

Impact of Online Classes on the Health of Indian Medical and Dental Students during the Pandemic Period of COVID-19: An Observational Study

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Abstract

Background After attending online classes during the coronavirus disease pandemic, drastic changes were observed in their physical, mental, and social health, which were also reflected in their academic performances. All these negative impacts were due to prolonged screen time and sedentary lifestyle due to online classes, no interaction with classmates, and poor teacher–student interaction.

Material and Method This was an observational study, and the data were collected through a self-designed questionnaire sent via the mode of electronic message (Google forms) to Indian medical and dental students across India. Eight hundred students responded to our questionnaire. All the responses were then compiled in the form of adequate tables and charts to study the responses.

Results Among 800 responders, 83.4% students preferred the offline mode of teaching over the online mode. Online classes had negative impact on the academic performance of 73.6% students and 67% students were frustrated with their academic performance. Weight gain due to lockdown (online classes) was seen in 62.6% students. The low energy level was seen in 58.8% students. Lost interest toward careers was observed in 51.6% students. Complains of frequent headaches were seen in 50.6% students, and 54.3% students had visual problems. Interaction with batch mates during classes was missed by 76.1% students.

Conclusion From the present study, we conclude that there is a negative impact of online classes not only on the physical, mental, and social health but also on the academic performance and interest toward the careers of Indian medical and dental students.

Keywords

- ▶ COVID-19
- ▶ health
- ▶ lockdown
- ▶ online teaching
- ▶ students

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Introduction

With the outbreak of the coronavirus disease 2019 (COVID-19) pandemic, a drastic change in the education system has been observed, mainly in medical and dental branches. All universities have moved toward online teaching, suspending the offline classes in a span of few days.¹ This transition was a necessity for the education system during such a contagious situation. But every change comes with its own pitfalls. On the one hand, online teaching is helping to continue the education without putting students at the risk of catching the virus, and, on the other hand, this method is slowly and progressively making students prone to depression and many other health problems. The major drawback of online teaching and learning is limited nonverbal communication.² Stated as the definition on the health by World Health Organization "it is a state of complete physical, mental and social wellbeing and not merely an absence of disease and infirmity",³ all three aspects of health are affected in online classes. At present, medical students are exposed to fully online teaching modules, textbooks, video lectures, and online computer-based theory exams and viva.^{4,5} Students are suffering from frequent headaches and visual disturbances due to increased screen time. Due to online classes, there is a shift toward a sedentary lifestyle because of prolonged sitting and this shift is leading to weight gain which is a risk factor for many diseases. Menstrual irregularities are also seen due to sedentary lifestyle, stress, and weight gain. Looking toward mental and social aspects of health, students are unknowingly going toward depression. The reason for such lockdown-based depression is the lack of social interaction with peer groups which is, in turn, leading to frustrated and aggressive nature. To combat their social isolation, students have started deviating toward addiction, incidences of smoking and drinking are increasing majorly due to loneliness and pressure of studies. All these factors are influencing the academic performance of students. Since childhood students are prepared and studying via the offline pattern of teaching. Due to lockdown when suddenly the teaching pattern shifted toward the online pattern of teaching, students were not able to adapt to this pattern and lack of concentration and poor performance were observed. This poor performance again results in frustrated and aggressive nature. This frustration also affects the relationship of students with their parents. This online teaching pattern has a more aggressive effect on medical and dental students because both of these branches demand clinical exposure which cannot be provided via online teaching. In both these branches, students should be able to interact with their subject (cadaver or patient) physically. Virtual interaction with the subject is not a substitute for physical interaction. Secondly, in both these branches, interactive teaching plays a very important role which is lacking due to the online pattern. It is difficult both for students and teachers to understand the concept and to educate the students. In long term, this online teaching pattern will have a negative impact not merely on the health but also on the careers of the students.

Aims and Objectives

This study was conducted to evaluate the impact of online teaching on physical, mental, and social aspects of the health of Indian medical and dental students during the period of COVID-19 pandemic. Knowledge about the impact of online classes is important for both teachers and students, because if any subsequent pandemic wave strikes, students should be mentally prepared to continue their studies via the online teaching mode with minimal effect on their health and teachers should be ready to educate students via the online teaching mode with maximum understanding.

