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Original Research Article

To find the impact on learning among phase 1 MBBS students during COVID-19 pandemic

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ABSTRACT

Introduction: The closure of educational activities around the world due to the ongoing COVID-19 pandemic resulted in an unplanned shift from traditional learning to a setup that exclusively involves digital teaching and learning. Within this context, the present study aimed to explore undergraduate medical students' perceptions regarding the effectiveness of synchronized online learning at DM WIMS, Wayanad, Kerala.

Materials and Methods: A cross sectional study was done in DM WIMS, Wayanad, Kerala and included 120 first MBBS students. First a five point Likert scale questionnaire specific to their level of training was sent online via Google form. Next, 3 focus group were conducted on 3 different days. Number of students in each group were 8. Duration of each focus group discussion was 1 hr. Focus group discussion was done in the department of Biochemistry. All interviews were recorded, transcribed and analyzed for thematic contents.

Results: Various challenges to learning as agreed upon by majority of students included not familiar with Google meet (80%), could not concentrate for long during sessions (75.8%), less interaction, not able to clarify doubts, network and connectivity issues (70%) and not adequate feedback given during the sessions (59.1%). Various benefits to learning during COVID-19 pandemic as agreed by students included: online ppt shared via Whatsapp were useful (86.6%), better time management (65.9%), and use of videos and pictures during sessions enhanced understanding the concept better (41.5%). A thematic analysis yielded three core themes: (1) Overall learning experience, (2) Quality of teaching and learning, (3) Difficulties encountered. Majority of participants said it was good learning experience and new for them. They said they were reluctant and anxious about going online initially but eventually they picked up and were satisfied with most of the sessions. Majority of students were satisfied with the teaching and agreed that the lectures were well taken.

Conclusion: It is true to say that all facets of health education and clinical training is harshly affected by the pandemic. Despite all these barriers and challenges, it has been demonstrated that online learning holds certain advantages over traditional learning.

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1. Introduction

The coronavirus disease (COVID-19) pandemic has had a worldwide impact affecting all sectors including the

health care systems resulting in far-reaching consequences.¹ Educational institutes were shut down across the world and over 1.2 billion children were out of the classroom. Closure of the medical schools and universities had disrupted the learning and education of future health professionals.²

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The sudden transition from on-campus learning to exclusively online learning was challenging for both faculty and students especially providing adequate clinical experience with social distancing norms in mind.² This had required a lot of preparation and other efforts from all colleges in a short time in order to meet time line for the curriculum delivery.³ The academic institutions worldwide had to accelerate the development of online learning environment to minimize the damage caused due to pandemic.⁴

Changes that may seemed relatively minor in comparison to the global pandemic had the potential to be drastic turning points in the career progression of many, especially for the first year MBBS students for whom everything is new. The first MBBS students as they walk into the medical colleges are exposed to a totally new environment of teaching and learning as it is a professional course. The teaching methodologies which are implied on the first year students are normally framed out according to NMC guidelines. But with sudden onset of this pandemic there were no such guidelines laid out. This put the burden on medical professors to discover newer innovative ways to deliver knowledge to the learners.

Regarding the long-lasting impact of COVID-19 on medical education, especially the impact on first year MBBS students, not much was known. Therefore this study was done to identify the challenges and limitations of learning among phase 1 MBBS students during COVID-19 pandemic and also to find their perception towards online learning during COVID-19 pandemic.

2. Materials and Methods

This study was a cross-sectional study done in DM WIMS medical college, Wayanad, Kerala and included phase 1 MBBS students. Institutional Ethical clearance was obtained before starting the study. Objective of the study were explained to the students who participated in the study. First a five point Likert scale questionnaire specific to their level of training was sent online via Google form to all 150 phase 1 MBBS students. Students who were willing to participate were asked to fill the form sent in the batch whatsapp group. Only 120 students responded by filling the form and sending before the mentioned date and were included in the study. Confidentiality of responses was maintained.

