

Students' Perspective towards Impact of e-Learning on Medical Education in a Low Resource Set-Up at Delhi during COVID Era

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Abstract

During COVID-19, online mode of education became the most preferred approach for imparting medical education especially during lockdown. Earlier in medical education, online learning was restricted to searching of literature on internet and applying the information to patient care. COVID 19 resulted in increased significance of online learning in medical education system. Thus, this study was done to evaluate the perception of medical students towards online learning and to analyse the challenges faced by medical students as well as the future prospects of online learning in medical education. This was an observational cross sectional study conducted on 135 medical students who had undergone online learning sessions during COVID-19 lockdown. A validated questionnaire was created and distributed through social platform. Student's responses were collected and analyzed. Around half of medical students (52.6%) expressed dissatisfaction with e-learning mode of education. A total of 24.4% of students believed that online teaching has reduced the student-teacher interaction by more than 75%. 57% students encountered hindrances like poor internet connectivity issues, 45.2% faced incompatible home environment and 50.4% showed lack of interest. Medical students favoured the conventional mode of teaching to online learning which could be attributed to several reasons such as lack of face to face interaction, scarce practical and hands on training and internet connectivity issues. However, they concurred that online learning can serve as an additional resource to offline regular classes. Moreover, orientation classes for students and faculty alike regarding online training program should be incorporated in their curriculum for better online learning experience.

Keywords: e-Learning; Medical Education; COVID-19; Medical Students

Introduction

Coronavirus disease 2019 (COVID-19) is a severe acute respiratory infection which is caused by Coronavirus 2 (SARS-CoV-2) [1]. It was declared a pandemic on 11th March, 2020 by the World Health Organization (WHO). This has resulted in an unprecedented health situation, which has enforced a nation-wide lockdown on 25th March 2020 which ultimately led to closures of schools and colleges across the nation and government orders of staying at home [2].

The nationwide lockdown affected the country in a myriad of ways including unprecedented disruption of the education and health-care systems. Since the medical colleges were also closed during these times, hence it became difficult to continue with the regular aca-

demographic schedule of MBBS students including bedside teaching and practicals. Also, there was a constant fear of contracting the virus during training and spreading it to the families and near and dear ones [3]. This seriously hampered medical education especially for final year medical students, both undergraduates as well as post graduates and increased the need for switching over to other alternatives of conventional learning. Thus, online mode of education became the most preferred approach to deliver education during lockdown.

On 15 April, 2020, a notice was issued by the Ministry of Home Affairs, Government of India to promote online teaching [4]. The introduction of online teaching in India had a marked impact on the education system. In a study done in 2005, Khan BH defined online learning as an “innovative approach for delivering a well-designed, learnercentred, interactive and facilitated learning environment to anyone, anyplace, anytime by utilizing the attributed and resources of various digital technologies along with other forms of learning materials suited for open, flexible and distributed learning environments” [5].

In the past, the concept of online learning was restricted to searching of the literature on the internet and applying the information in the patient care [6].

With the introduction of Competency Based Medical Education (CBME) by National Medical Council (NMC) in 2019, one of the goal of Indian Medical Graduate was to be a lifelong learner who can use the modern technology appropriately for the benefit of the patient [7]. This resulted in increased significance of online learning in medical education system. Although there are many potential challenges to online learning system which include poor internet connections, lack of practical learning and hands on approach; still it was found to be the most commonly employed mode of teaching during these times [8]. Therefore, we planned to evaluate the feasibility of e-learning in medical education and determine its importance in contributing towards students learning process in a private medical college in North India which have student representation from all over the country.

Objective of the Study

Taking all this into consideration, the objectives of the present study were to evaluate the perception of medical students towards online learning and to analyse the challenges faced by the medical students as well as the future prospects of online learning in medical education.

Methods

This was an observational cross sectional study conducted on medical students of second, third and final year of Hamdard Institute of Medical Sciences and Research, a tertiary care teaching hospital, South Delhi after taking approval from the Institutional Ethics Committee (HIMSR/IEC/0022/2022). The research was done during August 2022 to September, 2022.

To obtain the data required for this study, a pre-designed questionnaire was created on Google Forms and distributed to all medical students online by sharing a link of the study with an introductory paragraph on respective social platform groups of the students. They were also informed that by completing the study questionnaire, they would be giving consent for their information to be used, analysed and published. Those students who gave their consent for participation in the study were asked to sign in using their Google account to avoid multiple entries. Student participation was voluntary and anonymous.

