The International Journal of
INDIAN PSYCHOLOGY

Comparative Study

Corona: Is Still Not Yet Over! Psychological Effects on Undergraduate Medical Students at The Entry-Level; A Gender-Based Comparative Study

Gururaj GP[1]*, Veninirudya K.[2]Dr. Manoranjitha V.[3]

ABSTRACT

Corona pandemic negatively affects undergraduate (UG)medical students with the increased prevalence levels of anxiety and stress and unaltered depression symptoms. Aims & objectives identify the Corona stress levels of UG students within the first two months of reporting to the campus and find any association of stress levels based on Gender. We conducted this cross-sectional study on all the 150 first-year Competency-based medical education (CBME)medical students batch of Sri Devaraj Urs Medical College, rural district of Kolar. We researched within their first two months of reporting to the campus when the institute's in-person teaching commenced. We excluded the students with a history of undergoing treatment with psychotropics or psychotherapy/counseling for any underlying stress. After obtaining approval from the Institutional Ethics Committee and their written informed consent, all the students filled in their basic socio-demographic and background details. Later, the main instrument for the study's objective, the Corona stress scale with slight modifications to suit our rural lower socio-economic community, was filled by all the students. Females had statistically more stress than males in the domains of danger subscale (p=0.005), social-economic consequences subscale(p=0.001), contamination subscale (p-0.008), compulsive checking subscale(p-0.039), and the overall global corona stress scale(p=0.001). There were no differences in stress scores based on the domicile and zonal status of the students, along with their current relationship status. Medical students suffer from various forms of anxiety disorders during this pandemic situation. It is pertinent to evaluate and address these issues before their early entry into the clinical postings as per their CBME (Competency-based medical education) curriculum.

Keywords: Medical Students, Gender, Religion, The Stress of Corona

[1]Associate Professor, Department of Psychiatry, Sri Devaraj Urs Academy of Higher Education and Research (SDUAHER), Kolar, Karnataka, India
[2]Postgraduate student, Department of Psychiatry, Sri Devaraj Urs Academy of Higher Education and Research (SDUAHER), Kolar, Karnataka, India
[3]Postgraduate student, Department of Psychiatry, Sri Devaraj Urs Academy of Higher Education and Research (SDUAHER), Kolar, Karnataka, India
*Corresponding Author

Corona: Is Still Not Yet Over! Psychological Effects on Undergraduate Medical Students at The Entry-Level; A Gender-Based Comparative Study

The World Health Organization (WHO) announced the COVID-19 outbreak initially as a Public Health Emergency of International Concern (PHEIC) on January 30, 2020, and later declared as a Pandemic on March 11, 2020 (WHO, 2020). [1]. By September 7, India became the world's second worst-hit nation with 4.2 million confirmed COVID-19 cases, following the United States of America, and has recorded 71,642 deaths (The New York Times,2020).[2]People reported feelings of isolation, boredom, frustrations, and worries about contracting the Saraswathi et al.2020.[3].Fear of infection, lack of freedom, and concerns for family/friends could affect mental well-being during quarantine (Brooks et al.,2020).[4] Medical education is the most demanding of other professional programs regarding students' academics and emotional components [5]. There are reports of stress seen in 25-75% of medical students' education. [6]. Globally, one in three medical students' anxiety was higher than the general population (Tian-Ci Quek et al.,2019). [7]

Sudden isolation and social distancing can significantly affect the students' mental health as they are away from their extracurricular activities. This situation makes them have uncertainty about their future, their health, and the health of their friends and relatives. Anxiety, depression, and stress are present in medical students in the COVID-19 phase, where the students are not attending medical colleges, and all the teaching process is online (Ashvin M Sorani et al.2020). [8] Unlike other students, medical students have a deeper understanding of the disease, which increases awareness of its severity and impact. [9]

The COVID-19 pandemic appears to negatively affect the mental health of undergraduate medical students, with the increased prevalence of anxiety and stress levels and depression symptoms remaining unaltered. (Saraswathi et al.,2020). [3]

There is a cavity on studies done face to face /in-person to find out the level of anxiety around the pandemic on the medical students during the entry into a rural setting. Our medical college is the only tertiary set up with state-of-the-art facilities with ICU (Intensive care unit).

