

# Online Teaching of Final-Year Medical Students during COVID-19 Pandemic: Merits and Challenges

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## ABSTRACT

**Objective:** To explore the fresh medical graduates' perspectives regarding online teaching of clinical subjects in the final year MBBS program during the COVID-19 pandemic.

**Study Design:** Qualitative research with exploratory study design.

**Place and Duration of the Study:** Punjab Medical College (PMC), Faisalabad Medical University (FMU), Faisalabad, from January to June 2022.

**Methodology:** Semi-structured, open-ended, in-depth interviews were used to collect data from fresh medical graduates of PMC, FMU, who had experienced online teaching from March 2020 to May 2021, during their final year of undergraduate medical degree. Fourteen graduates, selected on the basis of non-probability purposive sampling, were interviewed. The interviews were audio recorded and transcribed verbatim. An iterative process was employed in data collection and analysis. Thematic analysis was used to interpret data. Manual coding was done inductively and the codes were synthesised into categories and themes with consensus.

**Results:** Four themes emerged including advantages, disadvantages, challenges, and suggestions for improvement. Comfort, efficient learning, self-directed learning, and flexibility were the categories of advantages. The disadvantages theme had three categories including deficient clinical skills, demotivation, and unprofessional behaviour. Infrastructure limitations, distractions, and digital illiteracy came up as the main challenges. The students suggested the use of a hybrid model and simulated patients for improvement of the online teaching experience.

**Conclusion:** Fresh medical graduates consider online teaching a convenient and efficient method of learning theoretical concepts in clinical subjects, during their final year. However, the lack of contact with patients results in deficient clinical skills in their opinion.

**Key Words:** *Coronavirus infection, Medical students, Undergraduate medical education, Teaching, Distance learning.*

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## INTRODUCTION

Since the first reported case of COVID-19 in December 2019, in China, till 25 April 2023, globally, there have been 763,740,140 confirmed cases of COVID-19, including 6,908,554 deaths as reported by WHO.<sup>1</sup> This calamity resulted in a lack of contact teaching in higher education institutes all over the world, proving to be a tough challenge, especially for Pakistan. It not only affected the economic and social set-up but also had an adverse effect on the academic activities of the country.<sup>2</sup> Loss of contact classes for a considerably long period made online learning more than essential to complete the unfinished semesters.<sup>3</sup>

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Commission (HEC), directed all universities and accredited institutions in the country to start online classes to avoid education loss to the students staying at home due to the lockdown during the COVID-19 pandemic.<sup>4</sup> Complying with the directives of HEC, online classes were started for students at Punjab Medical College (PMC), Faisalabad (affiliated with Faisalabad Medical University, FMU). Online teaching as a "sole" method of teaching in clinical subjects has been used for the first time in medical institutes. Limited studies are available defining its advantages and disadvantages in the teaching of clinical subjects and its impact on student learning.<sup>5</sup> To date, there had been limited reviews of the evidence on barriers and solutions from a medical educator's perspective.<sup>6</sup> A systematic review by WHO on global e-learning and blended learning methods had highlighted that only a few studies were conducted in low- and middle-income countries (LMICs).<sup>7</sup>

This study focused on students' attitude and satisfaction regarding the delivery of coursework, interaction of students and faculty during online classes, student outcomes in online coursework in clinical subjects, and satisfaction with resources. This study will help us understand the overall impact of online teaching during the COVID-19 pandemic on student learning

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and their satisfaction with the experience. This will help us improve the use of this important learning modality for undergraduate medical students in clinical disciplines.

## METHODOLOGY

It was a qualitative research using an exploratory study design with semi-structured interviews of fresh medical graduates who had experienced online teaching during the COVID-19 pandemic as final-year students.<sup>8</sup>

PMC faculty started distance learning sessions for the final year undergraduate medical students, as per the instructions of HEC, in March 2020. The main tool used was Zoom along with Google Classroom and WhatsApp. The teaching of clinical subjects was organised in synchronous online sessions with mandatory attendance. It was augmented by clinical case scenarios, patients' laboratory results, scans, and images uploaded on these interactive platforms. Powerpoint presentations, recorded lectures, and topic-related research articles were provided to the students as the learning resources.<sup>9,10</sup> Data were collected from these students after they had taken the final professional examination and successfully completed their MBBS degree. At this stage, they were quite open about their experience and discussed the issues with the principal investigator which they probably would have been reluctant to do as medical students. The principal investigator was a professor of surgery and an examiner for the final professional examination.

After permission from the ethical review committee of FMU, semi-structured, open-ended interviews were used to collect data from 14 fresh graduates, who had experienced online teaching as final-year medical students. They were selected based on non-probability purposive sampling with maximal variation.<sup>11</sup> Participants were briefed about the purpose of the study and given assurance regarding the confidentiality and anonymity of data. After obtaining written informed consent, the interviews were audio recorded, and field notes were taken. Data saturation was reached after 10 interviews and four more were conducted for confirmation. The following questions were asked of participants:

1. What was your routine during corona pandemic when contact classes were suspended?
2. Share your experience of the online classes, starting from the beginning of the pandemic till the end of these classes.
3. What differences did you feel in learning through online sessions and contact classes of clinical subjects?
4. How was the learning during these online sessions of theoretical and clinical subjects?
5. What occurred out of expectation during this whole experience of online classes?

