Original Article :

Medical Staff Teaching Experience During COVID-19 Pandemic

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Abstract

Background & Aims:
The COVID-19 pandemic changed teaching and learning methods across the word. This cross-sectional study aimed to assess clinical tutor feedback on the e-learning at Taibah University Medical College during pandemic.

Methods:
Consenting medical faculty were asked to provide their feedback through an electronic semi-structured questionnaire which had both multiple choice and Likert scale responses. Sociodemographic data were also collected. The study was approved by Institutional Ethics Committee.

Results:
A total of 66 medical faculty members were participated. Most of the respondents were females (53%), almost half of them were Saudi nationals, and 48.4% had fewer than ten years of teaching experience. Most respondents felt that online teaching was the preferred choice during the pandemic, but over half of them (56.1%) favored classroom teaching for medical students. Almost fifty percent of the faculty members had not undergone training for medical education or online teaching. 86.4% of them felt that knowledge could be imparted through online teaching, but communication skills and psychomotor skills couldn't be acquired by online teaching. Around 60% of teachers felt that it is difficult to assess the students through the virtual teaching method.

Conclusion:
The medical faculty members believe that e-learning is time-consuming, it decreases student-teacher interaction, and student evaluation and assessment is more difficult than classroom teaching. Virtual teaching is good for imparting knowledge; however, it is not the preferred method for teaching communication and psychomotor skills.

Key Words:
online education, virtual teaching, e-learning, medical education, COVID-19

Introduction

Since COVID-19 first took hold in Wuhan, China, the world has seen incredible advancements and failures for humanity. Within months, COVID-19 seamlessly crossed all geographical and political boundaries to become a pandemic.[1] Teacher, along with other professionals, had to quickly find alternative ways to carry out their work. To continue medical education unabated and prevent the loss of time and knowledge, the Ministry of Education and Health in Saudi Arabia recommended online teaching for medical students.[2]

Thus, the age-old method of classroom teaching, based on personal interaction between students and teachers, had to be substituted with comparable, or improved, ways of interactive, informative, and effective teaching. In addition to this, medical teachers had to look for options for teaching clinical skills, which had also been suspended simultaneously. Classroom or clinical-setting teaching aims to stimulate deep learning, which is enforced when students become responsible for their learning and use critical analysis effectively.

Virtual education, or e-learning, refers to instruction in a learning environment where educators and students are separated by time, space, or both.[3,4] This learning format confers several advantages over conventional approaches. E-learning is easy to access as there is no geographical restriction; it crosses all longitudes and latitudes for one and all.[3,5,6] Virtual learning is neither static nor time-bound. It encourages self-motivation and self-learning for the students. Lastly, education can be consistent for all students through virtual teaching. E-learning can be didactic or interactive depending upon the teacher's model and the response of students. It can either be synchronous or asynchronous, depending upon time constraints and the convenience for both students and teachers.[6] Thus, the inclusion of e-learning into the current system of medical education as a blended learning system is being promoted.[7]

Although the shift from conventional teaching to virtual teaching was new for medical students of our university, remote online education for medical professionals was already a part of the curriculum in some medical schools.[3,8–12] The inclusion of virtual learning in the medical curriculum was recommended by the World Health Organization, mainly to decrease the gap between the availability and requirement of healthcare professionals in the developing world.3 World-class universities started participating in Massive Online Open Courses (MOCC), by which learning has become easily accessible in all corners of the world.[13,14] There has been an exponential increase in e-learning for economically

developing countries as well.[2] There have been various initiatives in Saudi Arabia to modify the mode of education because of the easy and widespread access to the internet and web-based resources.[15]

However, due to the COVID-19 pandemic, e-learning became mandatory rather than optional. The mushrooming of online platforms such as Zoom, Microsoft Teams, Google classroom, etc., have not only helped teachers but presented confusing technical and logistical hurdles. It has been challenging for teachers and students to familiarize themselves with this virtual classroom model. The teachers have had to shift to remote teaching while supporting learning outcomes and fulfilling teaching objectives. The need to complete the academic year without any loss to the students has encouraged the medical faculty to become accustomed to remote/virtual teaching as early as possible.