Material and Methods

Before starting the study, approval from the Institutional Ethical Committee of Subharti Medical College, Meerut, in accordance with the Helsinki Declaration of 1975 revised in 2000, was taken. It was an observational study conducted from 25th July 2021 to 25th September 2021 (2 months duration). Data were collected using an online self-administered questionnaire sent via the mode of electronic messages (Google forms) to medical and dental students across India. Students willing to participate filled the form without any compulsion. The sample size consisted of 800 individuals who responded adequately. The sampling type was simple purposive. The responses were then compiled and computed in the form of tables and figures.

Statistical Analysis

All statistical analyses were carried out through statistical software SPSS version 25.0. All the graphs and tables were compiled using Microsoft Excel.

Result

► **Table 1** shows the compilation of all the responses collected during the study. In the 800 collected responses of Indian medical and dental students, 470 (58.8%) were females and 330 (41.3%) were males. In the study population, 682 (85.3%) students had siblings while 118 (14.7%) were single child. Parents of 121 (15.1%) students were doctor, whereas the occupation of parents of 679 (84.9%) students was other than a doctor. Out of 800, only 133 (16.6%) students preferred the online mode of teaching and the rest of 667 (83.4%) students preferred the offline mode. Of 800 students, 589 (73.6%) had a bad impact of online teaching on their academic performance while 211 (26.4%) had a good impact of online teaching on their academic performance. In the study, it was found that 360 (45%) students felt lonely during the lockdown (online classes) while 440 (55%) students did not feel any loneliness. Disturbance in the sleep cycle during lockdown (online classes) was observed in 386 (48.3%) students, while 414 (51.7%) students did not experience any sleep disturbance. Weight gain was observed in 501 (62.6%) students, and

Table 1 Changes seen in male and female medical and dental students during lockdown

Changes during lockdown (COVID-19 pandemic)		Gender (absolute number)		Total frequency
		Male	Female	
Do you have siblings?	Yes	262	420	682
	No	68	50	118
	Total	330	470	800
Occupation of parents	Doctor	58	63	121
	Other	272	407	679
	Total	330	470	800
Preferred mode of teaching as a student	Offline	270	397	667
	Online	60	73	133
	Total	330	470	800
Impact of online teaching on online classes	Good	77	134	211
	Bad	253	336	589
	Total	330	470	800
Feel lonely during lockdown	Yes	165	195	360
	No	165	275	440
	Total	330	470	800
Disturbance in the sleep cycle	Yes	145	241	386
	No	185	229	414
	Total	330	470	800
Weight gain	Yes	208	293	501
	No	122	177	299
	Total	330	470	800
Frustrated with academic performance	Yes	229	307	536
	No	101	163	264
	Total	330	470	800
Deviated toward addiction	Yes	114	104	218
	No	216	366	582
	Total	330	470	800
Feeling low in energy	Yes	180	290	470
	No	150	180	330
	Total	330	470	800
Lost interest in careers	Yes	179	234	413
	No	151	236	387
	Total	330	470	800
Frequent headaches	Yes	133	272	405
	No	197	198	395
	Total	330	470	800
Visual problem	Yes	155	279	434
	No	175	191	366
	Total	330	470	800
Prepared for online classes if another pandemic wave strikes	Yes	198	271	469
	No	132	199	331
	Total	330	470	800

(Continued)

Table 1 (Continued)

Changes during lockdown (COVID-19 pandemic)		Gender (absolute number)		Total frequency
		Male	Female	
Relationship with parents	Good	278	409	687
	Bad	52	61	113
	Total	330	470	800
Miss interaction with batch mates	Yes	249	360	609
	No	81	110	191
	Total	330	470	800

Abbreviation: COVID-19, coronavirus disease 2019.