It is the only hospital/centre which handles all the corona cases in the entire district, with patients coming from the neighboring states' borders of Andhra Pradesh.

Medical students of the current academic year (21-22) who belonged to the CBME (Competency-Based Medical Education) batch reported to the campus of Sri Devaraj Urs Academy of Higher Education and Research (SDUAHER) after testing negative for the pandemic through RT-PCR (mandatory as per University guidelines).

Their onsite campus learning started in February 2021 after the required seven days of quarantine in the respective isolated quarters allotted to them.

The medical students filled the datasheets and the study questionnaire after completing the mandatory orientation program held regularly for one month in a big auditorium with facilities for maintaining Covid protocol.

This study aims to assess the effects of anxiety and stress levels related to the pandemic after a month of regular attendance on campus and compare the gender differences in anxiety differences. We used the Corona stress scales to evaluate various types of stress perceived due to the pandemic situation. [10]

MATERIALS & METHODS

This study was cross-sectional, with a random sampling of 150 medical students enrolled for the current academic year (CBME batch). We excluded students with symptoms of Covid-19 and those who are taking psychotropic medicines. No medical student was absent during the day of data collection. It is mandatory for all the students and the campus faculty to get their skin temperature checked to rule out any fever routinely before entering and leaving the campus.

After obtaining permission from the HOD of the Anatomy Department, the Principal Investigator for the study gave a brief introduction to the research project. All the identified 150 students were present in the anatomy lecture hall.
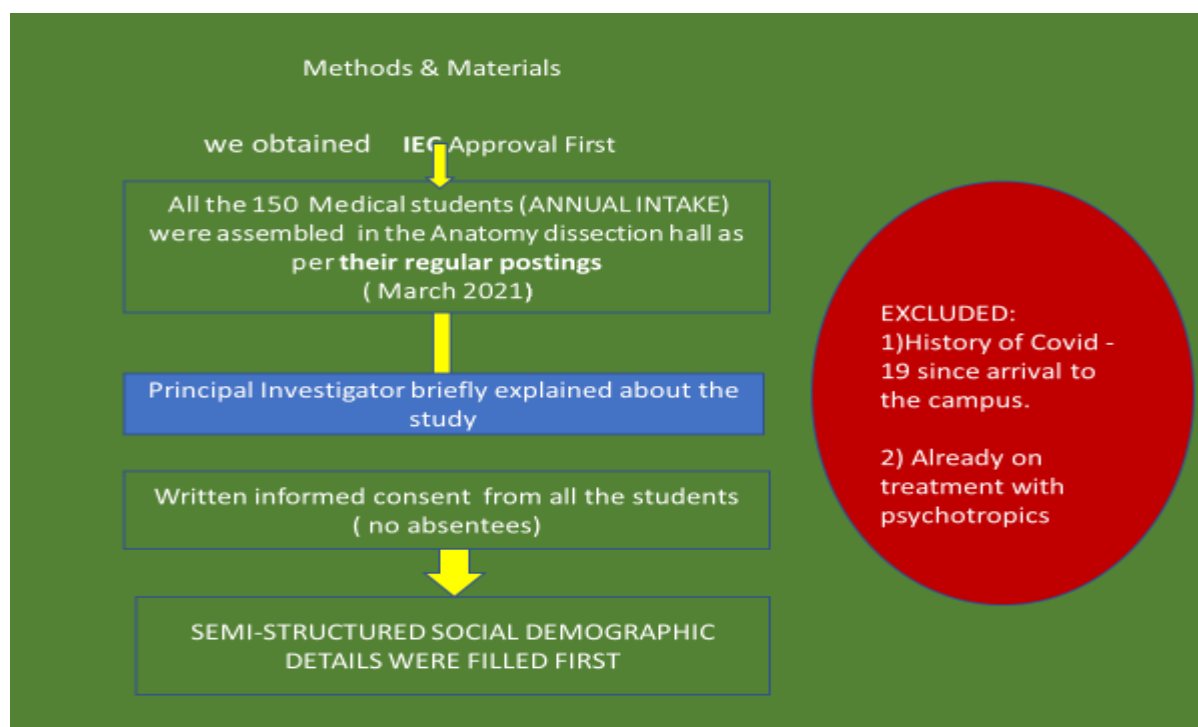

Figure 1

After obtaining details of the social demographic profile and whether they were willing to get vaccinated, students had to fill Corona stress scale (CSS), the main instrument for the study. CSS was slightly modified from the original scale, keeping in mind the rural, lower social-economic setting and location of the college. It was made sure that the students did not discuss it among others while filling it out after obtaining their written informed consent.

