Annals of Psychiatric Research
An official journal of Indian Psychiatric Society, Rajasthan Chapter

ORIGINAL RESEARCH ARTICLE
p-ISSN: 2455-6599
Doi: 10.70468/aopr.v03.i1.04

Fear of COVID-19 and Its Correlation with Anxiety in Medical Undergraduate Students

Vikas Gaur[1*], Gaurav Purohit[2]

[1]*Jaipur National University Institute of Medical Sciences and Research Center, Jaipur, Rajasthan, India.*
[2]*Geetanjali Medical College and Hospital, Udaipur, India.*

Abstract

Background: During the current coronavirus disease (COVID-19) pandemic, medical students are considered a psychologically vulnerable group. This study aimed to assess the level of COVID-19 fear and anxiety among undergraduate medical students.

Materials and methods: Two hundred and sixty-seven undergraduate medical students were assessed using the Fear of COVID-19 (FCV-19S) and Generalized Anxiety Disorder-7 (GAD-7) scales.

Results: The participants comprised 144 (52.88%) male and 123 (47.12%) female students, with a mean age of 19.94 ± 1.38. The mean score for the FCV-19S scale was 18.29 ± 5.81, while the mean score for the GAD-7 scale was 5.86 ± 4.80. Using a cut-off point score of 16.5 for the FCV-19S, 159 (59.55%) students showed elevated fear of COVID-19 infection. A total of 88 (32.96%) students suffered from mild anxiety, 38 (14.23%) from moderate anxiety, and 16 (5.99%) from severe anxiety. A significant association was observed between fear of COVID-19 and anxiety symptoms (correlation coefficient = 0.541, 95% CI 0.451-0.621, P <0.001).

Conclusion: The fear of COVID-19 infection is very high among medical students and is significantly related to anxiety.

ARTICLE INFO

Correspondence:
Vikas Gaur
Gaur:drvikasgaur@gmail.com
Jaipur National University Institute of Medical Sciences and Research Center, Jaipur, Rajasthan, India.

Dates:
Received: 01-08-2025
Accepted: 14-09-2025
Published: 09-10-2025

Keywords:
Coronavirus, COVID-19, Medical students, Anxiety, Fear.

How to Cite:
Gaur V, Purohit G. Fear of COVID-19 and Its Correlation with Anxiety in Medical Undergraduate Students. Annals of Psychiatric Research. 2025;3(1): 15-20

Introduction

A novel coronavirus (2019-nCoV) was identified in Wuhan, China. Since then, it has rapidly spread across the globe, causing outbreaks of acute infectious pneumonia[1] Numerous public health measures, such as nationwide lockdowns, quarantine, and social distancing, had to be implemented to curb the spread, but these approaches have adverse effects on people's mental health. In addition, various myths and misinformation, often driven by erroneous news reports and the public's misinterpretation of health messages, cause fear among people.[2-4]

According to literature, university students may experience significant psychological problems such as anxiety, fear, worry and depression during public health emergencies.[5]

The pandemic has imposed an enormous burden on governments to meet the healthcare demands of their respective countries. As a result, most affected

Table 1 : Socio-demographic characteristics of the study population

Variable	*Total (N = 267)*	*FCV-19S Score*
	Frequency	*Mean ± SD*
Age (Years)		19.94 (1.37)
18 – 19	111(41.57)	18.27 (6.20)
20-21	118(44.19)	18.08(5.64)
>21	33(12.36)	18.97(5.31)
	Sex	
Female	123 (47.12)	18.96 (5.33)
Male	144 (52.88)	17.77 (6.20)
	Academic Year	
First MBBS	142 (53.18)	18.28 (6.03)
Second MBBS	57 (21.35)	18.49 (5.44)
Third MBBS	68 (25.47)	18.25 (5.83)
	COVID-19 Diagnosis	
No	108 (40.45)	12.46 (2.78)
Yes	159 (59.55)	22.30 (3.57)
	Fear of COVID-19 infection FCV -19S > 16.5	
No	108 (40.45%)	12.46 (2.78)
Yes	159 (59.55%)	22.30 (3.57)
	Severity of Anxiety	
None	125 (46.82)	15.56 (5.26)
Mild	88(32.96)	19.48 (4.79)
Moderate	38 (14.23)	22.05 (3.86)
Severe	16 (5.99)	24.62 (7.50)

