

Online Medical Education in the COVID-19 Era: Undergraduate Students' Perspectives

Bajaj U¹, Marathe PA², Tadavi FM³, Khatri N⁴, Patil SR⁵

¹MBBS Student, Seth G.S. Medical College and K.E.M. Hospital, Parel, Mumbai

²Professor Additional, Department of Pharmacology and Therapeutics, Seth G.S. Medical College and K.E.M. Hospital, Parel, Mumbai

³Associate Professor, Department of Pharmacology, Lokmanya Tilak Municipal Medical College, Sion, Mumbai

⁴Ex-Assistant Professor, Department of Pharmacology and Therapeutics, Seth G.S. Medical College and K.E.M. Hospital, Mumbai

⁵Ex-Assistant Professor, Department of Pharmacology and Therapeutics, Seth G.S. Medical College and K.E.M. Hospital, Mumbai

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Corresponding author: Dr Firoz Tadavi

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Abstract

Online education became a norm during the recent COVID-19 pandemic and medical education institutes in India accepted the new normal. It was timely to assess the perceptions and experiences of medical students to find out its relevance and application, if required, in future.

Methods: Following permission from the Institutional Ethics Committee, a cross-sectional observational questionnaire-based study was conducted among undergraduate medical students in the fifth semester using a Google form. A validated questionnaire consisting of 21 items was circulated. The data were analyzed using descriptive statistics.

Results: A total of 150 students out of 180 (83.3%), who were approached participated in the study. About 46% of the students were of the opinion that online teaching-learning was not as effective as classroom teaching and 25% gave a neutral response. Only half the number of students (50.7%) felt attentive throughout the class and 40.7% attended solely for the purpose of attendance. Around 70% felt that their doubts were clarified while using this method of teaching, but 54% of them felt the amount of interaction was inadequate. Nearly 18% of students found it impossible to prepare for their examinations after learning through online classes. All the students (98.7 %) responded that they lost out on ward postings and clinical training. Although 79.3% of students agreed that online education was a useful option during the pandemic, only 46% of them felt that hybrid mode can be adopted in the post-pandemic era.

Conclusion: As per medical students' perspectives noted in this study, online medical teaching should not completely replace traditional modes of teaching.

Keywords: Online teaching, Clinical training, Classroom teaching, Undergraduate medical students

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Introduction

The COVID-19 pandemic had brought about a sudden halt in everyone's daily activities. The temporary closure of educational institutions was enforced as a protective measure during the pandemic. The unprecedented conditions led higher educational institutes to implement new ways of teaching and learning in order to alleviate the impact of the pandemic. [1] Most medical education institutions shifted to an online mode of education, effectively utilizing techniques of distance learning. Distance learning can be synchronous or asynchronous. While synchronous learning involves students learning in live environments such as lectures, asynchronous learning involves use of resource materials such as notes and video lectures by students at their own pace [2]. The acceptability and the outcomes of such teaching-learning methods needed to be rigorously evaluated to monitor their effectiveness [3-5].

Several studies have been conducted in India during the pandemic to assess the impact of online medical education on the training of students. In a study by Agarwal *et al.*, it was seen that the participants found the online pediatric teaching sessions to be a good utilization of time along with a break in the monotonous routine [6]. Further, in a study conducted by Desai *et al.*, the majority of medical undergraduates, postgraduates, and teachers found online education to be effective. [7] Lack of technical skills and inexperience with technology were major obstacles that the tutors faced while trying to deliver lectures to the students. Another study by Nimavat *et al.* reported the problems medical students faced in staying focused in a non-classroom environment while at home [8,9].

In view of the reported literature, we too felt that it was relevant to assess the perspectives and experiences of undergraduate medical students from our institution about online

medical education and about their willingness to accept online or hybrid modes of teaching in the post-pandemic period.

