

Original research article

Effectiveness and Perception of Indian medical students on E-learning during COVID-19 pandemic

Ranjana C Shingne¹, Santosh Kumar Jha², Pradnya V Gurude³,
Indira Jha⁴, Alok Kumar Yadav⁵, Shivanand S Rathod⁶

¹Associate Professor, Department of Physiology, Dr Ulhas Patil Medical College and Hospital, Jalgaon, India

²Assistant Professor, Department of Physiology, Dr Ulhas Patil Medical College and Hospital, Jalgaon, India

³Associate Professor, Department of Anatomy, Grant Government Medical College, Mumbai, India

⁴Senior Resident, Department of Physiology, Indira Gandhi Institute of Medical Sciences, Patna, India

⁵Assistant Professor, Department of Physiology, Dr Ulhas Patil Medical College and Hospital, Jalgaon, India

⁶Professor, Department of Physiology, Dr Ulhas Patil Medical College and Hospital, Jalgaon, India

Corresponding Author: Indira Jha

E-mail: indi_mishra@yahoo.com

Abstract

Introduction: Medical education involves pre-clinical and clinical teaching to build a strong knowledge foundation and clinical experience for the medical students. COVID-19 pandemic has imposed challenges for medical education facilities, with the need to shift from tradition class room teaching to E-learning modality. This paradigm shift could generate changes in students' perception of this way of teaching and their perception might be different from the one found in studies previous to the pandemic.

Aim:

1. To assess effectiveness of E-learning classes as compared to conventional classroom teaching-learning method.
2. To assess perceptions of medical students on the role of E-learning in facilitating medical education during COVID-19 pandemic.
3. To evaluate knowledge of electronic gadgets used during E-learning activities.

Materials and Methods: This online study was conducted on 1st year MBBS students (total of 101 students), who have already completed online classes from March 2021 to July 2021. A set of self-designed questionnaire was given to assess the effectiveness of learning through online classes and their understanding with satisfaction level on various parameters.

Results: In our study, 61.39% of students reported that E-learning was good decision during lockdown. 63.38% of students preferred live lectures as compared to recorded one. 52.48% reported stress during pandemic. Most of the students (81.19%) increased screen time more than 4 hours during pandemic. In terms of examination, 49.50% of students were in favour of class room exam. Very few students (11.88%) of students reported technophobia. 49.50% of

students reported internet error while 52.48% of students reported surrounding disturbances while attending E-learning classes.

Conclusion: In case of emergencies like pandemic, online teaching could be one of the good option to continue medical education but it cannot replace traditional method of teaching and learning activities.

Keywords: COVID-19, E-learning, Medical education

Introduction

COVID-19 viral infection started in December 2019, Wuhan, China and spread rapidly throughout the globe. As the infection spread throughout the world rapidly, on March 11, 2020 World Health Organization (WHO) declares it as pandemic [1]. As the infection spreads rapidly, government of India announces nation wise lockdown on 25th March 2020 for 21 days, with instructions to follow social distancing, physical isolation, hand washing and use of mask and sanitizer [2]. Pandemic imposed lockdown in all areas, including educational institutions. In the wake of institute shutdown, this was challenging time for professional education which combated through introduction of E-learning through online classes so as to ensure continuation of teaching -learning process for medical students. Our institute started online classes from 20th April 2020 and continued till the end of academic year. Again, we continued e-learning process ON and OFF as per the guidelines of government of India. We did E-learning total of 5 months i.e. from March 2021- July 2021.

According to Bernard Luskin, E-learning stands for “exciting, energetic, engaging, extended learning [3]. E-learning has certain benefits as it incorporates visual and interactive features, pictures, videos that definitely help the students to understand the topic thoroughly [4]. As a part of tele-education, E-learning has well acknowledged in the past few decades. E-learning is widely used in biomedical education as a blended learning method. For example, lectures are conducted with E-learning method while demonstrations and practicals are conducted with traditional teaching method. Nowadays, E-learning is meant for the use of information and communication technologies to strengthen knowledge and performance [5].