Next, 3 focus group discussions were conducted to find the perception of phase 1 MBBS students towards teaching and learning in all first year subjects conducted during the pandemic. It was done on 3 different days. Usually for practical sessions in biochemistry department 150 students are divided into 3 batches (A, B, C) of 50 students each. Principal investigator had included 8 students from each batch (A, B, C) via simple random sampling technique. Only those students willing to participate were included in

the present study. Thus, the numbers of students in each focus group discussion were 8. Duration of each focus group discussion was 1 hr. Focus group discussion was done in the biochemistry department. Session was moderated by the investigator and another faculty was recorder who observed the session and took notes. Facilitator's guide was used during the session. Notes were also taken during the discussion. Spontaneous discussion with minimal questions was allowed. At the end notes/ impression of moderator and recorder were noted.

2.1. Data analysis

We used descriptive statistics for Likert scale analysis. Categorical variables were represented as frequencies and percentages, and continuous variables as mean (standard deviation).

For focus group: after discussion, notes were reviewed and analyzed. Thematic analysis was done. Notes taken during the 3 sessions were reviewed and different patterns were identified in codes and different themes and subthemes were generated.

3. Results

Questionnaire to find the impact of COVID 19 on learning was sent as google form in batch whatsapp group to 150 phase 1 MBBS students. We received response of 120 students only and that was analysed. Response rate was 80%. The study included 66(55%) males and 54 (45%) females (Figure 1). The mean age of study participants was 19.90 ± 0.71 yrs (Table 1).

Table 1: Characteristics of study respondent

	Number (%)
Male	66 (55%)
Female	54 (45%)
Age	19.90 ± 0.71 yrs

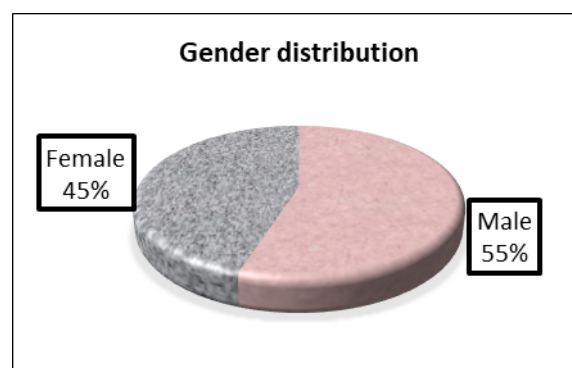


Fig. 1: Percentage of male and female students in the study

79% of students in our study disagreed that they lacked device to attend the online sessions (Figure 2). Most of the students (74.2%) used mobile for attending the sessions and 25.8% used laptops (Figure 3). Preferred and effective teaching mode of teaching and learning for 75.8% students was via google meet (Figure 4). 17.5% preferred recorded classes sent via google classroom and around 6.7% preferred learning via the ppts (lecture power point) shared in whatsapp group.

