

"AN INCREASING DISQUIET DUE TO THE EFFECT OF THE PANDEMIC ON PHYSICAL AND MENTAL HEALTH OF MEDICAL STUDENTS: A CROSS-SECTIONAL STUDY"

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ABSTRACT

Background

The COVID-19 outbreak created havoc, resulting in significant morbidity and mortality. Due to the shift of lectures and virtual consultations online, the education and healthcare industries were vastly affected. The present study was planned among medical students to identify the impact of a pandemic on their physical and mental health.

Methodology

A prospective cross-sectional study was conducted among 115 MBBS undergraduate students. The data was collected through an online questionnaire. Data thus collected was analyzed using descriptive and thematic analysis.

Results

Amongst all, 66.1% were females, although 67% had normal BMI, and 24.3% were overweight. 44.34% were active online for more than 10 hours, however, only 49.56% preferred to spend it on academics. 83.5% of students faced difficulties in their studies. 69.6% of students perceived their eating habits to change during the pandemic & 81.7% of students reported changes in their sleeping habits. Most students (67%) noticed weight gain during the lockdown. There are various physical symptoms developed during the lockdown. 63.5% of students agreed that the shift to online classes was the reason for their stress. 52.2% were affected by COVID-19, and 87.8% perceived that going to crowded places was stressful.

Conclusion

The study concluded that overall, students had a mixed perception of the changed lifestyle due to the pandemic. However, it had few positive (availability of time, family bonding, scope for creativity) and more negative (stress and anxiety, likewise, weakness, eye strain, headache, and weight gain) effects on their physical and mental health.

Recommendations

The current study recommends regular evaluation of the medical student's mental and physical health.

Keywords: Pandemic, Online teaching, Lifestyle, Physical health, Mental health, Medical Students

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Key message: A Health Crisis like the COVID-19 pandemic has shown us the way we should look at technological advancement in medical education. Although it was considered a blessing in disguise, the adverse effects of the pandemic on the mental and physical health of medical students, as observed in this study, has given a warning for the increasing disquiet.

BACKGROUND

The COVID-19 outbreak, which created havoc in the lives of people, was initially declared a public health emergency of international importance by the WHO

(World Health Organization) in January 2020. It was later declared a Pandemic on 11 March 2020. Throughout the world, it resulted in significant morbidity and mortality. It has negatively affected the mental health of undergraduate medical students, with the prevalence and levels of anxiety and stress being increased, and depression symptoms remaining unaltered. [1]

Education and healthcare industries were vastly affected by the cancellation of classes due to the pandemic, as they went online. In a very short period, students moved from the physical world of learning that provided them with much-needed practical skills and patient interactions, to being seated behind a screen for hours on the other end. [2]

Continuous online lectures led to prolonged screen exposure, which affected mental health & physical health, leading to stress, anxiety, and disappointment due to some unavoidable issues concerning the virtual learning strategy. [3] However, there was a paucity of studies in this area which perpetuated the need to do this research. The current study evaluated the perception of students towards the pandemic and also highlighted the effect on the physical and mental health of medical students.

Aim

The study aims to identify the factors affecting students' life and give an insight into various challenges faced by students during the pandemic, which can help us to devise strategies to manage the crisis in a better way in the future.

Objectives

- To evaluate the perception of students towards the changed lifestyle during the pandemic.
- To identify the factors affecting physical & mental health during the pandemic.

METHODOLOGY

Study design

A prospective cross-sectional study was conducted from 1st September to 31st October 2022 for 2 months.

Study setting

Great Eastern Medical School and Hospital, a tertiary health care setup of Andhra Pradesh.

Participants

Based on inclusion and exclusion criteria, the final sample size selected was 115.

Inclusion Criteria

All students in the Final year MBBS part II who gave consent to participate in the study were included in the study.

Exclusion Criteria

Those who didn't respond even after 2 reminders and those who gave incompletely filled forms were excluded from the study.

Bias

There were chances of selection bias, which was eliminated by using a complete enumeration sampling method, and non-response was eliminated by giving gentle reminders via email/WhatsApp/phone call. Recall bias was eliminated by developing a validated, reliable study tool with relevant questions.

Data Source & Measurement

A pre-validated, semi-structured online Google survey questionnaire was used as the study tool for data collection. The questionnaire consisted of MCQs related to students' perceptions & factors affecting their physical and mental health during the pandemic, along with a few open-ended questions. A brief orientation session was conducted by the author to familiarize the motive and idea behind the study with the participants.

