0.164	18.48 ± 6.266	0.914
	18.5- 24.99	18.59 ± 5.366		18.66 ± 5.987	
	25- 29.99	19.86 ± 5.585		18.22 ± 6.128	
	≥ 30	16.45 ± 5.184		17.64 ± 3.443	
Profession	Professionals	19.34 ± 5.417	0.265	17.86 ± 5.710	0.029
	Technicians & associate professionals	17.48 ± 5.085		16.42 ± 5.841	
	Student/ unemployed	18.85 ± 5.473		19.17 ± 5.991	

positive correlation with the PSS-10 score, with statistically significant p value of 0.018, 0.008 and 0.029, respectively (Table 3). □

### DISCUSSION

The main idea of this research study was to assess the level of apprehension, fear and stress among the Indian population during the second wave of COVID-19 pandemic, which has jeopardised human lives. The present study tried to explore any possible correlation between the level of stress and fear with demographic parameters.

It is not surprising that the mass media is still flooded by news about COVID-19, as the virus spreads quickly and uncertainties still exist about its course and treatment. Due to this, people are likely to be apprehensive and may feel frightened and stressed by COVID-19. The fear or stress may be related to contracting the infection, hospitalisation or death of themselves or their family members (13).

The study results showed that the mean BMI values of participants with positive history of SARS-CoV-2 infection were statistically higher than those with negative history; this is in line

with a previous study conducted in Korea by Jung *et al*, which revealed that higher BMI values were associated with an increased risk of contracting SARS-CoV-2 infection (14). The data further suggests that significantly higher fear exists among respondents with a positive history of SARS-CoV-2 infection. The study highlighted that perceived stress among subjects with a positive history of COVID-19 was higher but statistically non-significant.

The present study revealed that fear and perceived stress due to COVID-19 was higher in the relatively younger age group (18-24 year), with a statistically significant PSS-10 score, which may be associated with their future concern or feeling that they have spent little of their life span. In the female population, a significantly higher level of fear regarding COVID-19 was observed, thus supporting the findings from studies carried out by Huang and Zhao (15) and Sandín *et al* (16). The perceived stress related to COVID-19 was also found to be higher but non-significant in female subjects as compared to their male counterparts. Our results are consistent with those from studies by Wang C *et al* (17) and Mazza C *et al* (18), which concluded that women and younger age group individuals were more susceptible to stress. Previous studies imply that women suffer from more post-traumatic stress due to higher brainstem activation to deal with the impending stimuli, while in men greater hippocampal activation increases their ability to handle the stimuli (19, 20). Our finding was contrary to that of a previous study by Banerjee D, which reported a deterioration of older subjects' mental health due to COVID-19 (21).

Married participants and those living with their families had a higher level of fear but a lower perceived stress, while unmarried subjects and those living alone had less fear but a higher perceived stress. This may be related to the increased support and care from the family members during the pandemic. This finding was in

line with previous studies from China, which suggested that family support was important during the time of crisis (22, 23).

Participants who had a personal or family history of SARS-CoV-2 infection showed a higher level of fear and perceived stress regarding COVID-19 than those with a negative history; this is consistent with recent studies showing that health care workers and people with a personal or family history of SARS-CoV-2 infection were more susceptible to psychological disorders (17, 18, 24). □

## CONCLUSION

The present study investigated the association of coronavirus pandemic with the mental health status and well-being among the adult population of India. The findings of this study indicate that COVID-19 pandemic not only led to loss of life and wealth, but it also had a long lasting adverse impact on mental health. The present study highlights the psychological challenges faced by the Indian population due to the current pandemic. Community based strategies, counselling including self-relaxation and self-care may be emphasized to support susceptible population. The media should also be involved in increasing the awareness about the psychological aspect during pandemics and highlighting the importance of seeking help and engaging in physical activity. Furthermore, it is crucial that health care professionals be sensitised about the need to identify these high-risk populations, which should receive adequate support from governments and policy makers. The findings of the present study may be the tip of the iceberg and there is a need for further studies involving larger populations, including adolescents and children as well. □

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