The questionnaire included 10 questions regarding the overall perception of medical students towards online learning using Likert scale of 1-5 where 1 was strongly agree, 2 was agree, 3 was neutral, 4 was disagree, and 5 was strongly disagree. There were 10 multiple choice questions to assess the problems faced by medical students during online learning and also to explore the future possibilities of online education. More than one option was also allowed for these questions.

Results

A total of 135 medical students participated in the study and responded to the questionnaire. 52.6% students were not satisfied with e-learning mode of education. Around 52.6% of medical students did not want the online teaching to continue post pandemic. However;

68.9% of students reported that e-learning provide them with more spare time for self-study. Online teaching has improved the computer/technical skills of 54% of medical students. 78.6% reported that increased screen time lead to health problems. Among all the participants 79.3% of students reported that they felt difficulty in grasping the concept without any hands-on experience and 66.7% of students thought there is a need for guidelines on how to conduct training sessions on online teaching for students as well as for teachers. 70.86% of students reported that they do not feel confident giving exams post online teaching sessions. In this study, large no of medical students i.e. 63% were using their smartphone to take online classes. A total of 24.4% of students believed that online teaching has reduced the student-teacher interaction by more than 75%. (Table 1 and 2). During online teaching sessions, 57% students has faced poor internet connectivity issues, 45.2% faced incompatible home environment and 50.4% faced lack of interest as shown in figure 1. An average of 4 - 6 hours were spent on daily online teaching by 23% students and 44.4% students thought that didactic online lectures without clinical posting hampered their learning. Suggestions reported from 52.6% students that they will feel more comfortable with blended teaching post pandemic in their MBBS curriculum as shown in figure 2. 41.5% students emphasized more on MCQs format for assessment. 68.2% students wished to attend regular lectures along with practical training post COVID-19 pandemic.

Questions	Strongly Disagree	Disagree	Undecided	Strongly Agree	Agree
Are you satisfied with e-learning mode of education?	12.6%	40%	8.9%	7.4%	31.1%
Do you find e-learning to be more effective than the traditional system of teaching?	21.5%	47.4%	9.6%	5.9%	15.6%
Do you think online teaching should continue post-pandemic?	19.3%	33.3%	15.6%	9.6%	22.2%
Does e-learning provide more spare time for self-study?	29.6%	12.6%	13.3%	29.6%	39.3%
Has e-learning made you more selfdependent and disciplined with regard to medical education?	18.5%	34.1%	8.1%	10.4%	28.9%
Has e learning improved your computer skills/ technical skills?	4.4%	25.2%	16.3%	10.4%	43.7%
Do you think more screen time due to e-learning will lead to health problems?	4.4%	5.2%	6.7%	35.6%	43%
Do you feel confident taking assessments post online teaching sessions?	29.6%	41.5%	8.9%	6.7%	13.3%
Are you able to grasp concepts without any hands-on experience?	36.3%	43%	14.1%	1.5%	5.2%
Do you think there is need for conducting training sessions on online teaching for students/teachers?	5.9%	9.6%	17.8%	15.6%	51.1%

Table 1: Student's perceptions towards e-learning using Likert's Scale (n = 135).

S.NO	Multiple choice Questions on online learning	Percentage (%)
1.	Type of electronic device generally used for online learning	
	a) Desktop	0.74%
	b) Laptop	18.52%
	c) I-pad	17.78%
2.	d) Smartphone	62.96%
	Online teaching has reduced student-teacher interaction	
	a) Less than 25%	20%
	b) 25%-50%	33.33%
	c) 50%-75%	22.22%
	d) More than 75%	24.44%

