

# Impact of online learning; experiences and attitudes of faculty and students from two medical colleges

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## Author's Contribution

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## A B S T R A C T

**Introduction:** In this changing paradigm of flipped classrooms, online learning is becoming center of focus. The spread of CoVID-19 pandemic has prompted medical institutions to quickly adopt online curriculum delivery to avoid any breaks. This transition seems to adequately serve the needs of medical education. As this new technology is rapidly being implemented, the students' and teachers' perspectives need to be evaluated to assess the outcome of these changes and to design effective strategies.

**Objectives:** To assess the impact of online learning by recording experiences and attitudes of faculty members and students from two medical institutions.

**Materials & Methods:** The study was conducted at SCM and FUMC, Islamabad. 275 3rd year MBBS students from both medical colleges along with 40 faculty members were enrolled after taking consent. Their perspectives were taken by a questionnaire. They were asked about familiarity of e-learning, its advantages, disadvantages, credibility of online assessments and whether e-learning should be part of future medical education. The data was analyzed using SPSS23.

**Results:** 34 faculty members and 214 students from both institutes completed the questionnaire. Majority of the faculty members and students believed that e-learning can only serve as complementary role to traditional teaching.

**Conclusion:** E-learning provided us the needed mode to continue delivering the course in the need of the hour. Both faculty and students deemed that online learning is not as proficient as face-to-face teaching however, hybrid model combining both modalities can achieve better results.

**Keywords:** Medical education, online learning

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## Introduction

In this changing paradigm of learner centered approach and flipped classrooms, online interactive learning is becoming center of focus. E-learning is an effective learning tool. Currently, the spread of the COVID-19 pandemic has prompted medical institutions to quick transition to online curriculum delivery to avoid any breaks in the education. It has proved to be fruitful in keeping students engaged with their studies in this

unfortunate time. This shift to E-learning will have significant impact on the future learning trends and attitudes.<sup>1,2</sup>

E-learning is considered by students a complement to instructor-led teaching rather than its replacement. It provides the students control over content of curriculum and pace of learning. Students can modify their schedules

and tailor the content according to their personal learning objectives. They get opportunity to interact with teachers at other institutes. It also provides numerous research opportunities to the teachers. E-learning has transformed the role of teachers from providers of knowledge to facilitators of learning.<sup>3-5</sup> The transition from on-campus activities to distant learning seems to adequately serve the needs of medical curriculum delivery, however, it has compromised annual academic calendars and caused deferring of many practical sessions/clinical rotations. Virtual distant learning has also resulted in social isolation and blurring of boundaries between work and personal life which may affect students as well as teachers.<sup>3-5</sup>

Most medical colleges have adapted various modes to continue their learning process. Medicine is a skill-based profession; therefore, impact of online learning must be distinct from other fields. As this new technology is rapidly being implemented and deployed in medical education, the students' and teachers' perspectives need to be evaluated to assess the outcome of these changes and to design effective E-learning strategies.<sup>3-5</sup> The aim of present study is to assess the experiences and attitudes of teachers as well as students from two medical institutes.

## Objectives

To assess the impact of online learning by recording experiences and attitudes of faculty members and students from two medical institutions.

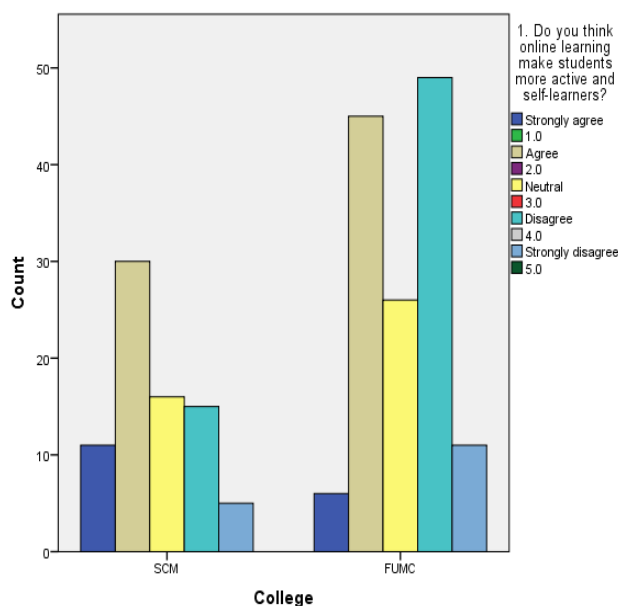
## Methodology

The study was conducted by faculty members of pathology department of Shifa College of Medicine (SCM) and Foundation University Medical College, Islamabad (FUMC) teaching 3rd year MBBS. 111 3rd year MBBS students from SCM and 164 students from FUMC along with 40 faculty members of pathology department of both colleges were enrolled after taking consent. 34 faculty members and 214 students from both institutes completed the questionnaire. Personal information of the participants was kept confidential. They were asked about familiarity of e-learning, its advantages, disadvantages, credibility of online assessments and whether e-learning should be part of future medical education. The participants were asked to answer each question on five-point scale. The