Each interview lasted about 20-25 minutes. Participants' responses to these questions were explored in depth, using probes. The audio recordings were transcribed and field notes

were added to the transcription. An iterative process was employed in data collection and analysis. Constant comparative method helped in the manual coding process and the code structure evolved inductively. The authors generated codes independently and then compared them, reaching a consensus. Thematic analysis was completed by synthesising codes into categories and themes.

## RESULTS

A total of 14 interviews were conducted with fresh medical graduates who had attended exclusive online classes during the pandemic lockdown period. There were 12 females and 2 males, with 11 residing in hostels and 3 being day-scholars. Thematic analysis with categories and codes is shown in Table I.

## DISCUSSION

In this study, most students viewed online learning as enjoyable, feasible, comfortable, and effective in delivering the theoretical component. Hammond *et al.* have commented similarly on the impact of online undergraduate teaching, highlighting these advantages.<sup>12</sup> It has the added benefits of being convenient and flexible requiring less face-to-face lectures without geographical and temporal constraints. Study findings by Greenhalgh<sup>10</sup> and Sekine *et al.* fully support observations that learners have the opportunity to repeat, interrupt, and resume in this type of personalised learning, making it an efficient way of gaining knowledge.<sup>13</sup> In this study, the participants expressed that they had plenty of time for self-study. This helped them in preparation for their assessments according to the guidelines provided during online sessions. The theory content of clinical subjects was perceived very well by the students, and some of the students felt it was better than the contact lectures, with better concentration span. Some of the study participants recommended the use of a hybrid system, combining online sessions for theoretical concepts and ward-based teaching for learning with patients in-person. According to Greenhalgh,<sup>10</sup> computer-assisted online teaching has the potential to achieve the ultimate goal of higher education. Final-year students were encouraged to take charge of their learning and manage their time according to their assignments and daily routine fostering self-directed learning. Maphalala *et al.* conducted a study in a South African university that favoured this concept with the further comment that it helped learners find new ways to interact and communicate with their teachers and fellow students.<sup>14</sup>

Public sector educational institutes in Pakistan have limited resources and financial backup. The institutes had to adopt this "forced" online learning amid the COVID-19 pandemic when the financial resources were already exhausted in managing the huge number of patients. Similar problems had been highlighted by a study conducted in Turkey by Ozudogru<sup>15</sup> and in Pakistan by Farooq *et al.*<sup>16</sup>

**Table I: Thematic analysis with categories and codes.**

Themes	Categories	Codes	Representative Quotes
Advantages	Comfort	Comfortable (14/14)	"We could study from the comfort of our homes" (AM1)
		Convenience (7/14)	"I enjoyed my breakfast with lectures and it was a great feel, free from hassle of getting ready and going to college" (NF1)
		No travelling (6/14)	"We did not have to commute to another place for our classes" (AM1)
	Efficient learning	Good theory coverage (9/14)	"Theory component should be covered through it" (NF4)
		Easy communication with teachers (3/14)	"Rather I was more comfortable in communicating with my teachers online" (IN2)
	Peer-assisted learning (3/14)	"I often used to have online academic discussion with my friends via zoom meetings." (HZ3)	
	Self-directed learning	Self-study (8/14)	"We had more time for Self-study" (AM1)
		Self-management (6/14)	"Online classes gave me the confidence to do things on my own." (HZ01)
		Self-reliability (4/14)	"It has taught me self-discipline and self-directed learning" (NF4)
	Flexibility	Recorded lectures (5/14)	"We could get the recordings of the lecturers to review later on" (AM1)
			"I enjoyed my free time, watching TV, Internet surfing" (NF4)
			"I could be online in lectures and doing something at my home going to kitchen, then coming back and joining again" (AS2)
Disadvantages	Deficient clinical skills	Lack of patient contact (13/14)	"I was lacking clinical skill practice" (AM2)
		Lack of communication (10/14)	"Patient interaction, clinical methods & communications skills were lacking in online classes" (SM02)
		No real life experience (9/14)	"In online classes, real life experience of communication & interaction with patients and teachers was missing" (HN12)
	Demotivation	No classroom environment (7/14)	"Exactly, I think environment matters a lot" (AS2)
		Difficulty in assessments (5/14)	"I missed my friends too"
		Didactic lecture (4/14)	"Socratic app, for the test, was quite problematic" (AS2)
		Less motivating (3/14)	"It was more of a slide reading" (NF4)
	Unprofessional behaviour		"We were less motivated in online classes" (AS2)
Fake identity (7/14)		"Nonserious fellows logged in fake IDs and started nonserious stuff in the chat box and this disturbed the session badly" (HZ3)	
	Cheating (5/14)	"There is a lot of cheating in online tests and assessments" (AS2)	
	Deceitful behaviour (3/14)	"In physical classes, I used to sit in the front row and take notes. But during online classes, I used to get distracted. So, I used to watch a drama during classes"	
Challenges	Infrastructure limitations	Frequent Connectivity / Network issues (10/14)	"Many times, connectivity issue was so bad that we had missed the basic concept" (DAA3)
		Load shedding (5/14)	"If the electricity was powered off lecture got disconnected" (NM11)
	Distraction	Home environment (5/14)	"There were intrusions from our family which distracted us from the class" (DA1)
			"Sometimes people forgot to mute their mic and we could hear the family voices"
		Lack of surveillance (3/14)	"The teacher would not know who is present and attentive in the class" (AM1)
	Digital illiteracy	Faculty`s digital skills (4/14)	"Some professors don't know how to use a gadget or online software" (AS2)
			"Some students were not able to log in, some would get disconnected, and some had issues operating their mics /cameras" (DA1)
Students` digital skills (4/14)			
Suggestions for improvement		Hybrid model (4/14)	"Online lectures must be incorporated. Along with that, regular classes must be improved on the basis of the clinical approaches to patients. Students must have both of these facilities to make the theory and clinical side strong" (8)
		Use of simulated patients (2/14)	"One of our teachers pretended to be a patient and asked us to take history from him...it was very helpful" (IO,14)