Methods

This was a cross-sectional observational study conducted at a medical college and tertiary care centre in the western region of India in July 2021. The study population comprised 180 undergraduate MBBS students in the fifth semester. The original questionnaire drafted by the authors for data collection consisted of 19 questions. It was subsequently validated for face and content validity by five senior medical teachers having minimum teaching experience of 10 years. The questions with a content validity ratio (CVR) above 0.99 were considered for inclusion. Two questions were eliminated, five questions were modified, and four questions were added during the validation process. The final validated questionnaire consisted of 21 items and the items were grouped into three domains: knowledge (three items), attitude (six items) and practice (twelve items). Some items were graded on a five-point Likert scale wherein the students could select the extent to which they agreed or disagreed with a statement. A few questions had binary responses. After permission from the institutional ethics committee (EC/OA-46/2021), the students were invited to voluntarily participate in the study using an online form. The consent statement was incorporated in the questionnaire. The data collected was analyzed descriptively using Microsoft Excel 2016.

Results

Out of 180 students, a total of 150 students participated in the study. The response rate was 83.3%.

Assessment of Knowledge

About 97.33% (146/150) of students knew

how to use a device initially without assistance and 98.67% (148/150) of students

were aware of how to log in and ask doubts with some help.

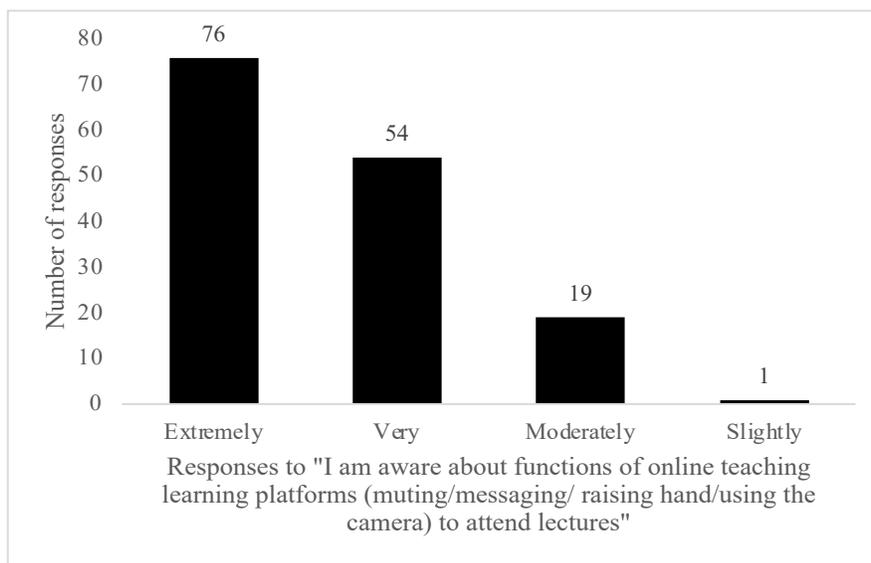


Figure 1: Awareness about functions of online teaching learning platforms to attend lectures

As depicted in Figure 1, almost 87% (130/150), were well versed and familiar with the functions of online teaching learning platforms and the rest were aware to a moderate extent.

Assessment of Attitude

The majority of the students (67.3%) found synchronous teaching methods more effective than asynchronous and preferred live online teaching over using notes. Almost all of the students (98.7%) felt that they missed out on the clinical training with 78%

strongly agreeing with this opinion. 76% of students felt that they can save on travel time due to classes being online.

Almost half the students (46%) disagreed that the online teaching mode was an effective alternative to traditional teaching in the pandemic as well as post-pandemic era, but most of the students (79.3%) felt that it was still a suitable mode during the pandemic. Only 46% of the students felt that hybrid mode can be adopted in the post-pandemic era. (Figure 2)