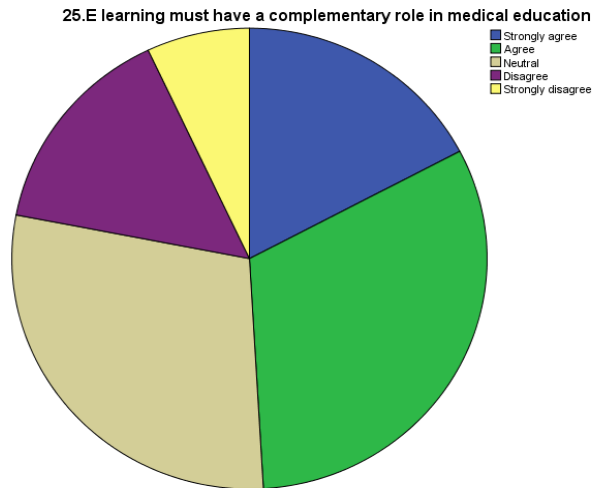
data was analyzed using SPSS 23. The analyses included descriptive statistics and chi-square test.

## Results

Majority of the faculty members from FUMC (66%) believed that e-learning does not make students more active or self-learners and it is less comfortable and interactive as compared to on-campus teaching, however, most members of SCM had different opinion asserting that online learning makes students better self-learners (Figure 1). Less students' participation is seen in online classes according to the faculty members (55.8%). Majority of the teachers (58%) believed that online learning makes the daily routine more cumbersome and they do face household distractions during online classes. Internet connectivity issues is another problem confronted by half (50%) of the faculty population. When asked about online examinations, most of the faculty members (76%) believed that high stake examinations should not be conducted online, and these are not credible for grading the students. Majority of the faculty members (55%) think that e-learning can be used in combination with face to face teaching for better understanding of the students (Figure 2.)



**Figure 1: SCM and FUMC faculty's perceptions about online learning making students more active and self-learners.**

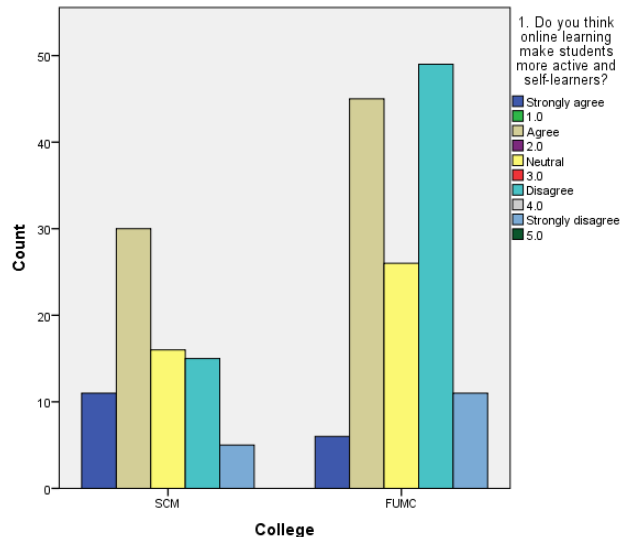


**Figure 2: SCM and FUMC faculty’s perceptions of e-learning having a complementary role in medical education**

In response to the question asked whether more students participate in online classes, majority of the students either disagreed (35%) or were neutral (24%) in the opinion. Students of SCM (53%) agreed that e-learning is more comfortable and promotes active learning. On the contrary, FUMC students had divided opinion, some agreed, and others disagreed (Figure-03). Pearson Chi-Square value was calculated on this question, which was significant (0.024). 82.7% of the students believed that uploaded lectures help in easy revision of the content. They (46.2%) also preferred case-based activities over simple lectures as it helps them to build better concepts. Students (61%) agreed that they suffer from household distractions while studying online and face internet connectivity issues. They feel that communication and interaction with teachers during online activities is not sufficient (50.5%).

About 60% students from both colleges disagreed with the concept of online examination; however, when asked about the credibility of exams, students had different opinions. Regarding easy cheating opportunity during online examinations, students of SCM and FUMC mostly disagreed (50.4%), however, 27% FUMC students remained neutral. 52.3% of the students think that curriculum can be delivered in less time through online classes as compared to on-campus delivery. Most of the students (75.2%) also believed that teachers were very

helpful during online teaching and around 49.06% suggested that e-learning can play a complementary role in medical education.