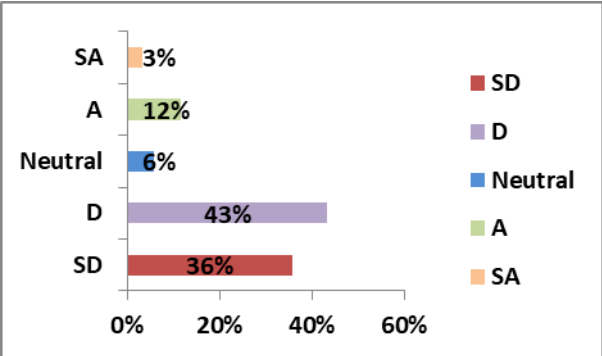


Fig. 2: Lacked device to attend session

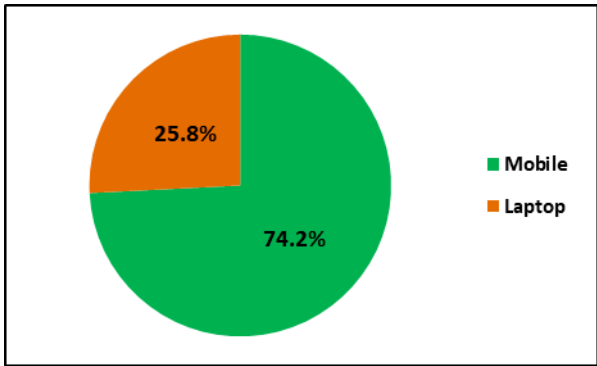


Fig. 3: Device used for learning

Various challenges to learning as agreed upon by majority of students included not familiar with google meet, could not concentrate for long during sessions, less interaction, not able to clarify doubts, network and connectivity issues and not adequate feedback given during the sessions (Figure 5). The main drawback as agreed upon by 80% of students in the present study was that they were not familiar with google meet when the sudden shift to online teaching and learning happened, of which 45.8% strongly agreed to it.

Various benefits (Figure 6) to learning during COVID -19 pandemic as agreed by students included: online ppt shared via whatsapp were useful (86.6%), better time management (65.9%), and use of videos and pictures during sessions enhanced understanding the concept better (42.5%).