there was no weight gain in 299 (37.4%) students during lockdown (online classes). According to the collected data, 536 (67%) students were frustrated with their academic performance during online teaching and only 264 (33%) students were not frustrated with their academic performance. During the lockdown, 218 (27.3%) students were deviated toward addiction and no such deviation was seen in 582 (72.8%) students. In the study population, 470 (58.8%) students felt lethargic during lockdown (online classes) and the rest of the 330 (41.3%) students did not feel lethargic. During online classes, 413 (51.6%) students lost interest in their careers, while 387 (48.4%) students did not lose interest in their careers. During online classes, 405 (50.6%) students experienced frequent headaches and 434 (54.3%) students had visual problems. In case another pandemic wave strikes, 486 (58.6%) students were mentally prepared for online classes while 331 (41.4%) students were still not mentally prepared for online classes. During lockdown, 687 (85.9%) students had a good relationship with their parents while the relationship of only 113 (14.1%) students was affected with parents. During lockdown (online classes), 609 (76.1%) students missed the interaction with their batch mates and only 191 (23.9%) students did not miss the interaction with their batch mates. Out of 470 female students, 141 (30%) faced menstrual irregularities during online classes due to the COVID-19 pandemic and 329 (70%) female students did not face any menstrual irregularities (► Fig. 1). Out of 330 male students, 118 (36%) male students experienced aggressive behavior during online classes due to the COVID-19 pandemic and 212 (64%) male students did not experience any such aggressive behavior (► Fig. 2). Out of 218 students who were deviated to addiction, 66 (30.3%) deviated toward alcohol drinking and 67 (30.7%) toward cigarette smoking (► Figs. 3 and 4).

Discussion

In our study, 58.8% students were females and 41.3% were males. According to our study, the preferred mode of teaching was offline (83.4%) which was similar to the study conducted by Khalil et al.⁶ In our study, 54.3% students faced

Menstrual irregularities in female students during online classes

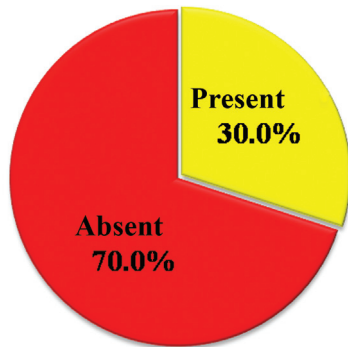


Fig. 1 Menstrual irregularities in female students during online classes.

Aggressive nature in male students during online classes

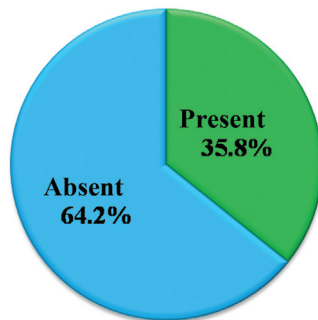


Fig. 2 Aggressive nature in male students during online classes.

visual problems which was also seen in the study conducted by Kaya.⁷ Our study shows that 48.3% students had sleep disturbance while 45% students felt loneliness and 50.6% students experienced frequent headaches during online classes and these results were the same as that of the study conducted by Mridul et al.⁸ In our study, 62.6% students had weight gain during online classes which was also seen in the study conducted by Rezaeipour.⁹ In our study, 30% females had menstrual irregularities and 35.8% students had aggressive behavior.

Conclusion

From the present study, we can conclude that online classes have a negative impact not only on the mental but also on the physical and social health of Indian medical and dental students. In the study, it is observed that the preferred mode of teaching for most of the students is still offline.

Deviation to alcohol

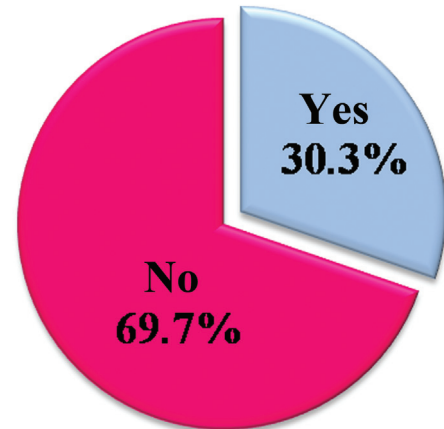


Fig. 3 Deviation to alcohol.