**Figure 3: Perceptions of students from both medical colleges regarding online learning making them active and self-learners.**

**Table 1: Faculty and student’s perceptions about online learning**

FACULTY							
	College	Strong Agree	Agree	Neutral	Disagree	Strong disagree	Total
<b>Q1</b>	Do you think online teaching make students more active and self-learner?						
	SCM	0	6	3	3	1	13
	FUMC	0	5	2	12	2	21
	Total	0	11	5	15	3	34
		(0%)	(32%)	(15%)	(44%)	(9%)	
<b>Q2</b>	Online platform adequate to deliver knowledge						
	SCM	0	5	4	3	1	13
	FUMC	0	2	6	11	2	21
	Total	0	7	10	14	3	34
			(21%)	(29%)	(41%)	(9%)	
<b>Q3</b>	Online assignments facilitate in building concept						
	SCM	0	5	3	4	1	13
	FUMC	0	5	7	7	2	21
	Total	0	10	10	11	3	34
			(30%)	(30%)	(32%)	(9%)	
<b>Q4</b>	Case-based learning						
	SCM	0	8	1	4	0	13
	FUMC	0	12	7	1	1	21
	Total	0	20	8	5	1	34
			(59%)	(23%)	(15%)	(3%)	
STUDENTS							
<b>Q1</b>	Do you think online teaching make students more active and self-learners?						
	SCM	11	30	16	15	5	77
	FUMC	6	45	26	49	11	137
	Total	17	75	42	64	16	214
		(8%)	(35%)	(20%)	(30%)	(8%)	

Q2 Online platform adequate to grasp knowledge							
SCM	9	32	19	14	3	77	
FUMC	9	38	35	39	16	137	
Total	18	70	54	53	19	214	
	(8%)	(33%)	(25%)	(25%)	(9%)		
Q3 Online assignments facilitate in building concepts							
SCM	12	29	21	13	2	77	
FUMC	7	29	32	44	25	137	
Total	19	58	53	57	27	214	
	(9%)	(27%)	(24%)	(27%)	(13%)		
Q4 Case-based learning							
SCM	8	33	25	6	5	77	
FUMC	9	49	33	36	10	137	
Total	17	82	58	42	15	214	
	(8%)	(38%)	(27%)	(20%)	(7%)		

**Table 2: Faculty and student's perceptions about online learning Assessments**

FACULTY							
College	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Total	
Q5 High-stakes exams should be conducted online							
SCM	0	2	1	8	2	13	
FUMC	0	2	3	13	3	21	
Total	0	4	4	21	5	34	
		(12%)	(12%)	(62%)	(14%)		
Q6 Household distractions							
SCM	0	5	2	6	0	13	
FUMC	1	11	2	7	0	21	
Total	1	16	4	13	0	34	
	(3%)	(47%)	(12%)	(38%)			
Q7 E-learning can replace conventional modes							
SCM	1	2	2	6	2	13	
FUMC	0	1	1	7	12	21	
Total	1 (3%)	3 (9%)	3 (9%)	13 (38%)	14 (41%)	34	
Q8 E-learning have complementary role							
SCM	3	7	1	1	1	13	
FUMC	0	9	8	4	0	21	
Total	3 (9%)	16 (47%)	9 (26%)	5 (15%)	1 (3%)	34	
STUDENTS							
Q5 High-stakes exams should be conducted online							
SC	10	8	14	20	25	77	
FUMC	8	30	2	45	33	137	
Total	18	38	35	65	58	214	
	(8%)	(18%)	(16%)	(30%)	(27%)		
Q6 Household distractions							
SCM	17	20	13	21	6	77	
FUMC	35	60	13	23	6	137	
Total	52	80	26	44	12	214	
	(24%)	(37%)	(12%)	(21%)	(6%)		
Q7 E-learning can replace conventional modes							
SCM	11	25	11	18	12	77	
FUMC	13	26	18	39	41	137	
Total	24	51	29	57	53	214	
	(11%)	(24%)	(14%)	(27%)	(25%)		
Q8 E-learning have complementary role.							
SCM	17	20	13	21	6	77	
FUMC	35	60	13	23	6	137	
Total	52	80	26	44	12	214	
	(24%)	(37%)	(12%)	(21%)	(6%)		

## Discussion

Pandemic has caused closure of schools and colleges throughout the world. Online learning even though was being utilized by medical colleges, but exclusive E-learning was uncharted territory for both the students and the teachers. This research draws attention to the experiences faced by students and their teachers to predict the future of online learning in the field of medicine post quarantine.