COVID-19 is a viral disease; mainstay treatment is symptomatic, antiviral and immunization. As unavailability of specific antiviral drugs and vaccine against COVID-19, social distancing and isolation proved most effective and preventive strategy [6]. Thus, COVID-19 has caused major obstacle to all the educational institutions including medical colleges and healthcare systems over the globe [7]. Many authors have suggested that E-learning platform for students will remain an integral part even after the end of COVID-19 pandemic [8]. Because of ongoing pandemic, lockdown was frequently imposed and lift up. As lockdown restrictions include social distancing, face covering and frequent hand wash, all these restrictions has put us in a unique situation to conduct and evaluate online teaching program in medical colleges. Many students have acknowledged impact of COVID-19 on their academic performance [9, 10] and shown their role during pandemic [11,12]. Present study is conducted to investigate perception of medical students on the role of online teaching in facilitating medical education during the COVID-19 pandemic.

Materials and Methods

A cross-sectional open and closed questionnaire study was conducted in the Department of Physiology, Dr Ulhas Patil Medical College and Hospital, Jalgaon, Maharashtra, India. This online study was conducted with informed consent through Google Form on total of 150 first year MBBS students who have already completed online classes from March 2021 to July 2021. Out of 150 students, only 101 students responded while 49 students were not

participated in the study. All interested students who had submitted informed consent were included in this study. A set of self-designed questionnaire was given to assess the effectiveness of learning through online classes and their understanding with satisfaction level on various parameters. Ethical clearance was obtained from institutional ethical committee of Dr Ulhas Patil Medical College and Hospital, Jalgaon, Maharashtra, India.

This survey has been conducted from 1st August 2021 to 15th August 2021. Gentle reminder was given during survey to minimize errors of the study. The questionnaires are based on effectiveness of E-learning, role of E-learning in facilitating medical education and to assess the knowledge of electronic gadgets during E-learning activities. We have asked whether online teaching was good option opted by medical college, on which device was more compatible for attending classes, duration of screen time use, technophobia, comparison between online and offline learning method, difficulties and disturbances while attending online classes and further preference for the method of teaching.

Statistical Analysis

Data was analysed by frequency and percentage distribution. All the analysis was done by using Microsoft excel and Minitab-13.

Results

Table 1: Effectiveness of E-learning classes as compared to conventional classroom teaching

Questions	Classification	Frequency	Percentage
On which device you are attending online lectures?	Smartphone	83	82.18
	Desktop	01	00.99
	Laptop	13	12.87
	Tablet	04	03.96
Whether online teaching was good decision to continue your education during lockdown ?	Yes	62	61.39
	No	38	37.62
	Can't say	01	00.99
Do you feel flexibility while attending online lectures?	Yes	31	30.69
	No	41	40.59
	Sometimes	27	26.73
Which type of online lecture is good?	Live	63	62.38
	Recorded	36	35.64
What will you prefer in future?	E-learning	04	03.96
	Class room teaching	78	77.23
	Combine	19	18.81

Table 2: Perception of medical students on role of E-learning in facilitating medical education

Questions	Classification	Frequency	Percentage
Whether online teaching was good	Yes	62	61.39
	No	38	37.62

decision to continue your education during lockdown?	Can't say	01	00.99
Does pandemic has increased your stress ?	Yes	53	52.48
	No	07	06.93
	Sometimes	41	40.59
Are you feeling anxious during lockdown?	Yes	45	44.55
	No	16	15.84
	Sometimes	38	37.62
Duration of screen use before COVID-19 pandemic?	0-30 min	22	21.78
	1-2 hrs	64	63.37
	3-4 hrs	13	12.87
	>4 hrs	02	01.98
Duration of screen use during COVID-19 pandemic?	0-30 min	00	00.00
	1-2 hrs	02	01.98
	3-4 hrs	17	16.83
	>4 hrs	82	81.19
Do you like online teaching over classroom teaching?	Yes	09	08.91
	No	81	80.20
	Sometimes	11	10.89
Do you like online exams?	Yes	23	22.77
	No	66	65.35
	Sometimes	12	11.88
Do you like classroom exams?	Yes	81	80.20
	No	08	07.92
	Sometimes	11	10.89
Do you like open book exams?	Yes	32	31.68
	No	53	52.48
	Sometimes	15	14.85

