

Research Article



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PERCEIVED STRESS DURING COVID-19 PANDEMIC BECAUSE OF ONLINE LEARNING AMONG MBBS STUDENTS

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ABSTRACT

Background: The extremely contagious COVID-19 coronavirus illness was initially discovered in Wuhan, China in 2019, and it has since spread around the world, affecting a sizable population. The WHO deemed it to be a pandemic. The pandemic had a significant impact on psychological health because to adjustments made to lifestyle and educational practices.

Objective: To assess medical students' reported stress levels throughout their online coursework in light of the COVID-19 pandemic in India.

Methods: The present online study assessed 892 students using the PSS (Perceived Stress Scale) questionnaire, which to all registered medical students by email and WhatsApp. The survey had to be filled out and sent again. Conclusions were reached after a statistical examination of the collected data.

Results: Of the participants in this study, there were 39.23% (n=350) females and 60.76% (n=542) males. 56.50% (n=504) research participants reported low stress (levels 0–13), 32.73% (n=292) reported moderate stress (levels 14–26), and 10.76% (n=96) reported severe stress (levels 27–40). Subjects with low stress levels experienced considerably less sleep disruptions, whereas those with high stress experienced three times/more sleep disturbances (p=0.01).

Conclusion: Taking into account its limitations, the current study comes to the conclusion that medical students' responses to the COVID-19 epidemic have been diverse and forceful, and that mental health concerns should be taken into account for all age groups and domains within society. During their online education, students might experience less stress by utilising online counselling and management programmes.

Keywords: COVID-19, medical students, online education, perceived stress, students

INTRODUCTION

Following its discovery in Wuhan, China in December 2019, the World Health Organisation (WHO) in January 2020 designated the coronavirus a health emergency of worldwide concern.¹ The COVID-19 epidemic has had a significant impact on how several societal sectors, especially Indian society, operate. Students, workers, labourers, economists, and traders are some of these sectors. Nevertheless, a number of assessments failed to provide the educational sectors and students with the necessary and sufficient attention. Based on available material, it is believed that around 80% of students worldwide experienced some form of disruption during the COVID-19 pandemic as a result of many educational institutions closing. The COVID-19 pandemic has had a significant impact on people's mental health during the pandemic, which may further contribute to the emergence of maladaptive behaviours, defensive reactions, and emotional discomfort.²

A recent study of 2021 conducted in Hubei, China has reported that the prevalence of anxiety and depressive symptoms in adolescent children during the COVID-19 pandemic is 37% and 43% respectively. In the current unfavourable

COVID-19 pandemic scenario, it is critical to take medical students' psychological well-being into account because it is well-known that medical students already have significant stress levels—33.8%, according to prior literature research.³ In the general population, 54% of study participants reported having a severe or moderate psychological impact as a result of the COVID-19 pandemic, 17% of subjects had moderate to severe symptoms of depression, and 29% of subjects had moderate to severe symptoms of anxiety. A different study conducted in China also showed that there is a high prevalence of nearly 27% of psychological distress among medical students during the pandemic.⁴

There is a dearth of information in the literature about the mental health of medical students studying in India. Furthermore, the abrupt lockdown forced the closure of colleges and educational institutions, which caused insecurity and uncertainty among students due to the abrupt switch to an unfamiliar online learning environment and a lack of information regarding exams and passing to advance to the following year, which made them fearful for their future and careers.⁵

With this knowledge in hand, the current study was carried out to assess medical students' reported stress during their online coursework as a result of the COVID-19 virus epidemic in India. Its relationship to studies, sleep, and coping mechanisms was also evaluated.

Materials and Methods

In light of the COVID-19 virus epidemic in India, a cross-sectional clinical study was conducted to assess medical students' reported stress levels throughout their online coursework. Its relationship to studies, sleep, and coping mechanisms was also evaluated. The study was conducted after approval from the relevant ethical committee. Undergraduate medical students made up the study population.

Current study programme participants who are undergraduate medical students were included in the study. The participants in the research also provided their informed permission online via email or WhatsApp. Subjects with sleep difficulties or any other mental condition were excluded from the study. Those who were willing to engage in the study were considered among the eligible participants.

