A cross-sectional observational study on psychological impact of COVID-19 pandemic on undergraduate medical students of Government Medical College, Maharashtra

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Abstract

Background: Students were one of the most affected category by COVID-19 because of uncertainty regarding academic success and covidophobia. Students required to stay home due to the closure of their educational institution. The present study was done to assess the impact of COVID-19 pandemic on the psychological status and academic status of undergraduate students. **Material and Methods:** A cross-sectional study was carried out in all undergraduate medical students who gave consent for participation, i.e., 619, using semi-structured pretested closed-ended questionnaires for socio-demographic and academics-related factors. Depression Anxiety Stress Scale-21 was used for assessing their psychological status. Responses were recorded using Google form and one-to-one interview method and analyzed using Microsoft Excel software using appropriate statistical tests. **Results:** Out of 619 students who participated in the study, 358 (57.83%) had extremely severe anxiety, 103 (16.63%) had extremely severe depression and 68 (10.98%) had extremely severe stress. In all, 82.07% of students were comfortable with offline practical classes compared to online classes. While 64.13% of students were not satisfied with the interaction during online classes. A statistically significant association was found between psychological status age, sex, and academic year of students. **Conclusion**: Most prevalent psychological factor was anxiety, and the least prevalent was stress related to COVID-19 pandemic. Students' response showed a positive attitude toward offline classes. This indicates a need for a more systematic and longitudinal assessment of the psychological needs of the students.

Keywords: Medical students, psychological status, COVID-19

Introduction

The novel coronavirus outbreak emerged in Wuhan, Hubei Province, China, in December 2019[1]. World Health Organization (WHO) on 11th February 2020 named this disease caused by SARS-CoV-2 as COVID-19[2].

A large proportion of the world's population was in isolation, as most countries affected with COVID-19 had implemented lockdown and other measures to prevent spread of the virus. According to the WHO, this rapidly spreading new disease had greatly impacted society, especially with stress and anxiety, a psychological system that responds to change and uncertainty[3].

The physical and mental impact on ordinary people might have increased due to the proliferation of identity and the constant amount of information on various platforms that can sometimes be misunderstood[4]. Therefore, widespread fear and confusion about COVID-19 lead to public psychological concerns in all segments of society, that may be more dangerous than the disease itself[5]. Previous studies have shown that mental health was significantly affected by this global epidemic. WHO had provided detailed psychological recommendations for reducing the stigma of COVID-19. Many incidences of health crime originated out of the fear of being corona positive have also been reported in India[6-7].

National lockdown programs that impose mass quarantine can cause widespread hysteria, anxiety, and anguish. These were exacerbated in the early stages of a pandemic by improper information and media communications hypes[8]. According to reports from past outbreaks, psychological effects of quarantine can range from short-term symptoms like irritability to severe ones like suicidal thoughts. Other reported symptoms include confusion, loneliness, denial, anxiety, depression, insomnia, and anger[9-10]. The WHO Director-General had named the situation, which causes fear and panic by spreading false and unfounded, ostentatious media and sensationalism, as a 'coronavirus infodemic'[11]. The lockdown had a severe impact on students and their learning process as well. A total of 50.43% of respondents of Spanish University presented a moderate to severe impact of the outbreak. University students had been especially impacted by COVID-19 confinement[12-13]. In India, exams had been postponed; college admissions were delayed with uncertainty[14-15]. The United Nations Educational, Scientific and Cultural Organization (UNESCO) had introduced the

term 'educational disruption' for the effects of the crisis on education systems[10,16-17]. Medical students were least studied and considered in this COVID-19 pandemic in spite of being involved in its management[18].

With reference to the facts mentioned above, this study was carried out amongst undergraduate medical students of Government Medical College to understand and study the impact of COVID-19 on their psychological and academic status.

Objectives

1. To study the psychological status of undergraduate medical students during COVID-19 pandemic

2. To determine the association between socio-demographic characteristics and psychological impact of COVID-19 on undergraduate medical students

3. To study the views of students regarding teaching methods adopted during the COVID-19 pandemic and effects of the pandemic on their academics

Materials and Methods

A cross-sectional observational study was conducted in one of the Government Medical College, Maharashtra. The study was carried out from 1st July to 15th August 2021.

Participants: The study was carried out among undergraduate medical students studying MBBS in the institute who were willing to participate. Students already suffering from psychological disorders like autism, psychosis, Obsessive-compulsive Disorder (OCD), etc. were excluded from the study. Out of total 700 students, 619 undergraduate students who gave consent were included in the study.