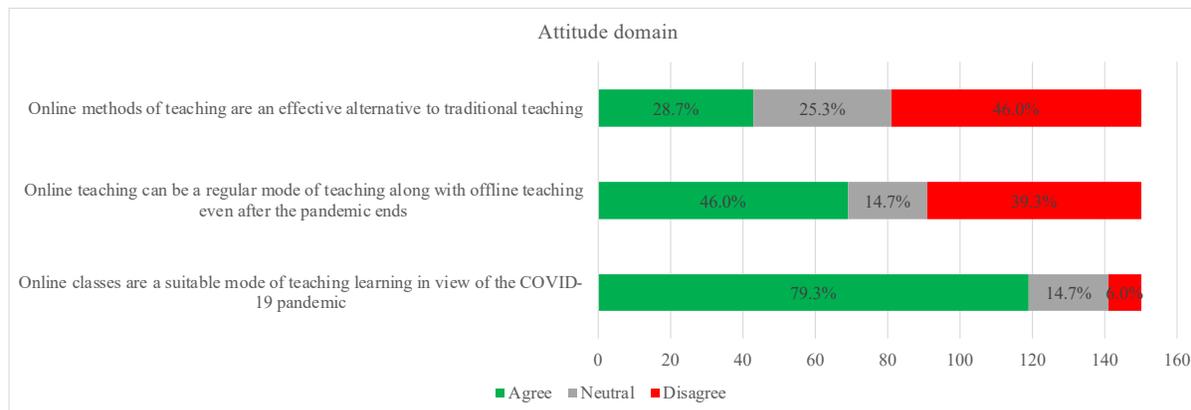


Figure 2: Responses to Questions in Attitude Domain

Assessment of Practices

The majority (82.6%) of the students used a laptop over mobile at least once with 25.3% always preferring to use laptops and 24% using it greater than half of the time. 46.7% actively reviewed e-learning material provided prior to lectures. The majority (57.3%) of students were able to utilize the travel time saved to revise coursework before lectures.

Most of the students (89.3%) attended online lectures regularly; however, a significant number of them (40.7%) attended them only

for the purpose of attendance. Most of the students (88.7%) were able to log in to the lectures on time, but only half the number of students (50.7%) felt attentive throughout the class. Around 70% felt that their doubts were clarified while using this method of teaching, but 54% of them felt the amount of interaction was inadequate. (Figure 3) As shown in Figure 4, 58% of students felt that they were able to prepare for examinations with resources provided during online teaching as effectively as they would have if lectures had been taken offline.