All participants were given a thorough explanation of the study's design and were given the assurance that the results would be kept secret. All of the enrolled students received Google forms including a questionnaire over email or WhatsApp. A week was allotted to the pupils to submit their responses. In the end, 892 volunteers made up the study sample.

The online Google form was used to create the questionnaire. The first section of the questionnaire was derived from the 10-item Perceived Stress Scale (PSS), a widely used measure for assessing perceived stress levels. The 6,7 PSS measures how stressful a person believes life to be. PSS tools also evaluate a subject's perceived level of overload, unpredictability, and uncontrollability in their life.

Regarding the perceived amount of stress at the moment, PSS also includes a variety of questions. PSS was applied to classes requiring at least a junior high school diploma. PSS evaluates the participants' sentiments and ideas from the previous month. For every PSS item, there were four options: very often, pretty often, occasionally, virtually never, and never. All of the individual scores within the range of 0–40 were combined to obtain the final results. High scores of 27–40 indicated high felt stress levels. values between 0 and 13 indicated minimal stress, whereas values of 14 and 26 indicated high stress.

The medical participants' sleep quality over the previous 30 days was also assessed using the PSQI (Pittsburgh Sleep Quality Index) instrument. The seven components of the PSQI score, which ranges from 0 to 3, are composed of 19 self-rated questions. A score of 0 denoted no difficulty, whereas a score of 3 denoted very challenging circumstances. The last seven components of the PSQI are scored from 0 to 21, with 0 indicating no difficulty and 21 indicating extreme difficulty across the board. In the third section, there was a questionnaire with questions on the research subjects' coping mechanisms for handling stress during the COVID-19 epidemic and whether or not they encountered any difficulties with their studies. Multivariate statistical methods and logistic regression were used to statistically evaluate the gathered data. Two forms were used to show the data: tabular and descriptive.

SPSS version 22.0, 2013, Armonk, NY: IBM Corp and chi-square test were utilized. The data were expressed as mean and standard deviations and as percentages and numbers with a 0.05% significance level.

RESULTS

In light of the COVID-19 virus epidemic in India, a cross-sectional clinical study was conducted to assess medical students' reported stress levels throughout their online coursework. Its relationship to studies, sleep, and coping mechanisms was also evaluated. Eighty-two medical students participated in the study. In the current study, there were

39.23% (n=350) females and 60.76% (n=542) men. The age distribution of the participants was as follows: 5.62% (n=50) were 18 years old, 17.26% (n=154) were 19 years old, 38.78% (n=346) were 20 years old, 21.74% (n=194) were 21 years old, 12.55% (n=112) were 22 years old, and 4.03% (n=36) were 23 years old. 16.59% (n=148) of the study's subjects were in their first year of medical school, while 28.47% (n=254) were in their second year.

38.78% (n=346) subjects in 3rd year, and 16.14% (n=144) subjects in final year of medical school. Table 1 indicates that, according to the perceived stress category, 56.50% (n=504) study participants reported low stress (levels 0–13), 32.73% (n=292) reported moderate stress (levels 14–26), and 10.76% (n=96) reported severe stress (levels 27–40). When the study year of the subjects and the perceived stress categories were compared, it was seen that, among first-year medical subjects, there was a low, moderate, and high degree of stress in 1.58%, 34.24%, and 4.16% of the study subjects, respectively. In second-year medical students, the percentages of subjects with low, moderate, and high stress were 42.06%, 10.95%, and 10.41%, respectively. In third-year students, 52.38% (n=264), 21.23% (n=62), and 20.83% (n=20) showed signs of low, moderate, and severe stress, respectively.

Table 2 shows that among final year students, the participants' corresponding levels of mild, moderate, and severe stress were 3.96% (n = 20), 33.56% (n = 98), and 27.08% (n = 26). The third and final year students had higher levels of stress than the first and second year students, according to these statistically significant data (p=0.04). Regarding the relationship between the PSQI and the study subjects' perceived stress categories, the findings indicated that the subjects with mild stress (260), moderate stress (124), and low stress (16) had the greatest subjective sleep quality of very excellent. When stress increased from mild to severe (p<0.001), the subjective sleep quality went from very excellent to very awful.