Taylor et al. developed the CSS to understand better and asses Covid-19-related distress and designed it to adapt for future pandemics readily. It uses five stable factors to assess Covid-19-related stress and anxiety symptoms. The six domains identified are as follows:(1) Fears about the dangerousness of COVID-19, (2) Fears about sources of COVID-19 related contamination, (3) COVID -19-Xenophobia (4) Fears about the personal social-economic consequence, (5) Covid-19 related checking (6) Traumatic stress symptoms.

Each Candidate item is constructed by examining the relevant literature and consulting experts on health-related anxiety. The Likert scale ranging from 0 (Not at all) to 4

(Extremely seen) rates the first four domains (subscales) of CSS, and the Last two domains' responses are rated ranging from 0(Never) to 4 (Almost always).

ANALYSIS & STATISTICAL METHODS

We use the Statistical Package for Social Sciences (SPSS for Windows, Version 25.0: IBM, Chicago, IL) for data analysis [11]. Basic descriptive statistics were computed for all variables and reported as frequency and percentage for categorical variables and means and standard deviation (SD) as appropriate for continuous variables. We evaluated the associations of all the anxiety domains and categorical variables using the chi-square (x2) test. We used student's t-test, and one-way analysis of variance (ANOVA) tests to test the correlation between continuous variables. All significance tests were two-tailed, and $p < 0.05$ is accepted for statistical significance.

RESULTS OF THE STUDY

Table 1: Socio-demographic characteristics of the study participants

Characteristics	Frequency	Percentage
Age group		
18 – 21 years	143	95.3%
21 – 24 years	7	4.7%
Gender		
Males/Females	50/100	33.3%/66.7%
Relationship status		
In a relationship/Single	13/137	8.7%/91.3%
Religion		
Hindu	131	90.0%
Muslim	14	9.3%
Christian	4	2.7%
Parsi	1	0.7%
Place of origin		
Rural/Semi-urban/Urban	9/36/105	6%/24%/70%
State of origin		
East	10	6.7%
North	56	37.3%
South	50	33.3%
West	34	22.7%
Occupation of parents		
Business	56	37.3%
IT	12	8.0%
Government	50	33.3%
Health professional	24	16.0%
Others	8	5.3%

95.5% of the medical students were 18-21 years old, and 66.7% (n=100) were females. 91.% of the students were single, and 90% (n=131) of them belonged to Hindu Religion. 70% (n=105) of the students came from an urban background, and the majority of them, 37.3%(n=56), were from northern India.

37.3%(n=56) and 33.3% of the parents of the students came from a business background and had a govt job, respectively .16%(n=24) of the students had parents who were doctors.

Table 2: Personal and behavioral factors among study participants (n=150)

Characteristics	Frequency	Percentage
History of substance abuse		
Present/Absent	2/148	1.3%/98.7%
Did any close member have COVID-19		
Yes/No	10/140	6.7%/93.3%
The Academic performance got affected		
Yes/No	10/140	6.7%/93.3%
History of medical disorders		
Yes/No	49/101	32.7%/67.3%
History of anxiety/psychiatric disorders		
Yes/No	5/145	3.3%/96.7%
Willingness to get vaccinated		
Yes	145	96.7%
No/not sure	5	3.3%

98.7% (n=148) of the students did not report having any substance use, and 93.3% did not have any close member of their family suffering from Covid-19.

6.7% (n=10) of the students reported that their academics got negatively affected, and 96.7% were willing to get vaccinated.32.7% of their parents had an ongoing medical illness, and about 3.3% had some psychiatric disorders.