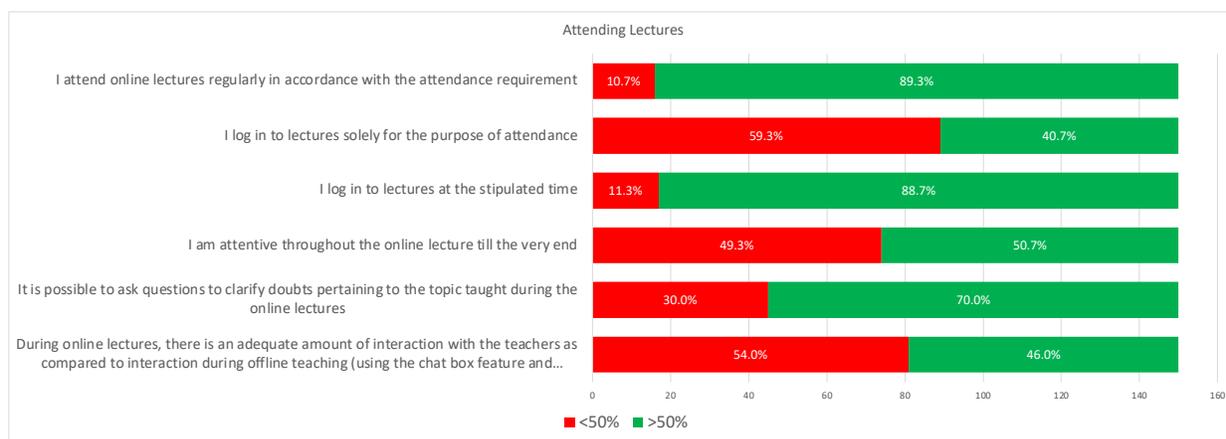


Figure 3: Responses to questions in the practice domain

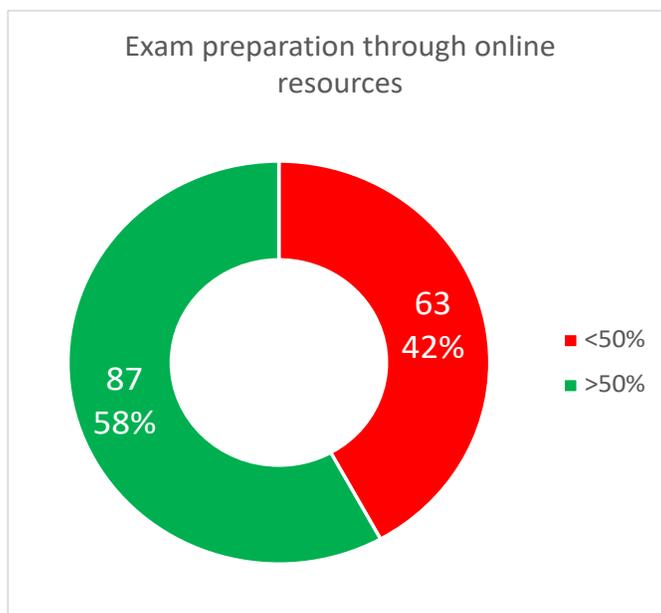


Figure 4: Perspectives on Usefulness of Online Resources for Exam Preparation

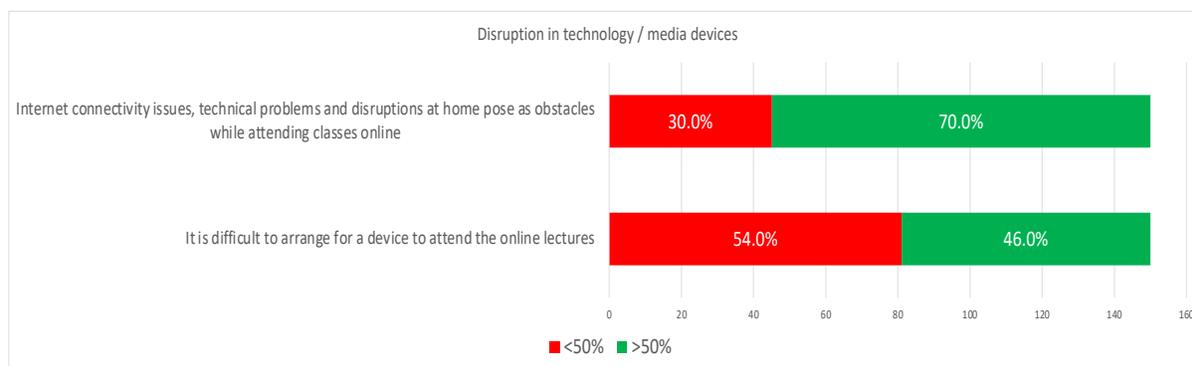


Figure 5: Technical Issues

A number of students (70%) faced technical issues and disruptions more than 50% of the time while attending classes online and almost half of them (46%) found it difficult to arrange for a device for the lectures more than 50% of the time (Figure 5)

Discussion

The pandemic has taught us that the scope of teaching-learning can be widened through online platforms in medical education and forced both students and teachers to learn new skills. This required a lot of self-motivation on the part of teachers as well as students.

The present study was conducted to assess the effectiveness of the online mode of medical education which was implemented to replace traditional classroom teaching in our institution in view of COVID-19 pandemic. Our study found that only 28.67% of students were of the opinion that online methods of teaching are as effective as traditional learning methods but 46% were still open to the idea of having it as part of their curriculum partially along with physical classroom teaching. A few (39.34%) did not want it as part of their curriculum at all. Furthermore, 79.33% of students agreed that in view of the pandemic online teaching was a suitable temporary option. Nearly 18% of students found it impossible to prepare for their examinations after learning through online classes. Almost all (98.7%) of students expressed