As the waves of COVID cases have not yet subsided, and there is no timeline for returning to regular or pre-pandemic medical teaching, there is a pressing need to understand the flaws of online medical education and improve upon them. We conducted this cross-sectional clinical study to assess clinical tutor feedback about e-learning during the COVID-19 pandemic at Taibah University Medical College.

Methods

Study design: This descriptive cross-sectional study was undertaken during the academic year 2020-21 from 1st January 2021 to 31st March 2021 at the College of Medicine at Taibah University, Al Madinah City, Saudi Arabia. The study was approved by the Research Ethics Committee/ College of Medicine/Taibah University (IRB00010413).

Study participants: We invited all medical faculty of Taibah Medical College to participate in the study. Recently recruited faculty members, those who had not been given teaching responsibility, and those who refused to participate were excluded from the study. Written informed consent was obtained from all the participants.

Questionnaire: The data was collected by researchers using a semi-structured questionnaire that helped gather information on the socio-demographics of participants and their views on e-learning. We developed a questionnaire for this study which consisted of 43 questions. (Appendix 1) (https://docs.google.com/forms/d/e/1FAIpQLSdErrlA8gC6SHyrucWG0IfCTiQapwrdIx-nAplZO9uvOG8Ufw/viewform)

The questionnaire had two types of questions: multiple-choice questions and those with Likert scale answers. We utilized the five-point Likert scale for scoring, i.e., 5, strongly agree; 4, agree; 3, not sure; 2, disagree; and 1, strongly disagree. We sent

an invitation link of the questionnaire as a Google form to all the consenting medical faculty members, through email and WhatsApp messages. All participants were requested to understand the purpose and methodology of the study and reach out to us for any clarification. Email reminders were sent twice every ten days to encourage maximum participation. Only completed questionnaires were considered. Data analysis and management: Statistical analysis was done using the Statistical Package for Social Science (SPSS) version 21.0 (SPSS, Chicago, Il, USA). Quantitative data were represented as mean and standard deviation (SD), and qualitative data as frequencies and percentages.

Results

Demographics: Sixty-six medical faculty members working at Taibah University Medical College, Al Madinah City, KSA, were enrolled in this study. Table 1 gives brief information about the participating faculty. Among the 66 participants, 35 (53%) were females, with most participants (23, 34.8%) falling into the 41–50-year-old age bracket. Over half (51.5%) were Saudi nationals. The Mean age (±SD) of the participants was 42.93 ±7.22 years. Almost 50% of the faculty members had work experience of fewer than ten years, and 19.7% had more than 20 years of teaching experience. Half of the participants were from the Medicine department, and the rest, 30.3% and 18.2%, were from Basic Medical Science and Surgical departments, respectively. Most of the faculty was involved in teaching all students (i.e., from 2nd to 6th profession (or year)), and only 12 (18.2%) faculty members were teaching female students only. Approx. two-thirds (66.7%) of the teaching faculty did not have any degrees or certificates in medical education. (Table 1) profession (or year)), and only 12 (18.2%) faculty members were teaching female students only. Approx. two-thirds (66.7%) of the teaching faculty did not have any degree or certificate in medical education. (Table 1)

Table no. 1: Demographic characteristics of participants

Variable	Level	Frequency	Percentage (%)
Gender	Male	31	47
	Female	35	53
Age group (Years)	25-30	1	1.5
	31-35	10	15.2
	36-40	21	31.8
	41-50	23	34.8
	>50	11	16.7

Variable	Level	Frequency	Percentage (%)
Nationality	Saudi	34	51.5
	Non-Saudi	32	48.5
Medical Teaching experience (years)	< 5 Years	16	24.2
	5-10 Years	16	24.2
	11-15 Years	9	13.6
	1-20 ears	12	18.2
	>20 Years	13	19.7
Specialty	Basic Medical Sciences	20	30.3
	Medical	34	51.5
	Surgical	12	18.2
Medical students taught during pandemic	2nd Year & 3rd Year	12	18.2
	4th Year, 5th Year, 6th Year	22	33.3
	Both	32	48.5
Gender distribution of students	Female	12	18.2
	Male	22	33.3
	Mixed	32	48.5
Possess degree/certificate in medical education	Yes	22	33.3
	No	44	66.7