Table 3: Distribution of Corona Stress subscales & Global stress scores across Gender (n=150)

	Males (n=50)	Females (n=100)	Total (n=150)	p-value
Danger subscale	6.8 (5.6)	9.2 (8.1)	8.4 (4.9)	**0.005**
Socio-economic consequence subscale	5.1 (3.6)	9.8 (7.1)	8.2 (6.8)	**<0.001**
Xenophobia subscale	7.3 (5.2)	8.3 (6.2)	8.0 (5.9)	0.353
Contamination subscale	6.7 (4.2)	9.4 (6.3)	8.5 (5.8)	**0.008**
Traumatic Stress Subscale	2.9 (3.7)	3.4 (7.1)	3.2 (3.9)	0.504
Compulsive Checking Subscale	8.5 (6.1)	10.8(6.5)	10.0 (6.4)	**0.039**
Total score	37.4 (18.2)	50.8 (25.9)	46.3(24.4)	**0.001**

All scores are reported as Mean± SD.

Females reported more scores indicating more stress levels when compared to boys in the subscales of danger, socio-economic consequence, contamination, compulsive subscales, and there were no statistical differences between genders concerning xenophobia and traumatic stress subscales.

The socio-economic consequence scale measures the severity of the fears arising due to the disruptions in the supply chain and fears of looting or rioting. The trauma stress scale refers

to the direct and vicarious exposure to trauma, including unwanted intrusive thoughts or nightmares relating to Covid -19 and exposure to traumatic images from the news media. There were no differences in all the other subscales of the Corona stress scale.
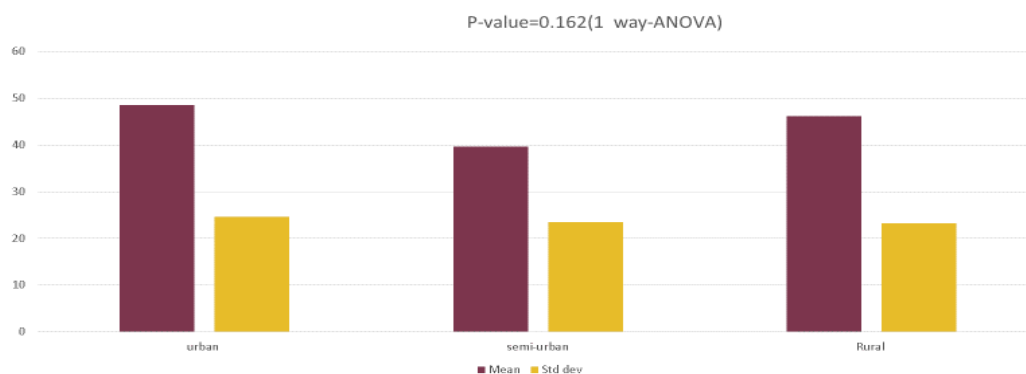

Figure 2

This study did not find any significant differences in the association between the domicile of the students and the covid stress scale scores [Fig 2]
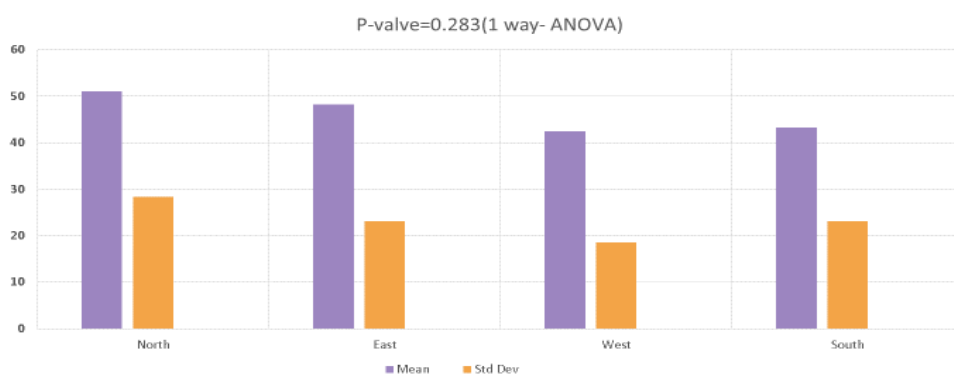
Figure 3.

There was no difference in Corona stress scores compared to the students' zonal distribution before joining the UG (undergraduate) course.