In the study, the students commented that several faculty members were not able to design and plan online classes due to a lack of training and computer literacy. Another study from Pakistan revealed that most of the medical institutes in Pakistan lack dedicated information technology (IT) departments and proper training of faculty in computer-based online teaching.<sup>16</sup> Despite the limited resources, amid the COVID pandemic, the authors designed a few online teaching session preparation courses for the faculty. To make it more effective, intensive training of the faculty was provided to meet the demand for online courses with the addition of interactive video sessions and clinical interactions as suggested by different studies.<sup>17,18</sup>

Poor internet connectivity during online teaching sessions was faced by a large number of students in this study. It resulted in frequent disconnection which were further augmented by power shut-down. This caused the students to miss the important and basic concepts of the topic under

"live" discussion. It also resulted in attempting the whole assessment again as it was not automatically saved, once the online connection was disrupted. The study conducted by Nazir *et al.*<sup>18</sup> has stressed that such issues need to be taken care of during the conduct of teaching sessions. Internet connectivity issues and slow bandwidth resulted in interruptions of academic sessions especially for students who lived in the rural areas.<sup>16</sup>

The majority of online teaching sessions conducted by the faculty were devoid of personal interaction with patients. Studies by Azmat *et al.*<sup>19</sup> and Nazir *et al.*<sup>18</sup> had commented that such online sessions lack clinical practice skills and face-to-face interaction with the patients. This resulted in deficient clinical skill acquisition by the students. In this study, participants commented that they missed important aspects of clinical teaching, i.e. history taking, clinical examination, and face-to-face bedside clinical discussion in real-time. For similar reasons, they felt a real deficiency in

clinical interaction with the patients and developing communication skills. Some of them confessed that they had to face difficulties during their final professional examination due to this deficiency. They suggested the use of simulated patients to fill this gap. Similar observations had been made in different studies.<sup>18-20</sup> Assessment of clinical skills, behaviour, and attitude was found to be difficult through an online system. Some students could not focus on the screen for a long time, but during the COVID lockdown, there was no other option available. Lack of classroom environment and sense of passive learning resulted in demotivation in some students.<sup>21,22</sup> Deficient training of faculty in the conduct of computer-based online classes and assessments resulted in a lack of effective surveillance, promoting unprofessional behaviour including the use of fake IDs and even cheating in assessments. The study participants shared examples of such behaviours, and they had serious reservations regarding the lack of accountability for such instances.

## CONCLUSION

The final-year MBBS students consider online teaching a convenient and efficient method of learning theoretical concepts in clinical subjects. However, a lack of contact with patients results in deficient clinical skills in their opinion.

## DISCLOSURE:

This study was conducted to fulfill the partial requirement of the MCPS - Health Professions Education Program of the College of Physicians and Surgeons of Pakistan.

## ETHICAL APPROVAL:

An approval (No. 48. ERC/FMC/2020-21/174) was granted by the Institutional Ethical Review Committee, Faisalabad Medical University, Faisalabad.

## COMPETING INTEREST:

The authors declared no competing interest.

## AUTHORS' CONTRIBUTION:

FBL: Substantial contribution to the conception and design of work, acquisition, analysis and interpretation of data, conduct of interview, and manuscript writing.

TK: Critical review and final approval of the version to be published, drafting of the work.

All authors approved the final version of the manuscript to be published.

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