Experience and training of staff:

During the COVID-19 pandemic, medical faculty took up various teaching activities. The most common activities were Skill Lab (44, 67.7%), Case- based collaborative learning (44, 67.7%), personal professional development (42, 63.6%), early clinical experience (29, 3.9%) and case management (23, 34.8%). Most of the faculty members (59, 89.4%) conducted their online classes from their respective homes. Our questions regarding the teaching practices showed that 29 (43.9%) preferred online e-learning classes. In contrast, the rest (37, 56.1%) preferred live classroom teaching, which shows that most of the medical faculty feel more comfortable with classroom lectures, a traditional teaching approach. Most of the teaching faculty had attended the workshops related to medical education (28.8% always and 39.4% occasionally), and 50% of the faculty had attended the E-learning/online teaching workshop whenever they had been offered such courses. A similar percentage (53.1%) had attended workshops for using technology (Zoom, blackboard) for teaching (Table 2).

Difficulties faced by teaching staff:

The faculty members (39.4%) highlighted that they were aware of the university's technical support available for their prob-

Table no. 2: Teaching practices adopted during the study period.

Factors	Level	Frequency	Percentages (%)
Personal preference	Live Classes/Class room learning (non-recorded)	37	56.1
	E-learning online (recorded)	12	18.2
	E-learning online (non-recorded)	17	25.8
Attend workshops, courses, etc. in medical education?	Never	1	1.5
	Very Rarely	4	6.1
	Rarely	16	24.2
	Occasionally	26	39.4
	Always	19	28.8
Attended workshops, courses, etc. in e-learning/ online teaching?	Never	4	6.1
	Very Rarely	8	12.1
	Rarely	10	15.2
	Occasionally	33	50.0
	Always	11	16.7
Attended workshops, courses, etc., for using technology, e.g., Zoom, blackboard, etc.?	Never	4	6.1
	Very Rarely	7	10.6
	Rarely	9	13.6
	Occasionally	35	53.1
	Always	11	16.6
The place for conducting most of your sessions during the pandemic?	From Home	59	89.4
	From work (University)	3	4.5
	Others	4	6.1

lems. Networking issues were occasionally faced by 28.8% of the faculty members during teaching from their homes (Table 4). A majority (66.7%) of the faculty members felt that allocated time was always appropriate for them to deliver the lecture online, and the rest felt the time allocation was occasionally proper. As medical education has a significant section of practical work, 71.2% of the faculty strongly agreed that face-to-face learning is the best option for practical teaching, and only 6.1% remained neutral. (Table 3)

Table no.3: Description of supportive facilities available in the university

Factors	Level	Frequency	Percentages (%)
Is there any technical support from university if you face a problem during online teaching?	Yes	26	39.4
	No	24	36.4
	I don't know	16	24.2
Were the available functioning internet services ever considered as obstacle for you while distance teaching?	Never	8	12.1
	Very Rarely	13	19.7
	Rarely	17	25.8
	Occasionally	19	28.8
	Always	9	13.6
	Never	0	00

Factors	Level	Frequency	Percentages (%)
Do you think appropriate time was allocated for the sessions?	Very Rarely	1	1.5
	Rarely	1	1.5
	Occasionally	20	30.3
	Always	44	66.7
Did you attend preparatory session for conducting coming tutorial/sessions?	Never	3	4.5
	Very Rarely	4	6.1
	Rarely	9	13.6
	Occasionally	24	36.4
	Always	26	39.4
Do you think face to face learning is important /needed for practical teaching?	Strongly agreed	47	71.2
	Agreed	15	22.7
	Neutral	4	6.1
	Disagreed	0	0
	Strongly Disagreed	0	0

Innovations by teaching staff:

The faculty members tried various ways to make teaching more interactive between students and the teachers. Two-thirds of the medical faculty felt that using a white-board was an outdated method and didn't make teaching more communicative; 84.4% felt that live teaching in skill-laboratory was not a proper way to teach, and 30 % had a bitter experience with the use of videos during lectures. On the other hand, 95.5% felt that sharing a screen made their sessions more interactive, and 50% wanted their students to switch on the cameras.