SD-Standard Deviation

Table 2 : Anxiety levels and fear of COVID-19 infection in medical undergraduates

Anxiety (GAD-7 Score ≥10)	*Total Participants (n=267)*	*FCV-19S Score*	*t*	*df*	*P*
No	213(79.78)	17.18 (5.42)	-6.86	265	<0.001
Yes	54(20.22)	22.81 (5.26)			

Table 3 : Correlation between fear of COVID-19 infection (FCV-19S score) and anxiety (GAD-7 Score) in medical undergraduates

Variable	Pearson's correlation coefficient (r)	P
Fear of COVID-19 infection Anxiety	0.541	<0.001

Table 4 : Binomial logistic regression analysis with fear of COVID-19 infection as dependent variable, and, age, education, sex, COVID-19 diagnosis and anxiety severity as independent variables in medical undergraduates

Variables	*Odds ratio (OR)*	*95% CI (lower-upper)*	*P*
Age	1.040	0.44 – 2.40	0.931
Sex	0.566	0.32 – 0.99	0.009*
Academic Year	1.010	0.64 – 1.59	0.959
COVID-19 Diagnosis	1.230	0.62 – 2.42	0.145
Severity of Anxiety	4.260	2.74 – 6.62	<0.001**

*P<0.05, **P<0.001

countries were forced to mobilize and reallocate resources in response to the emergency situation.[6-8] A major response to this crisis has been a call for volunteers to help. Medical students, as future healthcare professionals, have been studied in this regard. Some hospitals have been skeptical about the involvement of students in any clinical activities, while others have allowed students to stay and work. The instability of this global emergency has left medical students facing ethical and practical dilemmas that have never been previously considered, thus impacting their mental health[9,10] Medical students are recognized as a high-risk group for developing stress and anxiety during their daily life as compared to general population, a study on impact of SARS on medical students has shown high level of fear and anxiety during epidemic.[11]

Although interlinked, a distinguishing feature between fear and anxiety is the nature of the perceived threat itself. The fear is related to a known or imminent threat, whereas anxiety is mainly related to an unknown threat or to the anticipation of future threats, generalized in nature.[12]

In this study, we aimed to determine the level of COVID-19 fear among undergraduate medical students and assess its relationship with socio-demographic and clinical factors such as age, gender, education, anxiety symptoms, and COVID-19 diagnosis. We also evaluated the relationship between fear of COVID-19 and associated anxiety levels. To the best of our knowledge, no study has attempted to assess fear of COVID-19 infection, especially among recovered medical students, which makes our study the first in India to evaluate this aspect of the current pandemic.

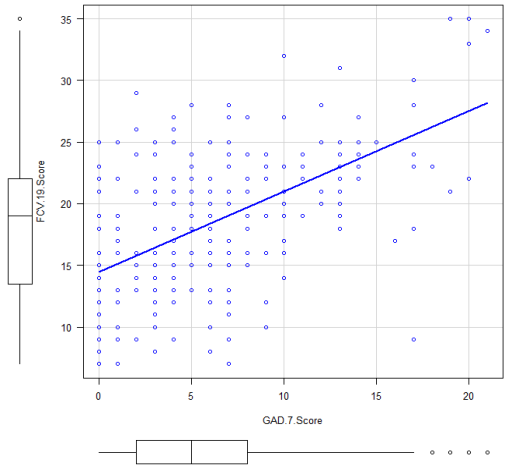

Figure 1 : Correlation between anxiety (GAD-7 score) and fear of COVID-19 infection (FCV-19S score) in medical undergraduates

Materials and Methods

The Institutional Research Ethics Committee approved this cross-sectional online study. In this study, a four-page Google form was constructed, consisting of questions related to socio-demographic information, past history of psychiatric disorder, COVID-19 infection, Generalized Anxiety Disorder-7 (GAD-7) scale, and assessment of fear in COVID-19 (FCV-19) scale. A specially designed section to inform participants and obtain informed consent was added at the beginning of the Google Form. All students pursuing MBBS were eligible to participate in this study. Students who were already suffering from or had suffered from any psychiatric disorder were excluded.