Statistical Methods

The quantitative data was analyzed using SPSS statistical software and the descriptive statistics were presented in terms of percentage, proportion, mean, SD, and chi-square tests to find out the p values. Qualitative data obtained from open-ended questions were analyzed using thematic analysis.

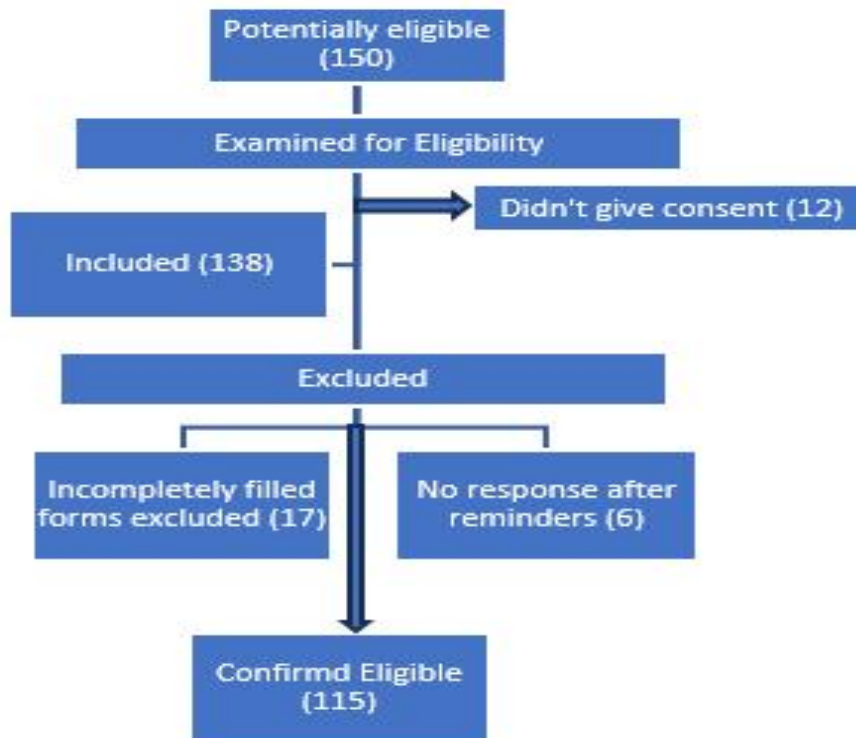
Ethical consideration

The ethical clearance was obtained from the Institutional Ethical Committee of GEMS & Hospital, with the ethical clearance/ registration number 15/IEC/GEMS & H 2022 dated 27/08/2022

RESULTS

Amongst all 150 students, 115 students were selected as the sample size with a response rate of 76.66%. (Figure 1)

Figure -1: Flowchart of determining the Sample Size (N=115)

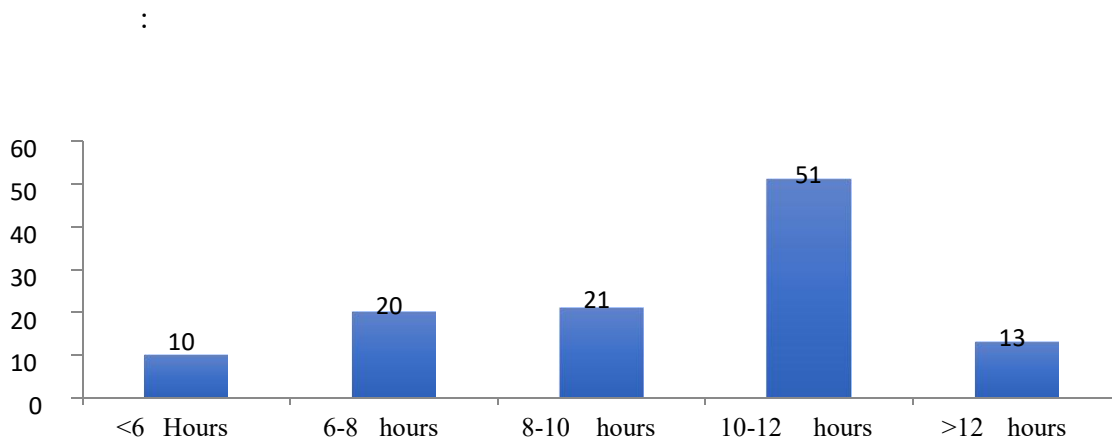


The majority (66.1%) were females, and 33.9% were males attributed to either more female students responding to the questionnaire or a high proportion of females in the batch. The average age of the participants was 22.94 ± 1.69 . The majority of them were Hindu (79%), followed by Muslims (12%), Christians (6%) and others (3%). Likewise, 88% belonged to the general caste, 4% ST/SC and 8% other backward caste.