Skill training: When questioned about the different domains of medical education, 86.4% felt that knowledge could be gained through online teaching, and 68.2% felt that cognitive skills could be improved with virtual instructions. However, 71.2% and 62.1% felt psychomotor skills and communication skills couldn't be learned by students through online teaching, respectively. About 68.2% felt that educational material had been changed to adapt to a new online teaching strategy. The majority of the faculty members (75.8%) participated in changing/planning and reframing content for online teaching. Almost all the faculty members gave students feedback about their performance. In regards to feedback styles; 68.2% of faculty members were specific and provided examples when needed, 77.3% addressed the positive issues first and then asked about the areas needing improvement, and only 16.7% of the faculty members conducted weekly meetings.

Participation of students:

Regarding the involvement of the students, only 18.2% of teachers were dissatisfied with the participation and involvement of

students during online classes. Close to half (48.5%) of the faculty felt that they could occasionally maintain the group dynamics (i.e., the group's performance as one team) during an online class. Approximately half of the faculty members felt that trust could be established among groups if the group members did not criticize each other, and 83.3% felt that a listening attitude could also enhance trust among group members. Teachers felt that the reasons for poor interaction included lack of effective communication (54%), lack of motivation (51%), lack of interest (41%), and lastly, the students' lack of listening skills for online classes (30%). Most of the teachers (71.2%) tried to motivate the students and were flexible with questioning for assessment and comparison of knowledge. Teachers (53%) encouraged the students to explain their answers with critical and logical reasoning, and some (36.4%) also suggested they use flow diagrams to explain complex concepts.

Assessment using online teaching: Regarding the evaluation of knowledge and cognitive skills, a majority (86.4%) felt that multiple-choice questions (MCQs) were the best method, followed by Objective Structured Clinical Examination (OSCE (62.1%)), and 47% thought oral examination is the right option. For practical and clinical skill assessment, a majority favored OSCE (84.8%), followed by Objective Structured Practical Examination (OSPE (72.7%)); MCQ and mini-essay-questions (MEQ) were not preferred.

Overall experience: After the online teaching modality was taken up due to restrictive orders, only 13.6% found e-learning to be a valuable teaching method, and 30.3% did not find e-learning helpful. Only 13.6% felt that e-learning serves to provide rich educational resources and experiences; 7.6% thought that e-learning provides extensive education to learners, and only 3.0% felt that it improves the participation of students in learning processes. Additionally, 42.4% felt that e-learning needs well-prepared educational resources; 57.6% thought that technological infrastructure is crucial for successful implementation, and 54.6% did not agree that e-learning improves the effectiveness of teaching. Furthermore, when assessing the view that e-learning saves time and effort when compared to conventional on-campus teaching, only 18.2% strongly agreed, 27.3% agreed, and 34.8% of the faculty were neutral. Additionally, 60.6% felt that it is difficult to evaluate students' performance through e-learning (Table 4).

Discussion

The year 2020 has seen medical educators around the world forced to transition to