Sleep latency was >60 minutes in 10, 40, and 14 participants with low, moderate, and high stress, and ≤15 minutes in 244 subjects with low stress, 60 subjects with moderate stress, and 32 subjects with high stress. In 220, 72, and 24 patients with low, moderate, and high stress levels, sleep delay of 16–30 minutes was seen; in 30, 120, and 26 subjects with low, moderate, and high stress levels, sleep latency of 31–60 minutes was noted. With p<0.001, these findings were statistically significant. The length of sleep was considerably longer in the low-stress patients and shorter in the majority of the high-stress subjects (p=0.04). participants with low stress levels had habitual sleep efficiency of >85%, whereas participants with high stress levels had it at <65% with high-stress levels which was significant with p<0.001. Subjects with low stress levels experienced considerably less sleep disruptions, whereas those with high stress experienced three times/more sleep disturbances (p=0.01). Using the PSQI component scores, which are displayed in Table 3, daytime dysfunction was similarly considerably greater in patients with high stress levels and significantly lower in subjects with low stress levels (p<0.001).

According to the study results, 52.38% (n=308) of the subjects with stress reported having no trouble focusing on their studies, while 49.34% (n=150) of the subjects without perceived stress reported having trouble focusing on their studies. Of the subjects with stress, 47.61% (n=280) reported having trouble focusing. Talking to friends was the most popular coping technique used by survey participants (42.26%; n = 164) who felt stressed followed by listening to music or watching movies by 24.74% (n=96) subjects, Table 4 indicates that 18.04% (n=70) of the study respondents used social media, 12.88% (n=50) of the subjects engaged in regular exercise, meditation, or yoga, and the least number of study subjects—2.06% (n=8)—adopted a healthy diet.

DISCUSSION

In the current study, there were 39.23 (n = 350) females and 60.76% (n = 542) males. Of the individuals, 5.62 (n = 50) were 18 years old, 17.26% (n = 154) were 19 years old, 38.78 (n = 346) were 20 years old, 21.74% (n = 194) were 21 years old, 12.55% (n = 112) were 22 years old, and 4.03% (n = 36) were 23 years old, respectively. During the study year, 16.59% (n=148) of the subjects were in their first year of medical school, 28.57% (n=254) in their second year, 36.78% (n=346) in their third year, and 16.14% (n=144) in their final year.

According to the perceived stress category, 56.50% (n=504) of the research participants reported low stress (levels 0–13), 32.73% (n=292) reported moderate stress (levels 14–26), and 10.76% (n=96) reported severe stress (levels 27–40). These findings were contrasted with those from the investigations conducted in 2017 by Heinen I et al. and in 2020 by Brooks SK et al., in which the authors evaluated people whose demographics were similar to those of the current study. The study's findings revealed that, among first-year medical students, 1.58% (n = 8), 34.24% (n = 100), and 4.16% (n = 40) of the participants had low, moderate, or high stress levels, respectively. Among second-year medical students, the subjects with low, moderate, and high stress levels were 42.06% (n=212), 10.95% (n=32), and 10.41% (n=10), respectively.

In third-year students, 52.38% (n=264), 21.23% (n=62), and 20.83% (n=20) showed signs of low, moderate, and severe stress, respectively. Among final-year students, the percentages of subjects with mild, moderate, and severe stress were 3.96% (n = 20), 33.56% (n = 98), and 27.08% (n = 26), respectively. The third and final year students had higher levels of stress than the first and second year students, according to these statistically significant data ($p=0.04$). These findings aligned with research by Quek TT et al. (2019) and Robello CR et al. (2018), who found that study participants' perceptions of stress during COVID-19 infection were comparable. It was demonstrated that the greatest subjective sleep quality of very good was attained by 16 participants with low stress, 260 subjects with moderate stress, and 260 individuals with low stress.

When stress increased from mild to severe ($p<0.001$), the subjective sleep quality went from very excellent to very awful. Sleep latency was >60 minutes in 10, 40, and 14 participants with low, moderate, and high stress, and ≤ 15 minutes in 244 subjects with low stress, 60 subjects with moderate stress, and 32 subjects with high stress. The length of sleep was considerably longer in the low-stress patients and shorter in the majority of the high-stress subjects ($p=0.04$).