Although 67% had normal BMI, 24.3% were overweight, 6.1% were underweight, and 2.6% were obese.

The majority of students (44.34%) were active online for 10-12 hours; the rest of the participants, although engaged in online activity, had durations that varied from less than 6 to more than 12 hours. [Figure 2]

Figure 2: Number of online active hours per day



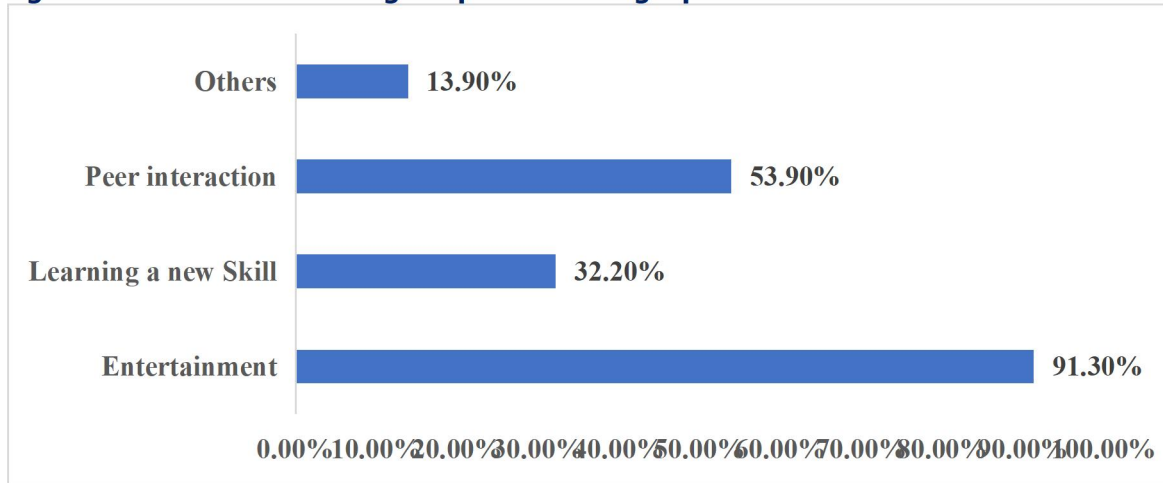
49.56% of students had spent 6-8 hours of their online time on academic purposes, and the rest preferred less

than either 4-6 hours (20.86%) or less than 4 hours (25.21%) for academics.

However, when the use of devices for non-academic activity was questioned, a huge percentage (91.3%) of students used their devices for Entertainment,

followed by peer interaction, learning a new skill, and various other reasons. [Figure 3]

Figure 3- Reason for the usage of phones during a pandemic



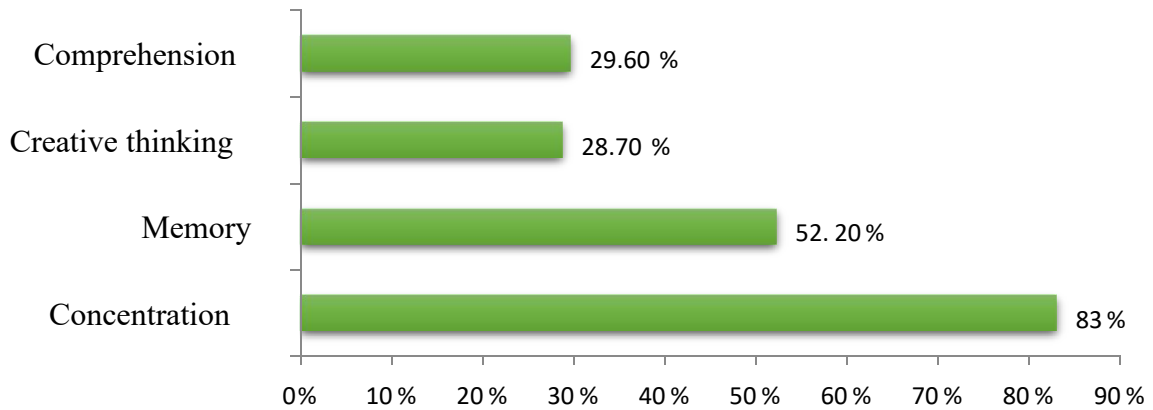
The majority of the students responded that their daily routine was disturbed, leading to a sense of laziness, boredom, and reduced productivity after online classes, which were expressed verbatim [Table 1]