E-learning has had an important role in medicine for a very long time. But this global pandemic shifted the whole burden to online teaching. Multiple studies have shown good participation when attendance was made mandatory in these lectures or attendance was a part of course-grade; ensuring student participation<sup>6-8</sup> When asked students and faculty both presented a united front that 'exclusive online learning' did not ensure expected participation by the students. Interaction and communication are vital to know if the knowledge is being adequately grasped by the students. An Indian study concluded that interaction among teachers and students was less effective in e-learning compared to the face to face classroom learning.<sup>6-8</sup>

Students believe that they have become more responsible regarding their curriculum while studying online. The e-learning has made them active learners and changed their approach from teacher-centered learning to self-learning. Students with different learning styles are aided by this enabling them to study more efficiently.<sup>5</sup> However, views of SCM and FUMC students differ slightly (Table-01). A study conducted by Masic I, also discusses benefits of distance learning; stating that they are given the opportunity to learn how to work independently.<sup>5</sup> Even though online learning has proved to be flexible and accessible making distant learning exultantly easy to administer, there were still many kinks to evaluate. Online assignments and lectures were the main modes of delivering and assessing the knowledge. Faculty considered these to be inadequate for building the concepts amongst the students. While students gave a very neutral response to both these techniques. A study was published by Robert M. Bernard from Concordia University in 2004 presenting how Distant Education can be extremely efficacious at times and can work poorly.

Therefore, it is important to firstly know and then work out the problematic areas to make E-learning more efficient.<sup>10</sup>

Medicine is a skill-based profession, medical students must examine the patient, take history, and build a case to diagnose and manage the disease. Going to wards and visiting the patients was not possible during quarantine so case-based learning was the best alternative. A study done by Susan F Mclean in USA suggested CBL as an important tool for imparting practical relevance to the theory. Our students and faculty (46.2% and 58.8% respectively) also exhibited the pertinence of CBL during CoVID-19 era as a source of correlating theoretical knowledge. Inculcating cases and learning objectives in study guidelines have been appreciated by the teachers and the pupils (Table-01).<sup>9-12</sup>

Online assessments were imperative to evaluate the progress of students. Multiple examinations were conducted via online platforms; some were routine while others were high-stake assessments. Overall, faculty and students were dissatisfied by the credibility of online grading of such exams specifically for the important tests. Generally, any assessment brings about a concern for cheating, precautions were taken to make invigilation as cautious as possible<sup>13</sup> Thus, making it difficult for the students to attain outside aid to complete their evaluations. Newer and better technologies can help to improve reliability of online examinations, as stated in a previous study.<sup>3</sup>

Transition to online learning, though drastic, was seamlessly adopted by all. Online instructions being the sole way to transfer the knowledge led to myriads of problems faced by the administrations and the students. For instance, Lack of decorum during online lectures. Internet can make anonymity easy to use, to disrupt the discipline of the classes. Strict measures were taken to set examples for the rest of the students to convey that such behavior will not be tolerated in the future. Internet connectivity issues or technical difficulties have always caused some problems even before this outbreak. This remained as a problem during this time as well. In addition to this, home environment is contrasting to the workplace discipline. Many faced household distractions mingling with their working hours making home a less conducive learning environment. College managements were available during office hours to take care of any

such issue and provided online assistance. Faculty was properly trained to deliver the content online. Their issues and suggestions were welcomed by the seniors and certain changes were made to make the process easier for all. Perhaps this quarantine has highlighted the issues to facilitate the learning to get the maximum benefits.<sup>14,15</sup>

Plethora of researches have been done in the past to see if network aided tools were reliable enough to be utilized in the curriculum delivery. A research done in Riyadh, suggested it to be innovative way to achieve course delivery goals.<sup>16</sup> During lockdown, this became an utmost necessity. Exclusive virtual learning for an extended period wanted us to see its future implications. We concurred that digital teaching could have a blended role in the future to save time and effort as previously studied. It cannot completely take over the conventional face to face teaching methods as it lacks teacher-student bonding and skill-based activities.<sup>17,18</sup>

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## Conclusion

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E-learning provided us the needed mode to continue delivering the course in the need of the hour. Both faculty and students deemed that online learning is not as proficient as face-to-face teaching however, hybrid model combining both modalities can achieve better results.

### Recommendations of study

Online-learning helped us to deliver curriculum during CoVID-19 pandemic. Now, we are more experienced and well equipped to deal with such crisis. We need to develop permanent systems to deal with any such adversity. Using our knowledge of the problems faced by us we can devise an effective mode of delivering the curriculum in case of an unfortunate event. Moreover, it has been highlighted that we need to redesign our educational systems to use the advantages of digital learning and apply it to our conventional teaching methods making learning easier to grasp and accessible.

### Limitation of study

This study was done with 3<sup>rd</sup> year students and with faculty members of pathology department of both medical colleges. It can be done on a larger scale including all faculty members and all MBBS students from 1<sup>st</sup> year to final year of both medical colleges.

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