Table 4: Attitudes of faculty staff towards e-elarning

Attitudes towards E-learning	Strongly agreed N (%)	Agreed N (%)	Neutral N (%)	Disagreed N (%)	Strongly Disagreed N (%)
E-learning modalities are useful tool in medical education	9 (13.6)	8 (12.1)	22 (33.3)	20 (30.3)	7 (10.6)
The use of educational technologies serve to provide rich educational resources and experiences	9 (13.6)	21 (31.8)	19 (28.8)	15 (22.7)	2 (3.0)
E-learning provides extensive education for the learners	5 (7.6)	4 (6.1)	26 (39.4)	23 (34.8)	8 (12.1)
E-learning improves student's participation in the educational process	2 (3.0)	11 (16.7)	27 (40.9)	13 (19.7)	13 (19.7)
Formal staff development online Teaching and learning guidance should be facilitated for implementation of e – learning activities in the campus.	11 (16.7)	22 (33.3)	19 (28.8)	7 (10.6)	7 (10.6)
E- learning needs well prepared online materials	28 (42.4)	19 (28.8)	5 (7.6)	8 (12.1)	6 (9.1)
E-Learning saves the time and effort of both teachers and students	12 (18.2)	18 (27.3)	23 (34.8)	8 (12.1)	5 (7.6)
E-learning may result in decline in students performances	15 (22.7)	21 (31.8)	16 (24.2)	11 916.7)	3 (4.5)
E-learning improves the effectiveness of teaching	3 (4.5)	7 (10.6)	20 (30.3)	24 (36.4)	12 (18.2)
E-learning may result indifficulty in monitoring and evaluation of the students	21 (31.8)	19 (28.8)	8 (12.1)	11 (16.7)	7 (10.6)
The use of e-learning is more time-demanding than traditional education processes	9 (13.6)	17 (25.8)	10 (15.2)	19 (28.8)	11 (16.7)
Technological infrastructure is crucial for successful implementation activities	38 (57.6)	10 (15.2)	7 (10.6)	6 (9.1)	5 (7.6)

virtual education, all while facing the enormous challenges of COVID-19. Although this was a sudden shift for the faculty members of the university, many medical institutions across the globe were already in the process of including e-learning into their curriculum.[8,9,12] In the medical education system, teachers must become facilitators for learning, which is far more than just delivering didactic lectures. The conventional role of a teacher as the content provider has changed into one where the teacher plays an active role in progressing and developing a science student into a doctor. All the learning domains, such as cognitive, psychomotor, and affective, are to be taken care of while teaching.

Thus, the transition from age-old class-

room medical teaching to virtual learning, or e-learning, in medical education is slow and facing some barriers.[16,17,18] E-learning can be network-based or non-network-based, or it can be a blended learning management system. Network-based is taking live classes, and non-network implies that students are not always connected; resources are shared via pen drives or compact discs. A blended learning management system means that the resources, track record of the students and notifications are available online to both students and teachers; however, the teaching is generally held in the conventional classroom method.[12] The blended education system can overcome some of the disadvantages of online teaching.[12,19] When blended with classroom teaching, e-learning can help provide resources, increase student participation, and can include regular assessments after each topic is completed.[6,9,12,20,21] Before the onset of the pandemic, we had established a web-based platform that contains cases, assessment questionnaires, educational content, and notices from the administration; however, this was not interactive, and teaching was undertaken live physically. The mixed responses of the teachers included in this study show that the inclusion of a learning management system for the university and blended education system can be taken forward to improve medical education in the country.

The results of the study show that the medical faculty members considered e-learning/teaching to be more time-consuming and require more training and proper infrastructure, as compared to conventional classroom teaching. In our study, most faculty members were females, Saudi nationals, less than 50 years of age, and 50% had less than ten years of teaching experience. Only one-third of the faculty members had training for medical education. Almost half of them occasionally attended the workshops and courses for medical education and online education, and technology for teaching. Interestingly, during this short period of less than a year, faculty members tried different teaching methods to increase the students' active participation.

Our faculty members showed a positive response for the initiation of e-learning during the pandemic which has been reflected from other clinical studies as well. Hoq et al. found that most of the teachers welcomed the new teaching method and were happy to prevent any academic loss for the students.[2] Another study from medical colleges of Saudi Arabia also showed that the faculty members had a positive attitude towards the inclusion of e-learning in their curriculum.[22]

However, the overall experience of the

faculty members showed a preference for classroom teaching as compared to online teaching. Some of the reasons for the preference for classroom teaching included differences in the level of group interaction, effective communication, and motivation among students. As psychomotor skills can be best taught in real-life scenarios, our teachers also did not see any role of e-learning in imparting psychomotor skills to students. Technological difficulties were not a significant concern for the faculty, and they were satisfied with the timely technical help from the university staff. The difficulties included the non-serious attitude of the students, apart from the technical glitches, which were not significant. Additionally, the home environment was not suitable for both teachers and students alike. Teachers above the age of 50 years and students living in areas with poor internet connectivity had difficulties in this transition. Our faculty members also felt the lack of student-teacher interaction during virtual teaching.[3,23] In addition to our analysis, other problems of e-learning included difficulty in availability and accessibility of hardware and software, connectivity issues, increased financial burden for the students and the university management, and the teacher's constant effort required to make e-learning captivating and retainable.[16,17,18]