Data tools: The tool of data collection used was a structured close-ended questionnaire consisting of socio-economic, demographic and academic details, including age, sex, year of education, place of residence (rural or urban), and type of ration card the family holds (as economic status). Pre-tested Semi structured close-ended questionnaire was used to collect information about student's academic status and perception of it during the COVID-19 pandemic. For studying psychological status, the Depression Anxiety Stress Scale-21 (DASS-21) was used. A total of 21 questions were asked including 7 questions for each category of anxiety, depression, and stress respectively. Each question's scoring was as follows: score 0 - Did not apply to me at all, score 1- Applied to me to some degree, or some of the time, score 2 - Applied to me to a considerable degree or a good part of the time, score 3 -Applied to me very much or most of the time. Final scoring was calculated by adding scores of all questions for each category and then was divided into subcategories of normal, mild, moderate, severe, and extremely severe according to DASS-21 scale scoring system[19].

Data collection and analysis: Before collecting data, informed consent from each student was taken through online Google forms sent on their personal WhatsApp numbers. After consent, required data was collected through self-administered Google forms sent on their personal WhatsApp numbers and one-to-one interview method. The descriptive and inferential data analysis was done using Microsoft Excel software after proper coding of collected data. The Chi-Square test of independence was used to find an association between socio-demographic variables and psychological status. The study was undertaken after the approval of the concerned institutional academic and ethics committee (Ref. No.: IEC/Approval letter/124/21 dated 17/08/2021)

Results

The students' mean age was 20.68 years, with a standard deviation of 1.35. In all, 465 (75.12%) were in the age group 18 to 21 years and remaining were in the age group 22 to 25 years. Half, i.e. 307 (49.60%) were females, and 312 (50.40%) were males. In all, 218 (35.22%) were from rural residence, and the remaining were from urban background. Regarding the possession of ration card color, 336 (54.28%) students' families had white card [Above Poverty Line (APL)], 234 (37.80%) had orange ration card (APL), and 49 (7.92%) were yellow card holders [Below Poverty Line (BPL)]. Out of a total of 619 students who participated, 189 (30.53%) were from 1st year, 224 (36.19%) were from 2nd year, 110 (17.77%) from 3rd minor year and remaining were from the 3rd major year (Table 1).

Table 1: Distribution of socio-demographic variables (N = 619)

Variable	n (%)
Age (in years)	
18 to 21	465 (75.12)
22 to 25	154 (24.88)
Gender	
Female	307 (49.60)
Male	312 (50.40)
Place of residence	
Rural	218 (35.22)
Urban	401 (64.78)
Ration card colour	
White	336 (54.28)
Orange	234 (37.80)
Yellow	49 (7.92)
Academic year of education	
1st Year	189 (30.53)
2nd Year	224 (36.19)
3rd Minor	110 (17.77)
3rd Major	96 (15.51)

As shown in Table 2, out of 619 students, 358 (57.84%), 133 (21.49%), 101 (16.32%), and 14 (2.26%) students had extremely severe, severe, moderate, and mild anxiety, respectively; only 13 (2.10%) students were found normal. In the case of stress, 68 (10.99%) and 172 (27.79%) students had extremely severe, severe stress, respectively; 110 (17.77%) students were normal. In the case of depression, 103 (16.64%), 94 (15.19%), 240 (38.77%), and 79 (12.76%) students had extremely severe, severe, moderate, and mild depression respectively, and 103 (16.64%) were having no depression.

Out of total 619 students 468 (75.60%) had all three category of psychological impact and 142 (22.94%) had at least one of three type, and only 9 (1.45%) were having no psychological impact at all.

Table 2: Psychological status of undergraduate students (N = 619)

Parameters	Extremely severe n (%)	Severe n (%)	Moderate n (%)	Mild n (%)	Normal n (%)
Anxiety	358 (57.83)	133 (21.48)	101 (16.3)	14 (2.26)	13 (2.10)
Stress	68 (10.99)	172 (27.9)	162 (26.16)	107 (17.3)	110 (17.65)
Depression	103 (16.64)	94 (15.19)	240 (38.77)	79 (12.76)	103 (16.64)

Out of the total participants, 194 (31.34%) were female students having extremely severe form of anxiety, which was statistically significant. the highest number of participants with severe anxiety were found from 2nd year, 141 (22.78%) (Table 3).