The link to the form was shared via various social media channels and online chat groups of the

medical college to reach the medical students. It was mandatory to answer all questions, and logging in with a Google account was also mandatory to save the form. Total of 281survey forms were collected from 1st May 2021 to May 7, 2021, of which 267 students consented to participate in the study and were analyzed further.

The GAD-7 score was calculated by assessing the responses to seven general questions, with a score of 0-4 taken as no to minimal anxiety, a score of 5-9 taken as mild anxiety, a score of 10-14 taken as score for moderate anxiety, and score of 15-21 for severe anxiety, respectively. A score of 10 or greater than 10 has a specificity of 82% and a sensitivity of 89% for the diagnosis of GAD.[13]A dichotomous variable was created out of the total GAD-7 using the cut-off point of 10 to assess anxiety

The score for the assessment of the fear in COVID-19 scale ranges from 7-35, minimal score of 7 and a maximum of 35, by assessing seven general questions. A score of 16.5 or greater was considered the cut-off for determining COVID-19 fear. A dichotomous variable was created from the total COVID-19 fear scale using a cut-off point of 16.5 to distinguish elevated from normal fear. [14,15]

Data analysis

The data obtained were analyzed using descriptive and inferential statistical methods. Qualitative variables were analyzed using the chi-square test. The mean and standard deviation of quantitative variables were calculated and analyzed using Student's t-test. A correlation analysis was performed, and the correlation coefficient was calculated. Binomial logistic regression analysis with fear of COVID-19 infection as the dependent variable, and age, education, sex, COVID-19 diagnosis, and anxiety severity as independent variables in medical undergraduates. P <0.05 was considered statistically significant at a 95% confidence level.

Results

This study was conducted among 267 COVID-19 undergraduate medical students studying in a medical college. The sample comprised 144 (52.88%) male and 123 (47.12%) female participants with a mean age of 19.94 ± 1.37 years. The number of participants who were COVID-19 positive was 64 (23.97%), whereas 203 (76.03%) had never been diagnosed with COVID-19 (Table 1).

The mean score for the Fear of COVID-19 scale (FCV-19S) among all participants was 18.31(±5.84). The FCV-19S mean score of COVID-19-infected students was 18.31 (±5.91), whereas it was 18.66 (±5.64) in the non-infected participants (Table 1).

Using a cut-off point score of 16.5 for FCV-19S, 165 (59.35%) of students were classified as cases with elevated fear of COVID-19 infection, with a mean score of 22.30 (±3.57); on the other hand, students having normal fear of COVID-19 infection had a mean score of 12.46 (±2.78). Eighty-eight (32.96%) students reported mild anxiety, 38 (14.23%) reported moderate anxiety, and 16 (5.99%) reported severe anxiety.

As shown in Table 2, using a cut-off score of **≥**10 GAD-7 score, 54 (20.22%) students reported significant anxiety symptoms with a mean FCV-19S score of 22.81 (±5.26), whereas 213 (79.78%) students with no significant clinical anxiety score had a mean FCV-19S score of 17.18 (±5.42). The difference was statistically significant. A significant correlation was observed between the presence of anxiety symptoms and elevated fear of COVID-19 scores (Table 3 and Figure 1)

To explore how individual factors influenced fear of COVID-19 infection, binomial logistic regression analysis was performed. Sex (OR=0.56; CI=0.44–2.40) and severity of anxiety (OR = 4.26; CI = 2.74–6.62) acted as determinants in the occurrence of fear of COVID-19 infection.