Table 4: Distribution of Global stress scores across relationship status (n=150)

	In relationship (n=13)	Single (n=137)	Total (n=150)	p-value
Danger subscale	8.9 (5.0)	8.3 (4.9)	8.4 (4.9)	0.677
Socio-economic consequence subscale	10.3 (8.4)	8.0 (6.7)	8.2 (6.8)	0.246
Xenophobia subscale	8.1 (5.3)	8.0 (5.9)	8.0 (5.9)	0.947
Contamination subscale	8.5 (5.6)	8.5 (5.9)	8.5 (5.8)	0.997
Traumatic Stress Subscale	3.9 (4.8)	3.2 (3.9)	3.2 (3.9)	0.534
Compulsive Checking Subscale	8.8 (6.2)	10.2 (6.5)	10.0 (6.4)	0.456
Total score	48.5 (12.6)	46.1 (25.3)	46.3 (24.4)	0.744

All scores were reported as Mean± SD.

No statistical significance in the total Corona stress scale scores was reported based on the relationship status of the medical students.

DISCUSSION

Females had significant anxiety more than males in most of the subscales of the Corona stress scale, which is similar to the study findings of an online survey of medical students done at Gujarat. Stress levels were also higher in an online study done on medical students in Turkey, [12] Morocco [13], and the USA [14].

Our study findings were similar to an online study finding of the college students in India. [15] However, in contrast to a prospective cross-sectional study on medical students in urban Tamil Nadu, there were no differences in stress levels between genders.

Different findings in our study could be because females outnumbered male students in a ratio of 2:1 (100:50), unlike other studies, where they were comparatively equal in numbers. Our study participants reported stress and anxiety in various subscales of danger, socio-economic consequences, compulsive checking, and overall global stress scales due to Covid-19, which is similar and comparable to the previous studies done on rural medical students in Tamilnadu. [16]

Our study participants reported high scores on the contamination subscale and compulsive checking scale, similar to the study findings of an online north Indian study done on postgraduate doctors. [17]

Our hospital mainly caters to health services to the rural people, and the majority of the patients belong to either agricultural workers or daily wage workers. They do not carry sanitizers or wear masks as recommended by the WHO.

This lack of self-protection equipment by the public could explain the medical students' anxiety about getting contaminated, checking for the places or the surfaces they might have come in contact with, especially in the commonplaces of the parking area, main gates, and eating in the nearby hotels.

96.7% of the students were willing to get vaccinated, which is a positive sign keeping the negative rumors about the side effects of the vaccines in the media. We did not find any differences in the Covid stress scores based upon the domicile of the medical students.

70% (n=105) of the medical students were from urban backgrounds, and about 6% were from rural backgrounds. They needed to undergo routine RT-PCR (Reverse Transcriptase-Polymerase Chain Reaction) and carry a negative report before entering the clinical or preclinical block. Most students stayed locked in their homes given the unpredictable notice or information from the college regarding the reopening of the college for routine campus functioning.

Fear of getting quarantined in a separate hospital ward or hostel facilities or knowing that our hospital was overloaded with Covid positive cases, and even teaching faculty coming positive with the infection from their seniors who are currently on campus.

The daily updates from the campus staff and students could have induced more anxiety and followed strict adherence to the Covid protocol as per the government guidelines.

All the students were religiously following the standard protocol during the lockdown. None of the students reported being positive before the commencement of the study, and only 6.7%(n=10) of their close relatives had suffered from Covid infection.

This onsite was the first study done on medical students within two months of onsite /in-person examining the relationship status of the students and their Religion with the Covid -19 stress before the third term mandatory clinical postings as per the CBME curriculum.

Limitations of the study
The study had a small sample size and unequal distribution of genders among the first-year medical students. The adaptability and validity of the CSS scale for the Indian medical students, especially in rural settings, are to be evaluated in a large-scale study sample.

CONCLUSIONS AND SUGGESTIONS FOR THE FUTURE

Medical students suffer from various forms of anxiety disorders during this pandemic situation. It is pertinent to evaluate and address these issues before their clinical postings. It is critical to evaluate stress levels before the upsurge in the third wave as it can negatively impact their learning /knowledge in clinical subjects in the coming academic years**.**

REFERENCES

[1] World Health Organization (2020). WHO Director-Generals' Opening Remarks at the Media Briefing on COVID-19-March 11. Available online: https://www.who.int/dg/speeches/detail/who-director-generals-opening-remarks-at-the-media-briefing-on-Covid-19-11-march-2020 (accessed on July 2, 2020).