Table 3: Association between anxiety status and socio-demographic characteristics (N = 619)

Parameters	Extremely severe n (%)	Severe n (%)	Moderate n (%)	Mild n (%)	Normal n (%)	p-value	Chi-square
Age in years							
18 to 21	265 (42.81)	103 (16.64)	75 (12.12)	13 (2.10)	9 (1.45)	0.5	3.253
22 to 25	93 (15.02)	30 (4.85)	26 (4.20)	1 (0.15)	4 (0.66)		
Gender							
Female	194 (31.34)	67 (10.82)	36 (5.82)	8 (1.29)	2 (0.32)	*0.0017	17.325
Male	164 (26.49)	66 (10.66)	65 (10.50)	6 (0.97)	8 (2.56)		
Place of residence							
Rural	132 (21.32)	48 (7.75)	31 (5.01)	3 (0.48)	4 (0.65)	0.62	2.659
Urban	226 (36.51)	85 (13.73)	70 (11.31)	11 (1.78)	9 (1.45)		
Academic year							
1st Year	93 (15.02)	46 (7.43)	9 (1.45)	34 (5.49)	7 (1.13)	0.15	17.039
2nd Year	141 (22.78)	42 (6.79)	4 (0.65)	34 (5.49)	3 (0.48)		
3rd Minor	66 (10.66)	29 (4.68)	1 (0.16)	13 (2.10)	1 (0.16)		
3rd Major	58 (9.37)	16 (2.58)	0 (0.00)	20 (3.23)	2 (0.32)		

*p-value <0.05 significant. Pearson's Chi-Square test of independence used for analysis

In the case of depression, 70 (11.31%) females had extremely severe depression; comparatively, male students had less depression. Males were found more with no depression 64 (10.34%). This association was found statistically highly significant. Similarly, a highly significant association was found between the level of depression and place of residence (rural or urban) (Table 4).

Table 4: Association between depression and socio-demographic determinants (N = 619)

Parameters	Extremely severe n (%)	Severe n (%)	Moderate n (%)	Mild n (%)	Normal n (%)	p-value	Chi-square
Age in years							
18 to 21	76 (12.28)	69 (11.1)	185 (29.8)	67 (10.2)	68 (10.99)	0.05	9.2752
22 to 25	27 (4.36)	25 (4.04)	55 (8.89)	12 (1.94)	35 (5.65)		
Gender							
Female	70 (11.31)	49 (7.92)	115 (18.58)	34 (5.49)	39 (6.30)	*0.001	21.4391
Male	33 (5.33)	45 (7.27)	125 (20.19)	45 (7.27)	64 (10.34)		
Place of residence							
Rural	27 (4.36)	28 (4.52)	85 (13.73)	39 (6.30)	39 (6.30)	*0.01	12.1284
Urban	76 (12.28)	66 (10.66)	155 (25.4)	40 (6.46)	64 (10.34)		
Academic year							
1st Year	21 (3.39)	28 (4.52)	85 (13.73)	24 (3.88)	31 (5.01)	*0.01	25.7372
2nd Year	47 (7.59)	34 (5.49)	85 (13.73)	29 (4.6)	29 (4.68)		
3rd Minor	21 (3.39)	18 (2.91)	44 (7.11)	13 (2.10)	14 (2.26)		
3rd Major	14 (2.26)	14 (2.26)	26 (4.20)	13 (2.10)	29 (4.68)		

*p-value <0.05 significant. Pearson's Chi-Square test of independence used for analysis

No statistically significant association was found between stress level and socio-demographic factors except gender and place of residence (rural or urban), which was highly significant (Table 5).

Table 5: Association between stress and socio-demographic determinants (n = 619)