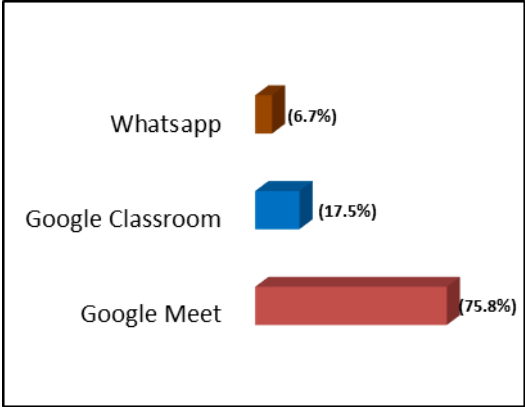


Fig. 4: Device used for learning

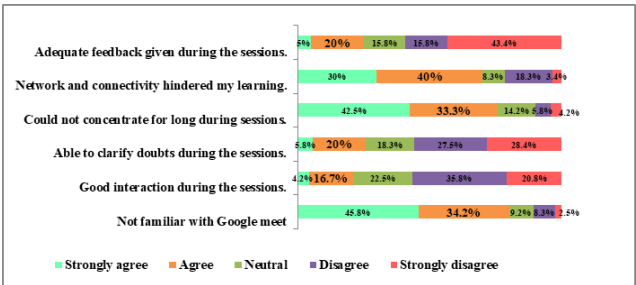


Fig. 5: Challenges to online education during the COVID-19 pandemic

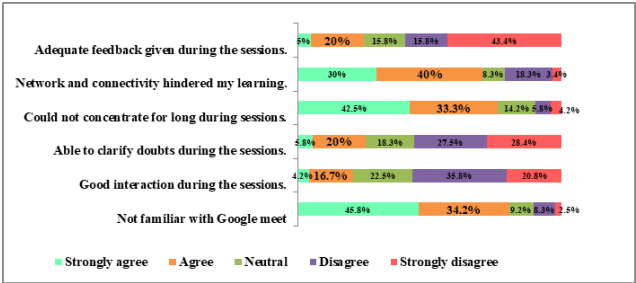


Fig. 6: Benefits to online education during the COVID-19 pandemic

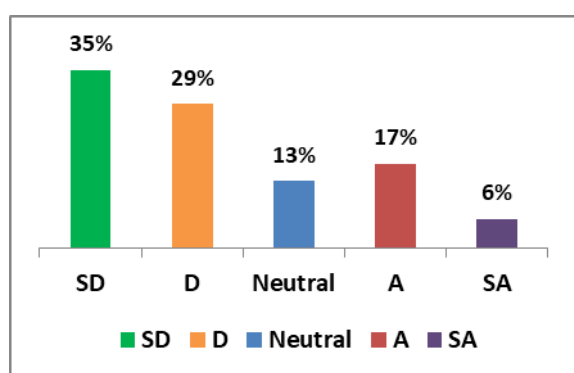
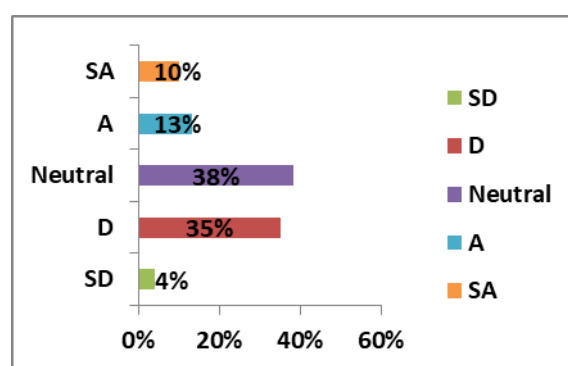
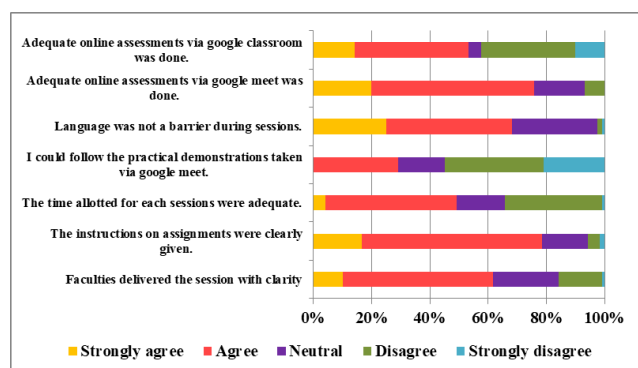
Larger part of participants reported that they were very good or proficient in using electronic devices (Figure 7). 64% students disagreed they were technophobic when the shift to online learning happened. Of which 35% strongly disagreed to it.

When asked to describe their online teaching/learning experience during the pandemic students were overall satisfied (Figure 8). The mean satisfaction score was 3.43 (Table 2).

39% of students in our study disagreed that online learning has helped in better understanding of concepts (Figure 9). 38% were neutral to the question and 23% agreed to it. Remarkably, 45% of students disagreed and 45%

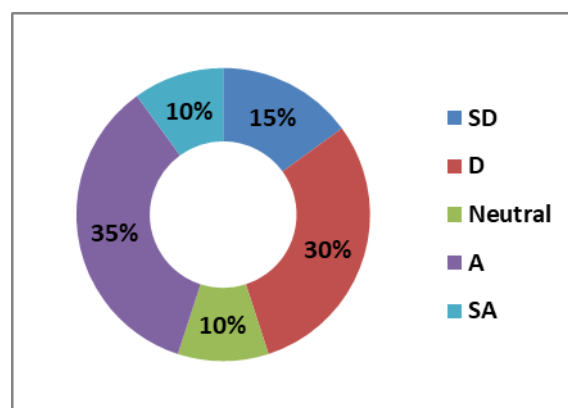
Table 2: Mean satisfaction score of students of students of teaching learning during pandemic

	Mean score	Satisfaction	Mean satisfaction score
Faculties delivered the session with clarity	3.55	High quality	3.43
The instructions on assignments were clearly given.	3.88	High quality	
The time allotted for each sessions were adequate.	3.08	Quality	
I could follow the practical demonstrations taken via google meet.	2.53	Quality	
Language was not a barrier during sessions.	3.9	High quality	
Adequate online assessments via Google meet was done.	3.89	High quality	
Adequate online assessments via Google classroom was done.	3.15	Quality	

**Fig. 7:** Student's were asked whether they were technophobic**Fig. 9:** Students were asked whether online learning helped in better understanding of concepts**Fig. 8:** Online teaching-learning experience during COVID 19 pandemic

agreed that online classes has increased their confidence in learning, whereas, 10% choose to say neutral. (Figure 10)

Among the respondents, 83% preferred face to face learning and only 46% preferred online learning (Figure 11). The acceptance of blending online and face-to-face instruction has been growing in the academic community and in our study 53% students preferred to have a blended learning in future, 27% disagreed and 20% were neutral to

**Fig. 10:** Students were asked whether online learning helped in better understanding of concepts

opine (Figure 12).