Discussion

The consequences of COVID-19 have been considerable, causing fear, anxiety, and worry, particularly due to the precariousness of its prognosis, changes in lifestyles, lockdown restrictions, and educational disruptions.

The psychological impact on university students is especially burdensome due to disturbance in studies, and with medical students in particular, it is possibly due to the distinct nature of their training and the increased risk of exposure to the virus during clinical postings. Ferriera et al., reported intense fear of having COVID-19 in half of their study population.

In their study, 85.7% of the respondents feared transmitting the virus, and 87.8% feared dying from COVID-19. Another reason was related to economic losses during the pandemic.[16]

Tan et al. conducted a study assessing fear of COVID-19 in medical students and the factors associated with it. As per this study, the mean score on FCV-19S scale was 17.1.[17] This is consistent with the findings of our study, where the mean score was 18.31, suggesting elevated fear.

In this study, no significant impact of age and academic year was found on fear levels due to COVID-19. This is in contradiction to the findings of a study that reported lower scores in the higher age group and academic year. A possible explanation for this is that the study population comprised students in a higher age group.[15]

While comparing male and female medical students, elevated FCV-19S scores were observed in both groups, and the difference was statistically significant (OR=0.56; CI=0.44 – 2.40, $p < 0.001$), which was in contrast with the findings of the study by Ahorsu et al.[14] In two other studies, one by Tan et al. and the other by Nyugen et al. [17,15], significantly higher scores were seen in females than in males, in resonance with the findings of this study.

In the present study, a previous COVID-19 previously showed no significant impact on the FCV-19S score. Elevated scores were observed in both groups, irrespective of the previous COVID-19 diagnosis. Only one previous study has addressed this aspect. It revealed lower mean FCV-19S scores in previously infected participants than in non-infected participants.17 Due to the paucity of literature, we could not provide a strong argument to support the findings of our study. This may be related to cultural myths that once infected, a person develops antibodies, and hence the chances of getting reinfection are less.

Loh et al, in their study during the 2003 SARS epidemic, found increased levels of anxiety in undergraduate medical students, which they attributed to 'health anxiety'- a phenomenon seen in medical students. These students had excessive anxiety about their health, which often leads to frequent requests for medical consultations and sometimes, needless investigations.[18]

As indicated by a study conducted using the GAD-7 scale in the UAE, more than two-thirds of students reported mild anxiety levels, and one-third reported severe anxiety. [19] Our findings were consistent with those of this study.

According to Nikopoulou et al., a high positive correlation between fear of COVID-19 (assessed by FCV-19S) and anxiety (assessed by GAD-7) was found. However, their study was based on the general population. [12] In our study, a significant correlation was also found between elevated levels of fear due to COVID-19 and anxiety symptoms among medical students. Our study also suggests that elevated levels of fear are related to the severity of anxiety symptoms. This strong relationship between the FCV-19S scale and anxiety has been demonstrated in recent studies.[12,20]

This study has certain limitations. First, the study included a modest number of participants, thereby restricting the statistical power. Second, participants were chosen using the convenience sampling method at a single center, which may limit the generalization of these findings because of sampling bias. Third, self-reporting of fear and anxiety symptoms by participants was another important limitation, as there might be a discrepancy between the actual responses given to the real picture, which could potentially lead to inaccuracies in the information that has been reported.

Conclusion

Screening medical students regularly with tools such as the FCV-19S and GAD-7 could help faculty in the early identification of highly anxious students and guide students to receive help from targeted interventions that promote psychological well-being, mental health support, and coping mechanisms.