As the second and third waves of the pandemic are still engulfing the world and mass vaccination is not yet complete, faculty members will have to make further efforts to impart psychomotor skills through videos demonstrating various procedures and interventions.[6] Some of the suggested methods to improve e-learning might include proper training of the medical teaching staff and establishing appropriate infrastructure.[24] All the stakeholders should be on the same page before the set-up of online teaching. The authorities, teaching staff, and the students should have a positive attitude toward including e-learning in the education system.[23] The teachers can allocate tasks to students, involve them in presenting seminars, interpreting cases, and having open discussions. E-learning is beneficial for continuing in-service training and for improving clinical skills.[25,26]

One of the limitations of our study was the non-inclusion of feedback from the medical students. In a study among medical students of Qasim Medical Institute, Saudi Arabia, the students were surveyed about the success of e-learning in compensating for the urgent suspension of face-to-face teaching during the COVID-19 pandemic and the effectiveness of online assessment in testing their knowledge and skill levels.[27] There was an overwhelmingly positive response for e-learning as 87% of the

students found e-learning to be unique and highly satisfying. Interestingly, e-learning gave more chances for students to participate in discussions, and they thought that this method gave them more time to do other things and thus lead a normal life. Contrary to our results, the teaching staff was satisfied with the online teaching and assessment methods and hoped to continue them later. There were some concerns about the inadequate knowledge and experience of the medical teaching staff.[27] Interestingly, there are conflicting views from the students about the benefits and disadvantages of e-learning. Some studies have reported that students find e-learning beneficial as it improves understanding, is easily accessible and is flexible; additionally, there is increased student participation.[6,28,29] On the other hand, students have also reported e-learning to be more time-consuming, stating a lack of student-teacher interaction and tutor support, and feelings of isolation or difficulty in clarifying any doubts.3 Some reports suggest that teachers find that e-learning saves time, content can be easily edited, there is no variation in content for different sub-groups of the class, and videos can help in teaching skills that are difficult to teach every student equally in the laboratories.[6,30,31]

As the continuation of medical education became more critical during this pandemic, we wanted to evaluate the new strategies and overcome the flaws and work on improving medical education. This study aims to recognize the experience of medical faculty during the transition from physical classroom and hospital-based teaching to virtual e-learning for medical students. Parallel to our study, various other clinical studies were also conducted to understand the changing role of virtual learning for students.[2,27,32–34] While analyzing the response of the medical faculty members, it is also crucial to remember that this transition was stressful and difficult for medical teachers as they had to adapt to a new way of teaching in a short span. The medical teachers had to continue with "student-centered learning" through virtual classrooms as well. Additionally, the medical faculty had to remotely help students in controlling the stress and panic of the COVID-19 pandemic.

Our study had some limitations, including small sample size, cross-sectional study design, single-center study, and a lack of feedback information from the students, parents, and university officials. However, such feedback with analysis will help the university, and further studies with students and a larger sample size can help understand the advantages, effectiveness, and flaws of online teaching for medical students. The introduction of e-learning was a

learning experience for the medical faculty as well. Although working from home is coming up as an alternative approach for the employees, there is a smaller chance that online teaching will be considered a substitute for classroom teaching for medical education.

Conclusion

The medical faculty found online teaching to be a good substitute for classroom teaching during the COVID-19 pandemic. However, they still prefer conventional teaching methods as online education is less interactive, students are less serious during classes, assessment is complex, and practical/clinical skills cannot be taught effectively. The inclusion of online platforms can be a good way of communicating with students educational resources and for logbook maintenance.

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Conflict of interest

There is no conflict of interest

Ethical approval

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