Further, total 3 focus group sessions were conducted to know the perception of students towards teaching learning during COVID 19 pandemic. Number of students in each group were 8 and duration of each focus group discussion was 1 hr. Different patterns were identified and

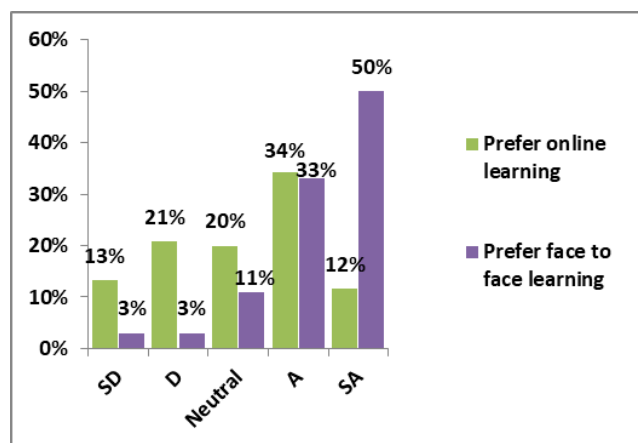


Fig. 11: Teaching learning preferences

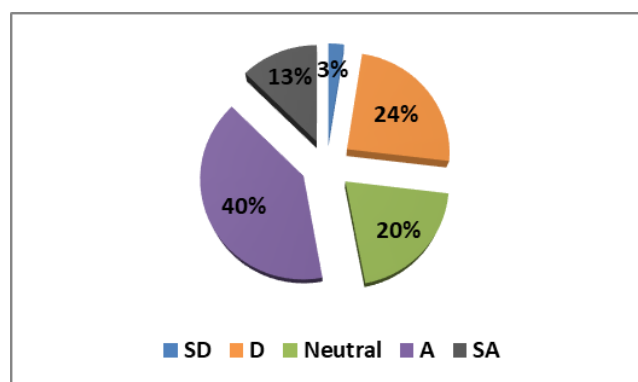


Fig. 12: Blended learning

coded. During the analysis, sub-themes were identified and classified under three major themes, which are summarized below with relevant quotes from the participants.

Three core themes included the following: (1) Overall learning experience, (2) Quality of teaching and learning, (3) Difficulties encountered.

Theme 1: Overall learning experience

Overall learning experience during COVID was discussed under mainly 2 subthemes: Level of satisfaction and preference for future learning. The participants in the 3 groups had different opinions on the overall experience and level of satisfaction. Majority of participants said it was good learning experience and new for them. They said they were reluctant and anxious about going online initially but eventually they picked up and were satisfied with most of the sessions. They expressed their views as:

“The online teaching was challenging in the beginning because most of us though well versed with technology were anxious how things will fall into place, but it got over with time.”

“For me, online lectures are useful only for theory classes but I miss practical classes especially dissection classes.”

“Even though, I managed to cope up with online teaching but I desperately missed discussions with friends, clearing doubts in class, the interactive sessions, etc.”

“Online classes provided me with great opportunities to focus on studies well and also my other works properly. I had enough time for myself”

“My experience during online session was horrible initially and later it was difficult to cope up because of network issue and all. Also, clarity of lectures was not there. So I was not satisfied at all.”

“I thoroughly enjoyed online courses. I used to choose a comfortable place in my hostel room for my online classes and it also gave me a chance to relax at my convenience. It really saved my time and effort to study well.”

The students were also asked about their preferences for future learning. Mixed responses were conveyed. Majority of students expressed interest in the continuation of campus-bound classes, while few of the participants were neutral. The following statements elaborated upon this:

“It’s difficult to understand dissection and practical sessions. How much ever simplified, it cannot be taught in online sessions. So I think I prefer to come to college.”

“I think, the feel of attending lecture like eye contact with lecturer, discussion with them and with other students which is very helpful for clearing a lot of concepts was missing. So I prefer campus learning”

“I agree to continue online sessions for theory lectures but definitely not for practical sessions.”

“If I am asked I think I will choose online as it is flexible and comfortable for me.”