References

1. Bao Y, Sun Y, Meng S, Shi J, Lu L. 2019-nCoV epidemic: address mental health care to empower society. The Lancet. 2020 Feb 22;395(10224):e37-8.
2. Barkur G, Vibha GB. Sentiment analysis of nationwide lockdown due to COVID-19 outbreak: Evidence from India. Asian journal of psychiatry. 2020 Jun;51:102089.
3. Armitage R, Nellums LB. COVID-19 and the consequences of isolating the elderly. The Lancet Public Health. 2020 May 1;5(5):e256.
4. Okunlola MA, Lamptey E, Senkyire EK, Dorcas S, Dooshima BA. Perceived myths and misconceptions

about the novel COVID-19 outbreak. SciMedicine Journal. 2020 Sep 1;2(3):108-17.
5. Savage MJ, James R, Magistro D, Donaldson J, Healy LC, Nevill M, Hennis PJ. Mental health and movement behaviour during the COVID-19 pandemic in UK university students: Prospective cohort study. Mental Health and Physical Activity. 2020 Oct 1;19:100357.
6. Gallagher TH, Schleyer AM. "We signed up for this!"—student and trainee responses to the Covid-19 pandemic. New England Journal of Medicine. 2020 Jun 18;382(25):e96.
7. Bauchner H, Sharfstein J. A bold response to the COVID-19 pandemic: medical students, national service, and public health. Jama. 2020 May 12;323(18):1790-1.
8. Fisher D, Wilder-Smith A. The global community needs to swiftly ramp up the response to contain COVID-19. Lancet (London, England). 2020 Apr 4;395(10230):1109.
9. Ostrov BF, Healthline C. In face of coronavirus, many hospitals cancel on-site training for nursing and med students. KHN: Kaiser Health News. 2020.
10. *AAMC press conferences ON Coronavirus (COVID-19)*. AAMC. (2020, May 8). https://www.aamc.org/coronavirus/aamc-press-conferences-coronavirus-covid-19.
11. Klasen JM, Vithyapathy A, Zante B, Burm S. "The storm has arrived": the impact of SARS-CoV-2 on medical students. Perspectives on medical education. 2020 Jun;9:181-5.
12. Nikopoulou VA, Holeva V, Parlapani E, Karamouzi P, Voitsidis P, Porfyri GN, Blekas A, Papigkioti K, Patsiala S, Diakogiannis I. Mental health screening for COVID-19: a proposed cutoff score for the Greek version of the fear of COVID-19 scale (FCV-19S). International Journal of Mental Health and Addiction. 2020 Nov 10:1-4.
13. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Archives of internal medicine. 2006 May 22;166(10):1092-7.
14. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The fear of COVID-19 scale: development and initial validation. International journal of mental health and addiction. 2020 Mar 27:1-9.
15. Nguyen HT, Do BN, Pham KM, Kim GB, Dam HT, Nguyen TT, Nguyen TT, Nguyen YH, Sørensen K, Pleasant A, Duong TV. Fear of COVID-19 scale—associations of its scores with health literacy and health-related behaviors among medical students. International Journal of Environmental Research and Public Health. 2020 Jan;17(11):4164.
16. Ferreira LC, Amorim RS, Melo Campos FM, Cipolotti R. Mental health and illness of medical students and newly graduated doctors during the pandemic of SARS-Cov-2/COVID-19. PloS one. 2021 May 18;16(5):e0251525.
17. Tan B, Ay B, Ozdemir J, Caliyurt O. Fear of COVID-19 among medical students and associated factors. Turkish Medical Student Journal. 2021:13-6.
18. Loh LC, Ali AM, Ang TH, Chelliah A. Impact of a spreading epidemic on medical students. The Malaysian journal of medical sciences: MJMS. 2005 Jul;12(2):43.
19. Saddik B, Hussein A, Sharif-Askari FS, Kheder W, Temsah MH, Koutaich RA, Haddad ES, Al-Roub NM, Marhoon FA, Hamid Q, Halwani R. Increased levels of anxiety among medical and non-medical university students during the COVID-19 pandemic in the United Arab Emirates. Risk management and healthcare policy. 2020;13:2395.
20. Harper CA, Satchell LP, Fido D, Latzman RD. Functional fear predicts public health compliance in the COVID-19 pandemic. International journal of mental health and addiction. 2020 Apr 27:1-4.