Subjects with low stress levels experienced considerably less sleep disruptions, whereas those with high stress experienced three times/more sleep disturbances ($p=0.01$). Using PSQI component scores, daytime dysfunction was similarly considerably greater in patients with high stress levels and significantly lower in subjects with low stress levels ($p<0.001$). These findings were consistent with those of Marelli S et al. (12) in 2021 and Ji XW et al. (13), who observed a similar pattern of sleep disruptions and related sleep patterns in patients who reported feeling stressed.

52.38% (n=308) of the participants with stress reported having no trouble focusing on the studies, compared to 47.61% (n=280) of the subjects who felt stressed, whereas, 49.34% (n=150) subjects without perceived stress had difficulty in concentrating on studies? Talking to friends was the most popular coping strategy used by study participants with perceived stress (42.26%; n =164), followed by watching films or listening to music (24.74%; n =96); utilising social media (18.04%; n =70); engaging in regular exercise, meditation, or yoga (12.88%; n =50); and eating a healthy diet (2.06%) study participants. These results were consistent with the research conducted by Li Y et al. in 2021 and Cullen W et al. in 2020, who both found difficulty focusing in their studies on stress-stricken patients and comparable results to the current study in terms of the coping mechanisms used.

CONCLUSION

The current study finds that medical students' responses to the COVID-19 epidemic have been diverse and forceful, and that mental health concerns should be taken into account for all age groups and sectors within society. During their online education, students might experience less stress by utilising online counselling and management programmes. A few disadvantages of the study—the lower sample size, cross-sectional design, and brief monitoring period—call for more longitudinal research.

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TABLES

S. No	Characteristics	Percentage (%)	Number (n=892)
1.	Gender		
a)	Males	60.76	542
b)	Females	39.23	350
2.	Age (years)		
a)	18	5.62	50
b)	19	17.26	154
c)	20	38.78	346
d)	21	21.74	194
e)	22	12.55	112
f)	23	4.03	36
3.	Study Year		
a)	First-year	16.59	148
b)	Second year	28.47	254
c)	Third year	38.78	346
d)	Final year	16.14	144
4.	Perceived stress category		
5.	Low (0-13)	56.50	504
6.	Moderate (14-26)	32.73	292
7.	High (27-40)	10.76	96

Table 1: Demographic data and perceived stress in the study subjects

S. No	Study year of subjects	Stress Level						p-value
		Low		Moderate		High		
		n	%	n	%	n	%	
1.	1 st year	8	1.58	100	34.24	40	4.16	0.04
2.	2 nd year	212	42.06	32	10.95	10	10.41	
3.	3 rd year	264	52.38	62	21.23	20	20.83	
4.	Final year	20	3.96	98	33.56	26	27.08	
5.	Total	504	1003	292	100	96	100	

Table 2: Association between study year of subjects and perceived stress categories in study subjects

S. No	PSQI components	Stress Level			p-value
		Low (n=504)	Moderate (n=292)	High (n=96)	

Day time dysfunction					
1.	Never	256	90	18	<0.001
2.	Less than a week	212	110	28	
3.	Once/twice a week	20	74	30	
4.	3 times/more a week	16	18	20	
Sleep disturbances					
1.	Not during last month	244	160	22	0.01
2.	Less than a week	226	100	28	
3.	Once/twice a week	20	20	22	
4.	3 times/more a week	14	12	24	
Habitual sleep efficiency (%)					
1.	>85	212	90	26	<0.001
2.	75-84	224	130	28	
3.	65-74	40	48	22	
4.	<65	28	24	20	
Sleep duration					
1.	>7	164	100	56	0.04
2.	6-7	120	130	24	
3.	5-6	136	50	12	
4.	<5	84	32	4	
Sleep latency (min)					
1.	≤15	244	60	32	<0.001
2.	16-30	220	72	24	
3.	31-60	30	120	26	
4.	>60	10	40	14	
Subjective sleep quality					
1.	Very good	260	124	16	<0.001
2.	Fairly good	216	40	20	
3.	Fairly bad	18	102	28	
4.	Very bad	10	26	32	

Table 3: Association between PSQI and perceived stress categories in the study subjects