Deviation to smoking

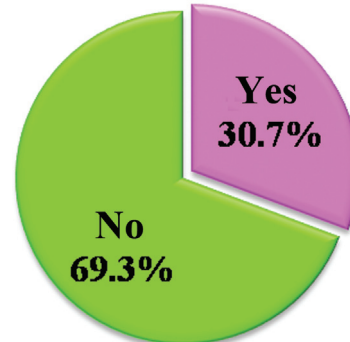


Fig. 4 Deviation to smoking.

Due to this shift toward online classes, students are frustrated because they are not able to study adequately via online teaching. On the one hand, online teaching is a great help in this pandemic to maintain the continuity of education, but, on the other hand, it has been only able to provide theoretical knowledge to students. Medical and dental branches are predominantly ruled by practical work with full clinical exposure. This practical exposure cannot be provided via online teaching. If these budding doctors will not interact with their subjects (cadaver or patient), they will not be able to learn medical science adequately. And this lack of exposure is dragging these students toward frustration, lowering of interest toward their careers. This is not only harmful for the careers of these students but also for the future medical fraternity, as these virtually trained professionals will be the

future of the medical field. Looking toward impact on the physical health, many students experience frequent headaches, problems in their vision, and disturbance in the sleep cycle. This is due to prolonged screen time and increased exposure to harmful rays. These headaches can be due to a vision problem, or they can be the first step toward migraine. These sleep changes further affect the lifestyle of students lowering their concentration power and increasing frustration. Weight gain was also observed in many students which could be due to a sedentary lifestyle. Weight gain is an important and common risk factor for many non-communicable lifestyle diseases like diabetes, hypertension, atherosclerosis, and many more. In many female students, menstrual irregularities were observed. Menstrual irregularities along with weight gain are ready-made platform for polycystic ovary syndrome which is emerging as the most common lifestyle disease in young women. Weight gain is also affecting the mental health of students. Students start having body image issues which can result in disorders like anorexia nervosa and bulimia nervosa. It was observed that due to the lack of interaction with peer groups and batch mates students feel lonely and aggressive. This loneliness is dragging them toward addiction. Addiction toward alcohol consumption and smoking cigarette is observed in many students. All these parameters like loneliness, frustration, addiction, weight gain, and poor academic performance due to lower concentration are slowly and progressively making these young students prone to depression and other major non-communicable lifestyle diseases. A healthy youth is important for the growth of the nation. In future, if another pandemic wave strikes, we should be ready to combat it, so it is really important to council students and their parents about lifestyle and importance of mental well-being for the a proper career of the students. It is also a necessity to figure

out a way to provide practical exposure to students without risking their health.

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Conflict of Interest
None declared.

References

- 1 Tanveer Awan M, Bhaumik A, Hassan S, Ul Haq I. Covid-19 pandemic, outbreak educational sector and students online learning in Saudi Arabia. *J Entrep Educ* 2020;23(03):23
- 2 Middleton AJ. How effective is distance education? *Int J Instr Media* 1997;24:133-138 Accessed October 12, 2021 at: <https://eric.ed.gov/?id=EJ569045>
- 3 Park K. Textbook of Preventive and Social Medicine 25th edition. Banarsidas Bhanot Publishers; 2019 chap-2, p.14, ISBN 978-93-82219-15-6
- 4 Williams DE. The future of medical education: flipping the classroom and education technology. *Ochsner J* 2016;16(01):14-15
- 5 Schwartzstein RM, Roberts DH. Saying goodbye to lectures in medical school-paradigm shift or passing fad? *N Engl J Med* 2017;377(07):605-607
- 6 Khalil R, Mansour AE, Fadda WA, et al. The sudden transition to synchronised online learning during the covid-19 pandemic in Saudi Arabia: a qualitative study exploring medical students perceptive. *BMC Med Educ* 2020;20:285
- 7 Kaya H. Investigation of the effect of online education on eye health in covid-19 pandemic. *Int J Assessment Tools Educ* 2020;7(03):488-496
- 8 Bandana BMridul, Sharma D, Kaur N. Online classes during covid-19 pandemic: anxiety, stress & depression among university students. *Ind J Forens Med Toxicol* 2021;15(01):186-189
- 9 Rezaeipour M. COVID-19-related weight gain in school-aged children. *Int J Endocrinol Metab* 2020;19(01):e110634