Theme 2: Quality of teaching and learning

Quality of teaching and learning during COVID pandemic was discussed under 4 sub themes: lecture quality, time management, online material shared, assessment and assignments and the learning outcomes. Majority of students were satisfied with the teaching and agreed that the lectures were well taken. The online material shared in whatsapp group was very useful for all the participants. Too many assignments were given was uniformly emphasized by all participants and also the shorter deadlines. Assessments for most of the students were ineffective. Majority of participants said they had more time to study and scored better and were satisfied more after assessment. They expressed their views in the following statements:

“Online sessions provided me with a great time to study and I experienced better time management and scored better.”

“The best thing about online lectures was- lecture ppt shared on whatsapp, as it helped me in studying better and saved lots of time in notes preparation, referring etc.”

“Online classes had a positive effect on me in terms of saving time and effort, by reducing the distractions like participation in cultural programs, etc, adjustment with unavoidable noise and waste of time in finding a proper

place to study alone.”

“While learning through online sessions, I had no time to enjoy my social life. I feel like I am busy all the time with my lectures, assignments, record book writing and reading for test and I lost interaction with my classmates.”

“Assessments were joke for few students as they copied from book and some even copied from internet.”

Many students reported that faculties were giving more assignments and feedback from faculty was limited or non-existent. In some of the lectures, all of the students were encouraged to keep the camera on, and some of the lecturers asked the students questions to initiate two-way communication.

Theme 3: Difficulties encountered

Difficulties encountered in learning during COVID 19 pandemic was discussed under 2 subthemes: technical issues and learning issues. The online sessions for students were taken via google meet. The link or class code for each session was sent in common whatsapp group for the batch 5-10 min before the particular lecture. Technical challenges faced by the participants include all essential technical elements, such as internet connectivity and the use of online tools. Participants listed many technical issues like slow network, poor connectivity, interrupted lectures, sound issue, etc. Issues they faced during online sessions are as mentioned in the following statements:

“Slow internet connectivity was an issue on and off. Sometimes instructor’s voice was not clear and this made understanding the lectures difficult.”

“I used to face very frequent internet disconnection during online lectures and it was very hard for me to follow lectures and explain the same to the teacher.”

“Turning on the camera was always an issue as the connection slows down. Some faculties never understood that as few students were taking advantage of it and doing something else with camera turned off.”

“Because of network issue at times the images or videos shown during online lecture were not clear as most of us were attending on our mobiles.”

Adjustment and engagement in the new system (online learning) was perceived as a barrier initially as it was implemented all of a sudden. Initially there were multiple problems related to the duration and arrangement of learning sessions. The significant amount of sitting in front of screen was physically demanding and emotionally taxing for most of the students. Some participants expressed their view about these issues as follows:

“There were a lot of lectures scheduled in one day. Honestly speaking, I didn’t get time to study them well. Most of the lectures’ content was huge and was covered within limited time and some of the instructors were not committed to the time of the lecture. It felt like we are listening to lectures whole day.”

“I noticed a serious communication gap between students and teacher. At time I needed more clarification for some lecture content but those points were left unexplained by the teacher because of miscommunication.”

“Some day’s faculty just rushed through the lecture and left me clueless of what is happening.”

“I missed direct discussions with my teachers and my classmates.”

“I faced difficulty in understanding some of the lectures, especially anatomy lectures and dissections, were difficult to follow in the online sessions.”

“If online lectures are continued then, I am afraid that it will lead to laziness and it is negatively affecting my performance, as it takes me longer to study the content.”

“We lost our routine and discipline as we were attending from our rooms. So sometimes it was like getting up and attending lectures straight.”

4. Discussion

Medical education is a stepping stone for producing competent doctors for future medical practice. Along this journey, medical students are prone to develop stress and anxiety especially the phase 1 students for whom everything is new, from college, to faculties, to colleagues, to curriculum. To add this pandemic had resulted in drastic change in education towards online learning. Therefore, in this study we tried to find the challenges faced by phase 1 MBBS students during this pandemic period due to the sudden shift in teaching learning process. We also tried to find the benefit and perception of student towards online learning.