[2] The New York Times. 2020. The coronavirus update: skyrocketing cases push India to no. 2 on the pandemic list. Available at https://www.nytimes.com/2020/09/07/world/covid-19- coronavirus. HTML (accessed 12 September 2020).

[3] Saikarthik J, Saraswathi I, Siva T. (2020). A cross-sectional study is a risk and protective factor of mental health during COVID-19 outbreak and lockdown in adult Indian population: a cross-sectional study. Med Rxiv DOI10.1101/2020.06.13.20130153.

[4] Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, Rubin GJ. (2020). The psychological impact of quarantine and how to reduce it: a rapid review of the evidence. Lancet 395(10227):912–920.

[5] Wolf TM. (1994). Stress, coping and health: enhancing well-being during medical school. Medical Education 28(1):8–17. DOI 10.1111/j.1365-2923. 1994.Feb 02679. x.

[6] Koochaki GM, Charkazi A, Hasanzadeh A, Saedani M, Qorbani M, Marjhani A, et al. (2011) Prevalence of stress among Iranian medical students; A questionnaire survey. Journal of East Mediterranean Health; 17:593-8.

[7] Tian-Ci Quek T, Tam W-S, X.Tran B, Zhang M, Zhang Z, Su-Hui Ho C, Chun-Man Ho R. (2019). The Global Prevalence of anxiety among medical students: a meta-analysis. International Journal of Environmental Research and Public Health 16(15):2735 DOI 10.3390/ijerph16152735.s

[8] Vala NH, Vachhani MV, Sorani AM. Study of anxiety, stress, and depression level among medical students during COVID-19 pandemic phase in Jamnagar city. (2020) National Journal of Physiology and Pharmacology;10(12):1043-1045.

[9] Vanitha GS, Ranjith T, Riddi hanish lanan. The psychological impact of COVID-19 on medical college students. (2020) European Journal of Molecule & Clinical Medicine:7, (10):435-443.

[10] Taylor S, Landry C. A, Paluszek M.M, Fergus T.A, McKay D & Asmundson G.J.G. (2020) Development and initial validation of the COVID Stress Scales. Journal of Anxiety disorder.

[11] Riffenberg RH. Statistics in Medicine. (2005) 2nded. Elsevier Academic Press publications, SanDiego, California, USA: Academic Press; p.85-125

[12] Torun F, Torun SD (2020). The psychological impact of the COVID -19 pandemic on medical students in Turkey. Pakistan Journal of Medical Sciences.;36(6): 1355-1359.doi: org/10.12669/jpms.36.6.2985

[13] Essangri H, Sabir M, Benkabbou A, et al (2021). Predictive factors for impaired mental health among medical students during the early stage of the COVID -19 pandemic in Morocco. Americal Journal of Tropical Medicine Hygiene.;104(1):95-102.

[14] Rea Mittal, Lilly Su & Rohit Jain (2021) COVID-19 mental health consequences on medical students worldwide, Journal on Community Hospital& International Medical perspectives,11:3,296-298.

[15] Kalpana Verma. Letter to the Editor. Asian Journal of Psychiatry.53(2020). https://doi.org/10.1016/j.ajp.2020.102398.

[16] Vanitha GS, Ranjith T, Riddi hanish lanan.(2020) The psychological impact of COVID-19 on medical college students. European Journal of Molecular & Clinical Medicine 07;(10):435-453.

[17] Chatterjee SS, Bhattacharyya R, Bhattacharyya S, Gupta S, Banerjee BB. (2020) Attitude, practice, behavior, and mental health impact of COVID-19 on doctors. Indian Journal of Psychiatry;62: 257-65.

[18] Saraswathi I, Saikarthik J, Senthil Kumar K, Madhan Srinivasan K, Ardhanaari M, Gunapriya R. (2020) Impact of COVID-19 outbreak on the mental health status of undergraduate medical students in a COVID-19 treating medical college: a prospective longitudinal study. Peer Journal. October 16;8: e10164. DOI: 10.7717/peerj.10164. PMID: 33088628; PMCID: PMC7571415.