Table 3: Knowledge of electronic gadgets used during E-learning activities

Questions	Classification	Frequency	Percentage
On which device you are attending online	Smart phone	83	82.18

lectures?	Desktop	01	00.99
	Laptop	13	12.87
	Tablet	04	03.96
Do you have technophobia before joining the online session ?	Yes	12	11.88
	No	73	72.28
	Sometimes	14	13.86
Do you face internet error while connecting for online classes ?	Yes	50	49.50
	No	19	18.81
	Sometimes	32	31.68
Which type of online lecture is good ?	Live	63	62.38
	Recorded	36	35.64
Disturbance while attending online session?	Family	36	35.64
	Friends	21	20.79
	Surrounding	53	52.48
	None	15	14.85
	Sometimes	35	34.65
What will you prefer in future?	E-learning	04	03.96
	Class room teaching	78	77.23
	Combine	19	18.81

82.18% of students used smart phone for attending online lectures. Out of 100%, 61.39% of students were agreed for online teaching is good decision during lockdown. In terms of flexibility, 30.69% of students were flexible while attending online lecture. 62.38% of students opted for live lectures with respect to recorded one (35.64%). In future, 77.23% of students were in favour of class room teaching while 3.96% preferred E-learning and 18.81% like class room and E-learning (combined).

52.48% of students perceived high stress due to pandemic while 44.55% of students were anxious during lockdown. Duration of screen use before pandemic is 0-30 min (21.78%), 1-2 hrs (63.37%), 3-4 hrs (12.87%) and >4 hrs (1.98%). During pandemic, 81.19% of students used screen for >4 hrs. If we compare online teaching versus class room teaching, only 08.91% of students were in favour of online teaching while 80.20% of students liked class room teaching.

72.28% of students did not report any technophobia before joining online classes. 49.50% of students face internet error while attending online E-learning. Regarding disturbances, 52.48% of students reported surrounding disturbances, 35.64% faced disturbances by their family.

Discussion

Medicine is the field of health and healing. It includes diagnosis, treatment and prevention of disease, medical research and many other aspects of health. Medical field requires lot of dedication, commitment, patience, vigilance, ethics, empathy along with lifelong up gradation of knowledge with minimal almost full accuracy. COVID-19 pandemic compel all medical education to conduct E-learning. As medical education is a longer duration and vast course, E-learning became essential part of medical education. Present study is assessing effectiveness of E-learning, perception of medical students on E-learning in facilitation of medical education in future, evaluating knowledge of electronic gadgets used during E-learning. Our study suggested that e-learning was good decision during lockdown. Similarly, Prageetha et al. suggested that majority of students are confident in using e-learning platform for their studies [13]. Smart phones were most preferred device (82.18%) for e-learning due to their compactness, cost effectiveness and easy to operate. Few study supported our study in terms of use of smart phones for online classes [14,15]. However, affordability of internet charges and availability of electronic gadgets such as laptops, smart phones and tablets seem to be unfavorable [13]. In terms of flexibility, most of the students were not flexible for attending online lectures [16]. In future, traditional teaching (class room teaching) is most favorable mode over the online teaching method [17].

As per concern with perception of medical students on E-learning during pandemic in facilitating medical education during pandemic, our study shows increase level of stress and anxiety (52.48%). Study conducted by Nishita Gadi et al. showed increases level of anxiety and stress in healthcare related students [18]. During pandemic, students spend more than 4 hours on screen as compared with 1 to 2 hours prior to the pandemic. Similarly, another study showed students spent an average of 7 to 10 hours using online teaching platforms, compared with 4 to 6 hours prior to the pandemic [19]. In terms of online teaching and exams, 81% of students preferred classroom teaching and exams over online teaching and exams. Pravesh Kumar et al. reported face to face teaching is most effective than online teaching [15].

Minimal number of students (11.88%) reported technophobia while attending online classes. This may be due to familiar with technology for a long time. Around 50% of students reported with internet error while attending e-learning classes. Few study supported with our results in terms of internet error [20, 21]. We have reported surrounding and family as two major factors of disturbances while attending online classes. This report goes with Byungn Choi et al [21] and Samiullah Dost et al [16].

Conclusion

We have concluded that in case of emergencies like pandemic online teaching could be one of the good option to continue medical education but it cannot replace traditional method of teaching and learning activities. It should be blended with the traditional teaching to enhance the knowledge in medical education.

Limitations

The findings of this study cannot be generalized because it was conducted in only one medical school. To ensure effectiveness of online learning modules for undergraduate medical students, the principles of online learning model and learning outcomes should be regularly evaluated .

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Conflicts of interest: None

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