Based on both the surveys and interviews, the most pressing concerns or challenge with the change in trend of education was not familiarity with using Google meet. Other challenges were related to long duration of sessions, less interaction, not able to clarify doubts, network and connectivity issues and less feedback. These challenges were akin to those faced in the transition to online education during non-emergency situations.^{5,6} Identifying these challenges may assist in recognizing online teaching and learning practices that can enhance classes even when we return to conventional face-to-face instruction.

Furthermore, medical students reported high levels of computer and information technology proficiency as they were not technophobic. 74.2% students in our study used mobile phone for attending the sessions. In addition to various challenges, the benefits students felt they had due to the shift to online mode was ppt shared via whatsapp, better time management and use of videos and pictures during sessions helped them. Preferred teaching mode for 75.8% was via Google meet.

Receiving teaching, supervision, exams and assessments solely through online solutions was a new experience for these students. Overall they were satisfied with the new

experience. Around 83% students preferred face to face learning, 53% agreed to have a blended approach for future medical training.

The themes identified in our study complement numerous previous studies.^{7–9} Although the themes that emerged from this study support the notion that “online learning works for medical students,” this does not imply that online learning can completely replace in-person live sessions. Our study participants encountered numerous challenges in adopting online learning including network and connectivity. Other than technical issues, our study participants’ experiences were influenced by the individual characteristics of students themselves, such as their learning styles, acceptance of new learning modalities, and levels of engagement in online classes.^{10–12}

One of the most imperative means for implementing online modules is encouraging collaboration among all departments and stakeholders. An organized and clear institutional approach is required to formulate a well-regulated and efficient system which can facilitate the adoption of structured methodologies by faculty members while implementing an online learning module.¹³ A lack of non-verbal communication by instructors was also identified as a significant challenge for our study participants. According to communication theorists, verbal messages are conveyed through words, whereas nonverbal messages are conveyed beyond the actual meaning of words, which typically complements the spoken words.¹⁴ The psychological closeness which a student may feel with their instructor is primarily based upon the instructor’s nonverbal clues. Nonverbal communication, such as eye contact, gestures, and posture, comprise a major part of all communications.¹⁵

According to our study participants, the missing element in the effectiveness of online learning was following the practical especially difficulty in following dissection classes. Cadaveric dissection helps medical students by helping them in understanding the three-dimensional relationship of different anatomical structures and appreciating anatomical variations.¹⁶ It is considered as a valuable source of learning anatomy and nothing can replace understanding of dissection than studying with cadavers. However, online learning may serve as an efficient resource for students if the method is upgraded through the integration of modalities such as virtual simulation technologies and computer-based models of real-life processes.

Students also believed that the quality of instruction has not suffered in the shift to an online environment. Others reported that the first few online sessions were problematic. Faculty and students had to adjust to the online environment.

In summary, the outbreak of COVID-19 has brought on new and unforeseen challenges in the field of medical education, related to the development of online learning. As the shift to online education poses important challenges,

medical colleges should be prepared to ensure a successful educational environment for medical students through emphasising the tech-based pedagogy, advising, motivating, inviting medical students’ feedback, as well as through supporting medical educators to adapt to the new reality. The adoption of online learning is a key strategy for ensuring continuity in medical education during COVID-19 pandemic.

The study had several limitations. We conducted the study during the second phase of the COVID-19 pandemic at a private institution where most students are financially secure. Also, we had included only phase 1 students in our study. Moreover, we did not record students’ marks obtained.

5. Conclusion

To conclude, medical colleges and universities should not disregard the effect of this pandemic on the training and well-being of the medical students. Primordial importance needs to be given to address their training needs. This calamity has provided us an opportunity to evaluate alternative modes of medical education and assessments. It gives a chance to adapt and imbibe newer modes of learning with a flexible approach. Regardless of the difficulties that the students and teachers would face in these disturbing times of the pandemic, it would provide them a silver lining to change the face of medical education in the country for the better. Furthermore, further research should be done in the coming years to corroborate the current impact of the COVID-19 pandemic on resident training and skill development.

6. Source of Funding

None.

7. Conflict of Interest

None.

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