Parameters	Extremely severe n (%)	Severe n (%)	Moderate n (%)	Mild n (%)	Normal n (%)	p-value	Chi-square
Age in years							
18 to 21	48 (7.75)	124 (20.0)	122 (19.7)	84 (13.7)	87 (14.05)	0.52	3.1782
22 to 25	20 (3.23)	48 (7.75)	40 (6.46)	23 (3.72)	23 (3.72)		
Gender							
Female	46 (7.43)	92 (14.86)	75 (12.12)	46 (7.43)	48 (7.75)	*0.001	14.0423
Male	22 (3.55)	80 (12.92)	87 (14.05)	61 (9.85)	62 (10.02)		
Place of residence							
Rural	21 (3.39)	54 (8.72)	69 (11.15)	46 (7.43)	28 (4.52)	*0.01	12.9532
Urban	47 (7.59)	118 (19.0)	93 (15.02)	61 (9.85)	82 (13.25)		
Academic year							
1st Year	15 (2.42)	48 (7.75)	51 (8.24)	36 (5.82)	39 (6.30)	0.44	12.0645
2nd Year	32 (5.17)	69 (11.15)	54 (8.72)	32 (5.17)	37 (5.98)		
3rd Minor	10 (1.62)	24 (3.88)	27 (4.36)	15 (2.42)	20 (3.23)		
3rd Major	11 (1.78)	31 (5.01)	30 (4.85)	24 (3.88)	14 (2.26)		

*p-value <0.05 significant. Pearson's Chi-Square test of independence used for analysis

According to our study, views of students regarding teaching methods adopted during the COVID-19 pandemic and effects of the pandemic on their academics, we found that 64.14% of students were not satisfied with interaction with teachers during online classes. Majority (82.07%) of students preferred offline practical classes. Majority (94.51%) of students were worried about their academics due to the pandemic and lockdown. Nearly half (51.53%) students had reported a decrease in study hours since the start of the pandemic and lockdown. More than half (69.63%) of students said they were comfortable with offline teaching mode. More than half (67.37%) students said that online mode of examination was not the right way of assessing their performance and study (Table 6).

Table 6: Students' responses about effect of COVID-19 pandemic on their academics (N = 619)

Criteria	%
Interaction during online classes	
No	64.14
Yes	35.86
Form of practical classes preferred	
Offline	82.07
Online	17.93
Worry about academics and career	
Yes	94.51
No	5.49
Effect on study hours/day	
Decreased	51.53
Increased	33.44
No	15.02
Preference of mode of learning	
Offline	69.63
Online	30.37
Opinion about online examination	
No	67.37
Yes	32.63

Discussion

Present study reported that over three-forth students had all three category of psychological impact and over one-fifth had at least one of three types. Only 1.5% were having no psychological impact. In the anxiety category, majority of students had significant extremely severe and severe anxiety. In the study by Shreevastava et al. (2022)[20], 67% of medical students were found to be anxious, with 27% displaying mild, 24% moderate, and 16% severe symptoms. This is inconsistent with our study, which may be due to the study period during which students faced exams delay due to COVID-19 restrictions. Changes in their daily routines and lifestyles, tight restrictions, educational interruptions, and the condition itself may all be contributing factors to the high occurrence of anxiety in the present study.

With respect to stress, 82.23% students had any type of stress. The stress levels identified were similar to that reported in a recently released survey that mentioned 72% of medical students reported feeling stressed[21]. Gender and anxiety levels were highly associated, with 31% of the participants being female college students with extremely severe forms of anxiety. Similar results were identified in the Chinna et al. study, where the highest proportion of male participants (82, 13.25%) were identified in the mild to normal category[21]. Except for place of residence (rural or urban), which was shown to be extremely significant, no statistically significant association between the degree of stress and socio-demographic characteristics was noted. Similar to our findings, Cao et al., 2020[22] also found a significant association between college student's living situation and stress.

According to our study, views of students regarding teaching methods adopted during the COVID-19 pandemic and effects of the pandemic on their academics, majority were not satisfied with interaction with teachers during online classes, and almost all students were worried about their academics. Similar findings were seen in Balachandran et al. (2020)[23] study.

Due to lockdown, no physical interviews and physical assessment of psychological status was done. Also, data was collected through self-administered questionnaire and was conducted in one medical college only, which limits the generalizability of the findings. Despite these limitations, the study adds to the psychological status of medical students and concerns related to the academic performance during COVID pandemic.

Conclusion

Psychological abnormality in any form of anxiety, depression, or stress was found in a majority of students. So it suggests prime importance of mitigating the psychological impacts of COVID-19 on students. The majority of students were interested in offline teaching classes and were not satisfied with online teaching. The majority of students felt that their academic performance and study hours were decreased during COVID-19 pandemic and lockdown.

Recommendations

1. Those students with severe psychological problems need to be referred to psychological counselors through college and should be followed up.
2. Advice students to maintain their social contacts even through virtual mediums, share their problems, and have good peer groups and family relations.

3. Advice teachers to understand academic challenges faced by students and help them by providing flexible schedules.

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