that they missed out on clinical training. Thus, our study results indicated that online teaching may supplement traditional modes of teaching but it should not replace them. In the previous studies assessing the effectiveness of online teaching, students were appreciative of certain aspects of online learning like the increased flexibility [9] learning at their own pace, the opportunity for distant learning, and being economically acceptable [10]. However, the main drawback identified was the lack of clinical training in the hospital wards. In a study conducted by Alsoufi *et al.*, 2020 [10,11] 21.1% of students agreed that the mode of online teaching was effective for clinical training whereas only 1.3% of students in our study felt the same. In a study conducted by Kala *et al.*, 2021, [12] it was unanimously (99.5%) believed that clinics would be better offline which is in accordance with our study finding that 98% of students expressed the need to attend clinical posting in person.

Another major issue was the lack of internet connectivity in certain remote places as also reported by Rafi *et al.* 2020 [13] where 43.7% of students faced connectivity issues. In our study, 70% of students faced network issues more than half the time during the course of their online learning. Another issue reported by Nimavat *et al* [8], was regarding the unavailability of devices to attend online classes as experienced by 40.7% of students. Similar problems were faced by students in Nepal [14] due to the disparity in the country.

The same issue is highly prevalent in India too with students in smaller cities facing more technical issues than students in larger and more developed cities.

In a study conducted by (Singh *et al.*, 2020) [15] 91.8% of students reviewed the material shared with them pertaining to their online classes. However, we found that only 46.7% reviewed the study material for more than 50% of their lectures. In the same study by Singh *et al.*, [15] 49% of students believed that E-learning was better than or at least as effective as physical classes, however, we found that only 28.7% of students had similar views at our institution.

Around 76% of students were open to having online teaching integrated with their curriculum post-pandemic in a study by (Rajab *et al.*, 2020) [16] compared to 46% at our institution. A much higher proportion of students (79.3%) on the other hand agreed that in view of the pandemic, online teaching was suitable to replace traditional classroom teaching. We found that 46% of students believed that there was an adequate amount of interaction with their teachers which was lesser as compared to another study [17] where 71.9% of students were satisfied with the amount of communication in their lectures.

In a study by (Mortagy *et al.*, 2022) [18] students also suggested the usage of quizzes, multimedia, and other activities to maximize interaction during online learning. It would be worthwhile to include quizzes, polls, and breakout rooms during online teaching sessions to keep the students engaged. Students also found it challenging to focus in a non-classroom environment [8] which was similar to the findings in our study with only half of the student batch (50.67%) attending their lectures attentively at least >50% of the time. It was observed that although 76% of the students felt that they could save time on traveling and utilize it for studying; however, only 57.3% of students agreed to have

utilized the saved time for studying. [8] Studies have been conducted that similarly highlight the challenges from the tutors' perspectives (Motte-Signoret E *et al.*, 2021) [19] and (Nimavat *et al.*, 2021) [8]. Difficulties faced by teachers were similar to students' problems too which included adapting to technology. Moreover, with teachers already struggling with the burden of managing COVID patients, having to invest extra time to fine-tune course material for online delivery was an added task in the limited time they had. Teachers seemed to be significantly stressed about online medical teaching even more so than COVID-19 [20] Snehata *et al.* [21] also reported the challenges faced by the faculty (64.1%) while imparting clinical skills to students through online mode of teaching. Teachers found it hard to keep students motivated and attentive compared to an offline setting. There was also difficulty in adapting to technology and learning a new set of skills in a short amount of time. While teachers acknowledged the decreased risk of the spread of COVID-19 due to online teaching, they were of the view that online teaching can only act as a supplement to traditional classroom teaching. [22]

The generalisability of the inferences drawn from the findings of our study is limited owing to the small sample size of 150. Moreover, the data is collected only from one class at one college. The attitudes, perceptions, and experiences of faculty members, if collected, would have added more value to our study. However, our results give a bird's eye view of the opinions and challenges the students described.

The present study revealed the students' perspective that online teaching was accepted to tide over the difficult situation during the pandemic. It may supplement in-person classroom teaching in future in the post-pandemic era to some extent, but it should not replace classroom teaching.

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