Table 1: Verbatim of students on the effect of online classes on daily activity

Participants	Responses
Participant 1	"There was so much mental stress and loss of interest in day-to-day activities. There's no one-to-one interaction, and most of the classes' routines have been disturbed, leading to dissatisfaction and incompleteness."
Participant 2	"I didn't take online classes seriously, So I used to attend them casually which was quite the opposite of my behavior before the pandemic, In the physical classes I used to write notes, and attend regularly as per schedule, So, I was organized but during online classes, I felt very lazy, disorganized and restless throughout."
Participant 3	"A sedentary lifestyle became boring with online lectures, which made me gain much more weight than I could ever gain if I had continued physical classes. I became less attentive towards academics and my health."
Participant 4	"It caused a lot of stress, and there was no fun in learning. It was all very monotonous, and my physical activity also decreased, eventually, I didn't follow any routine that I used to do before the pandemic."
Participant 5	"At the beginning of lockdown, I became lazy and didn't follow the routine that I used to do before, But afterward I realized the situation where I needed to adjust as per the situational environment. So, I started to change my strategies and adapt to the new teaching and learning methods."

83.5% of students faced difficulties in studies, such as comprehension abilities, recall memory issues, and reduced critical thinking skills post-pandemic. [Figure-4]

Figure 4- Academic difficulties faced during & post-pandemic



Amongst them only 53% tried to compensate for the academic loss during the pandemic by various strategies such as learning from YouTube videos, exam preparatory applications, and textbook reading. 69.6% of students perceived that their eating habits had changed during the pandemic. Among them majority (73.75%) noticed an increased frequency of snacking in between the meals, and the rest observed a changed pattern of their meals. Likewise, 81.7% of

students reported changes in their sleeping habits, out of which 58.26% of students had more than 8 hours of undisturbed sleep, and the rest had a disturbed sleep of < 8 hours. 56.52% of students were involved in physical activity during the lockdown in terms of walking indoors, along with home-based yoga & exercises. However, the majority of students (67%) noticed weight gain during the lockdown [Table 2].

Table 2: Amount of weight gain as perceived by students: (N=77)

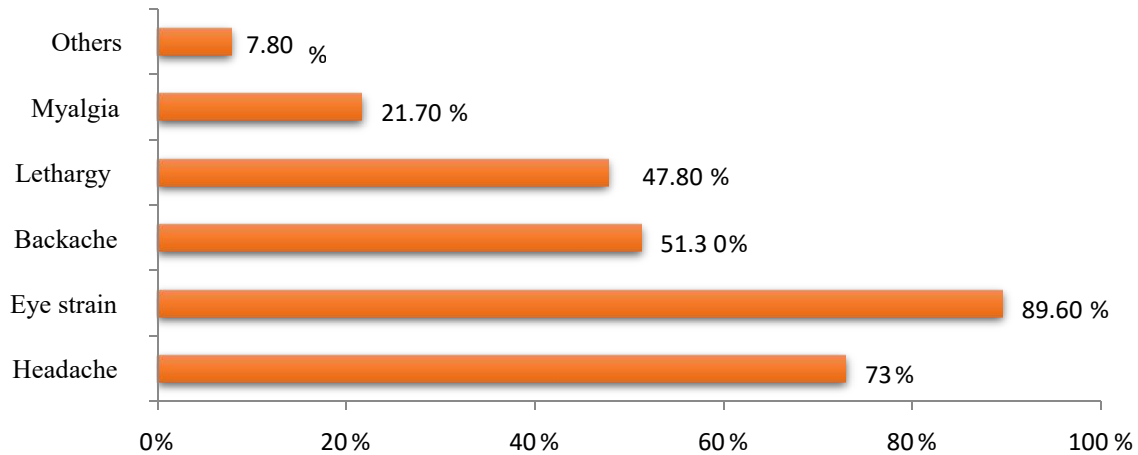
SL no.	Weight	Number of participants	Percentage of participants
1.	< 4 KG	7	9.09%
2.	4-6 KG	45	58.44%
3.	7-10 KG	20	25.97%
4.	> 10 KG	5	6.49%

KG: Kilograms

There are various symptoms developed during the lockdown while continuing online sessions, predominantly Eye strain 89.6% followed by

Headache 73%, Backache 51.3%, Lethargy 47.8%, myalgia 21.75%, & other 7.8% symptoms. [Figure 5]