3.	<p>Obstacles faced during online sessions</p> <p>a) Poor internet connection</p> <p>b) Incompatible Home Environment</p> <p>c) Lack of interest</p> <p>d) No prior training</p>	<p>57.04%</p> <p>45.18%</p> <p>50.37%</p> <p>22.22%</p>
4.	<p>According to you the most important disadvantage of online teaching is</p> <p>a) Learning is less impactful</p> <p>b) Lack of face-to-face interaction with teacher/ two-way learning</p> <p>c) Lack of self-motivation/discipline</p> <p>d) Technical problems</p>	<p>23.70%</p> <p>28.15%</p> <p>30.37%</p> <p>17.78%</p>
5.	<p>Average time spent on online classes daily</p> <p>a) 2-3hrs</p> <p>b) 4-5hrs</p> <p>c) 5-6hrs</p> <p>d) More than 6 hrs</p>	<p>54.07%</p> <p>16.29%</p> <p>22.96%</p> <p>6.67%</p>
6.	<p>According to you how much didactic lectures without clinical posting/ lab postings are hampering effective learning</p> <p>a) 0-25%</p> <p>b) 26-50%</p> <p>c) 51-75%</p> <p>d) More than 75%</p>	<p>9.63%</p> <p>24.44%</p> <p>27.41%</p> <p>44.44%</p>
7.	<p>Changes you would like to incorporate in your MBBS curriculum, post-Covid 19 pandemic</p> <p>a) Orientation classes on usage of technological resources for elearning</p> <p>b) More exposure to emergency medicine</p> <p>c) More emphasis on Multiple choice question assessment format</p> <p>d) Introduction of Blended teaching (both online and onsite)</p>	<p>20%</p> <p>49.62%</p> <p>41.48%</p> <p>52.59%</p>

8.	Preferred mode of classes in this present "NORMAL COVID 19 ERA"	
	a) Purely online for theory classes and simulated practical	27.40%
	b) Routine lectures and practicals with social distancing (less no. of students in each batch)	50.37%
	c) Regular classes as before	17.78%
	d) Don't know	4.44%
9.	According to you, the single most important advantage of online learning	
	a) Learning at your own pace	53.33%
	b) Ability to stay at home/comfortable surrounding	55.56%
	c) Classes interactivity	4.44%
	d) Access to online material	19.26%
10.	Type of assessment preferred during online exam	
	a) Written assessment (Essay type/ Small answer type)	9.63%
	b) MCQs	63.70%
	c) Viva voce examination	2.96%
	d) Combination of all the above	23.70%

Table 2: Students responses regarding e-learning in Multiple choice questions format.

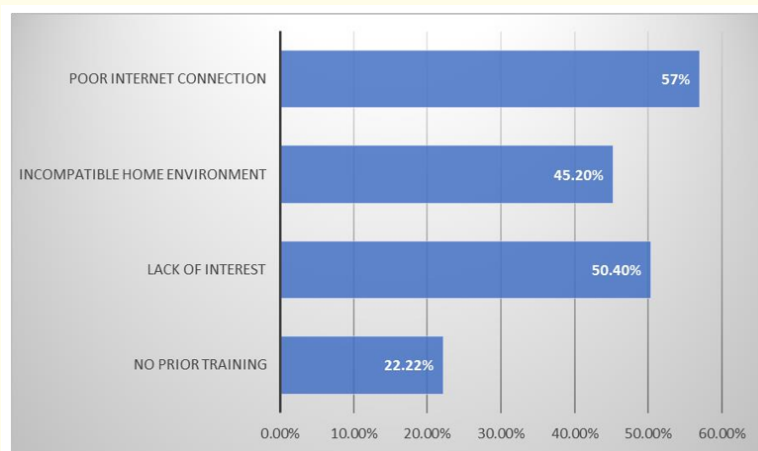


Figure 1: Obstacles faced by medical students during e-learning.

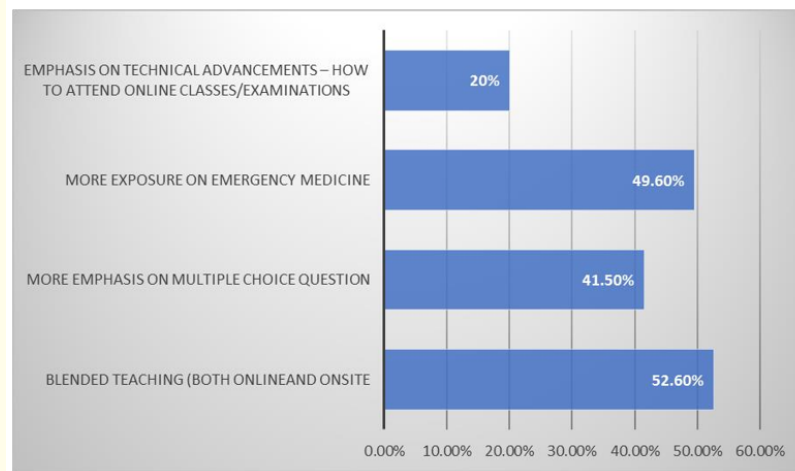


Figure 2: Suggestions of medical students regarding MBBS curriculum post Covid-19.