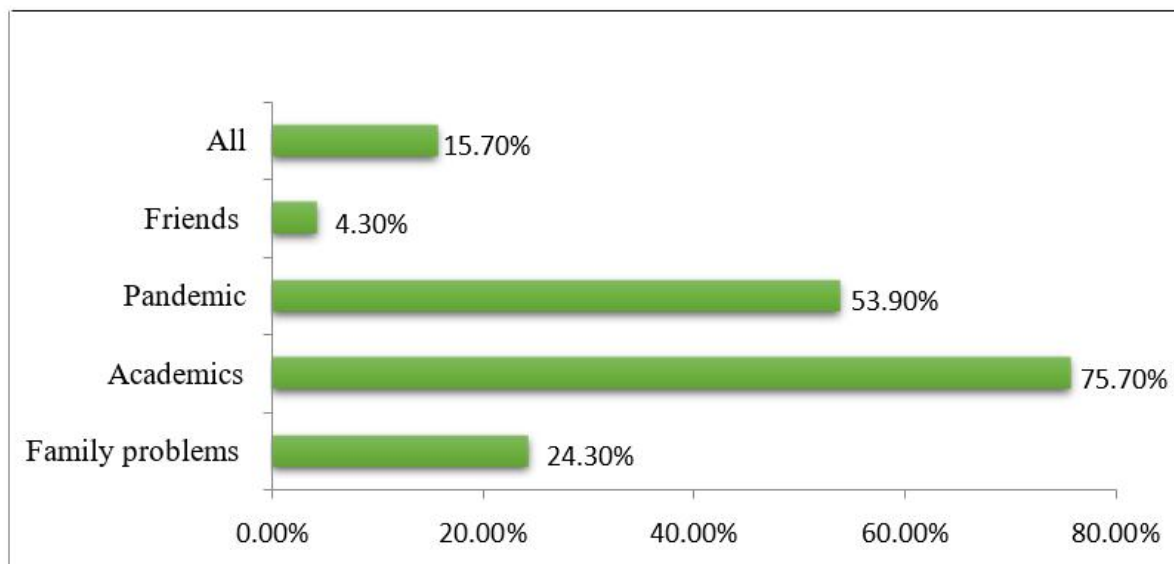
Figure 5- Physical Signs/symptoms developed during online classes



Average online active hours were 6-8 hours, which accounts for one-quarter of the day, and staying in front of the screen for such a long time has created deleterious effects on students' health. 63.5% of students agreed that the shift to online classes was the

reason for their stress. 75.7% of students were stressed because of Academics, especially practical and clinical, 53.9% due to the pandemic, 24.3% due to family problems, and 4.3% due to losing out to friends. [Figure 6]

Figure 6: Reasons for stress as perceived by students



All the students tried different strategies to cope with the stress as per their needs and feasibility. Strategies used were meditation, sleep, exercise, listening to music, watching movies & web series, staying away

from fake news, spending time with family, discovering new hobbies, journaling, and painting, along with story & poetry writing.

52.2% were affected by COVID-19 diseases, and 87.8% perceived going to crowded places like hospitals, markets, religious places, etc., as stressful. The qualitative data was obtained from open-ended questions asked about the effects of the pandemic on their physical and mental health, further analyzing the data led to the emergence of a few interesting themes

such as availability of enough time, opportunity for personal care, rest & relaxation, likewise family bonding, relaxation and opting new hobbies & creativity as positive effects and lethargy, weakness, eye strain, weight gain, respiratory tract infections, likewise academic Stress, anxiety, poor concentration, restlessness, irritation & anger. [Table-3]

Table 3: Themes emerged for the effects of the pandemic on students' health

Pandemic effects	Physical health	Mental health
Positive	Enough time Personal care Rest & relaxation	Family bonding Relaxation New hobbies & Creativity
Negative	Lethargy Weakness Eye strain Weight gain, Respiratory tract infections	Academic Stress Anxiety Poor concentration Restlessness Irritation & anger

DISCUSSION

In the current study response rate was found to be 76.66%, and the majority (66%) were females. Similarly, another study from Pakistan has shown a much higher response rate, with the majority (64.1%) of female participants. This could be attributed to a higher proportion of girls students admitted to the institute, and data collection timings clashed with the physical exam sessions after a long gap due to COVID-19, leading to less participation in the survey. [4]

The COVID-19 pandemic has disrupted education systems globally, affecting the most vulnerable learners the hardest. It has increased inequalities and exacerbated a pre-existing education crisis. The study observed that confinement to home due to the lockdown created panic among students attributed to disruptions in learning patterns and strategies. [5]

Most of the participants' BMIs were in the normal range. Most of the students were engaged in daily online activity of 10-12 hours and dedicated 6-8 hours to academics. Apart from academics, students used their gadgets for entertainment and peer interaction attributed to the abundance of time and curiosity to know about the disease, its effects, prevention, control, and management updates. Results from the current study were similar to a study that concluded that participants who were found spending more time on screen complained of disturbed sleep, headache, and eye strain at the end of long online classes. [6]

The present study results showed that the majority of students agreed that they were facing difficulty staying focused on studies post-pandemic, and a majority of students noted that concentration and memory were the predominant areas affected. This could be attributed to online teaching, teaching, and digital intimacy during a pandemic. Participants mentioned that they utilized various sources, like

YouTube and exam preparation applications, to compensate for the academic loss. Students also noticed a change in eating habits in terms of – a change in the pattern of 3 major meals and an increased frequency of snacking could be due to limitations to go outside, and at the same time, no limits to screen time and no accountability, responsibility as well. These results were similar to those found in a few studies, which showed that during a nationwide lockdown due to the COVID-19 pandemic, a significant percentage of individuals had experienced modification in their dietary habits and increased snacking. [7,8]

Students noted changes in sleeping habits & disturbed quality of sleep. This could be attributed to misinformation and increased digital intimacy during the pandemic. From studies, it was evident that the COVID-19 outbreak significantly reduced young adults' sleep quality, which influenced negative emotions and led to stress and anxiety. A slight variation was noted in this study. The majority of the participants reported an increase in their sleep during that time. Data from the study showed similar results. [9, 10]

From a rapid review study, it was found that there was an increase in moderate, vigorous, and total physical activity among the university students during the lockdown period, which was similar to the results from the current study, which showed that a majority of the students were engaged in physical activity during the lockdown. Participants specified that they used to do Yoga, cardio workouts, and brisk walking on the lawn. However, data from other studies have also shown that the COVID-19 outbreak limited physical activity and increased sedentary behavior.[11] Results from the current study revealed that students noticed weight gain during the lockdown period, which was largely attributed to physical inactivity, changed eating habits, and changes in sleeping

patterns, and the results were similar to many previous studies, which showed that participants gained weight during the pandemic. [12]

Students were feeling stressed during the pandemic when classes shifted online, and among the responses of reasons for stress were attributed to academics mostly clinical and practical sessions, pandemic effects, and family problems. Similar studies have found that students were concerned about family members' affection and academics as well. Students experienced anxiety because of the COVID-19 outbreak, and the factors that affected anxiety were: academic challenges, effects on daily life, and economic stressors. [13-15]

Students found different measures to cope with the stress, and the predominant measure was Meditation. Increased sleep time was one of the measures reported by students that helped them cope with stress. Similar results were found in a study in which students stated that they felt relaxed after long hours of sleep. [16]

GENERALIZABILITY

The study was conducted only in final year MBBS students with a small sample; this could be planned in a larger population of students, including various other streams, to generalize the findings.

CONCLUSION

The current study concluded that overall, students had a mixed perception of the pandemic. However, it had both positive and negative effects on their physical and mental health. The common factors affecting students' mental health were academic stress, anxiety,

and physical health disturbed sleep, eye strain, headache, and weight gain.

RECOMMENDATIONS

The current study recommends regular evaluation of the medical student's mental and physical health. Certain measures need to be taken for crisis management and developing resilience among students in the future, such as decreasing the hours of online classes, emphasizing more practical aspects through advanced technology in online classes, counseling sessions for students, and effective mentorship programs.

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CONFLICT OF INTEREST

The authors had no conflict of interest.

AUTHORS CONTRIBUTIONS

	Contributor 1	Contributor 2	Contributor 3	Contributor 4
Concepts	√	√	√	
Design	√	√	√	
Definition of intellectual content	√	√	√	√
Literature search	√	√	√	√
Clinical studies	√	√	√	√
Experimental studies	√	√	√	
Data acquisition	√	√	√	
Data analysis	√	√	√	√
Statistical analysis	√	√	√	√
Manuscript preparation	√	√	√	√
Manuscript editing	√	√	√	√
Manuscript review	√	√	√	√
Guarantor	√	√	√	

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DATA AVAILABILITY

The data was collected from the participants and stored safely with the researchers maintaining anonymity and confidentiality. However, it will be made available in case of requirements and further requests to the researchers.

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