Discussion

The present study was conducted among 135 undergraduate medical students who attended online learning sessions during the lockdown, due to COVID-19. Online learning served as the only platform for providing uninterrupted medical education during the pandemic outbreak. The present study evaluated the student's perception towards the online learning during COVID lockdown.

In this study, majority of the students (61.4%) were not satisfied with online learning. However, online teaching contributes in bringing out the self-directed learning ability of the student that will be helpful in fulfilling the role of a lifelong learner which is also one of the important goal of Indian Medical Graduate as suggested in the new CBME curriculum by NMC [7]. Most of the students in this study believed that the traditional system of teaching was more effective than the online learning as it is quite difficult to grasp concepts without any hands on experience or face to face student teacher interaction as was also seen in a study done by Hameed, *et al.* [9]. In a similar study conducted by Joshi and Bodhka, *et al.* it was found that classroom learning was more impactful [10]. Medical students in this study reported that e-learning doesn't make them self-dependent and disciplined whereas, a study conducted by Bambara, *et al.* (2009), showed the importance of responsibility and self-motivation during online learning [11]. In this study, a large number of students reported that, they were not trained enough to attend the online sessions on digital platform, for which they required some training sessions. This was also corroborated by a study done by Abdous (2019) which showed that students who had undergone orientation program on online learning showed greater academic efficiency [12]. Moreover, students suggested that there should be training sessions for faculty also so as to ensure smooth functioning of online sessions. A similar study was done by Joshi, *et al.* (2020) in which it was found that after the orientation session on online learning, the technical knowledge of the faculty members increased to 85% [13].

In the present study there were many hindering factors observed during the online sessions. Many students faced several challenges like poor internet connection, incompatible home environment and lack of interest/motivation. A similar study conducted by Joshi and Bodhka showed that network issues was a major obstacle to online learning [10].

The CBME curriculum recently introduced by NMC also emphasised on the online assessment of the medical students [14]. A research done by Tsai and Tsai (2003), suggested that teachers play a significant role in students life by encouraging them to develop strategies which are web based with the help of direct demonstration [15]. Also a study done by Muthuprasad, *et al.* concluded that online sessions

could be more impactful and comparable to traditional classes especially if there is proper connectivity, inclusion of recorded videos and suitable content in the sessions [16]. In our study, students came forward with suggestions to improve online learning such as orientation classes on technical advancements. Large number of students when given options preferred multiple choice questions as their assessment format post pandemic. COVID-19 has severely affected the healthcare system and also the capability of healthcare professionals to perform their services. Even after two years, COVID-19 pandemic is still continuing unabated at times having waxing and waning course and thus interrupting the medical education along with bedside training. After this COVID-19 outbreak, we must come up with innovative ideas and necessary measures to continue with effective medical education. Appropriate measures are required to minimize the effect of such pandemic, and these include orientation sessions on online learning and an understanding of online clinical teaching. The results from this study would be helpful in the future research to explore the status of medical students regarding the usage of e-learning as an adjunct to the traditional system of medical education to assist the progress of medical education.

Weaknesses of e-learning

- Insufficient computer/technical skills.
- Lack of availability of resources such as laptops, tablets.
- Lack of student teacher interaction.
- Lack of hands on training.
- Easy way of escaping the sessions with off-camera mode.

Strengths of e-learning

- Easy accessibility, flexibility and convenient.
- Enhanced team working ability or skills.
- Access to study materials.
- Comfortable environment.
- Continuous uninterrupted education despite COVID 19 lockdown.

Conclusion

To conclude, the impact of e-learning on medical education system was significant. Medical students favoured the regular offline teaching in medical colleges than online learning. It could be attributed to several reasons such as lack of face to face interaction, technical error, and poor internet connections. Students showed reservation in continuing with online after COVID-19 era. Although they concurred that online learning can serve as an additional resource to offline regular classes. Moreover, orientation classes should be incorporated in their curriculum for better online learning experience. This study further reaffirmed that the disturbance caused by COVID-19 on medical education needs further evaluation on its impact on e-learning, which is now an integral part of the medical education.

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Nil.

Conflicts of Interest

Nil.

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