



Original Article

Medical and Dental Faculty's Attitude towards E-Learning as the Mode of Teaching during Covid-19 Pandemic

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ABSTRACT

The use of modern technology infrastructure is regarded as critical for the successful adoption of innovative teaching approaches. **Objective:** To determine the attitudes and concerns of medical and dental faculty about the use of E-learning as a medium of instruction during the Covid-19 outbreak. **Methods:** This cross-sectional study included 368 faculty members from Medical and Dental Colleges of Punjab province and was conducted utilizing a questionnaire developed following a thorough literature review and analysis of questionnaires from previous studies. A 5-point Likert scale was used to record knowledge, attitude, and practice, and the questionnaires were graded. SPSS version 22 was used to enter the data. The mean and SD of quantitative variables such as age and total score for knowledge, attitude, and practice score was calculated. Gender, education level, knowledge, attitude, and practice were all represented as frequency (%). **Results:** Zoom was shown to be the most commonly utilized software (69.0%). E-learning was deemed a beneficial tool in medical education by 56% of the respondents. An equal percentage of individuals (35%) agreed and disapproved the use of E-learning approaches over traditional ones. Only 30% participants resisted the change from traditional educational methods. Technological infrastructure was considered crucial for successful implementation of E-learning by 46% of the participants. **Conclusion:** Faculty members are using the available infrastructure to implement E-learning teaching modalities to the best of their knowledge and abilities.

INTRODUCTION

The bulk of the world's industries have been affected by COVID-19. The education sector has mostly shifted online. The shutdown accelerated the growth of online educational activities, assuring that education would not be hindered, particularly tertiary care medical education [1]. Many faculty members have been involved in establishing the best way to distribute online course material, engage students, and conduct evaluations [2]. The various challenges faced by the educational industry during the pandemic have increased the importance of E-

learning, as it provides us with a method of ease to practice educational activities and it works remotely while maintaining the quality of the output [3]. To continue educational activities under unforeseen circumstances adoption of E-learning and shifting to E-mode of teaching is inevitable [4]. Coronavirus SARS-Cov-2 pandemic led to a major public health crisis worldwide [5]. This global outbreak not only changed day-to-day behavior but also adversely affected the education system and has compelled educationists to combine traditional learning

with E-learning [6-8]. Clinical rotations for medical students have been halted to minimize the transmission of disease, despite the fact that passing on clinical skills to students is mandatory [9]. E-learning is acquisition and application of knowledge by electronic means, which connects teachers and students from a distance [10]. It is easy and fast transfer of knowledge through audio and video resources that reduces use of paper, travel time and cost and has proved to be a safer method during the need to quarantine at home owing to pandemic scenario [9]. Lack of human interaction to transfer clinical skills, unavailability of reliable internet source and lack of technologically proficient academic staff are the upcoming challenges, which need to be addressed [7]. Today's students are always connected to the internet, unlike prior generations, the transition to E-learning is putting additional demand on already overworked faculty [11]. Educators on the other hand are relatively not well aware of full use of digital technologies [12]. It is the need of the hour for the educators to have sound knowledge, acquire digital skills and develop acceptance to the use of digital resources [13]. Traditional teaching methods need to be replaced with more innovative and attractive methods to address the changing nature of learners, and this can only be achieved by employing suitable strategies to engage and keep students more attentive during lectures. A disparity exists between medical faculty's perceptions and the actual use of E-learning materials. This disparity was linked to a lack of required specialized content, awareness of resources, and competence to integrate the available resources [14]. Since integration of E-learning in medical education has become imperative, formal training and workshops for teachers are mandatory for transition from traditional to E-learning [15]. This study looked at faculty attitudes and concerns about using E-learning as a method of instruction during the Covid-19 pandemic.

METHODS

This cross-sectional survey was carried out in the medical and dental colleges recognized by Pakistan Medical Commission (PMC) using a questionnaire constructed after comprehensive literature review and assessing questionnaires of different studies [4, 6]. The institution's ethical review board approved the study (Case #. 580/ERC/CMH/LMC). After conducting a pilot study, the reliability of the questionnaire was assessed using Cronbach's alpha, which yielded a result of 0.818. The survey questions were in English language, and it was kept completely confidential. It was divided into two parts. The first part (Section I) collected data on demographics, while the second part (Section II) collected data on knowledge,

attitude, and practices towards e-learning. All questions were closed ended. Section two responses were recorded on a Likert scale ranging from 1 to 5, or from strongly disagree to strongly agree. The questionnaire was uploaded at www.surveys.google.com and was circulated through e-mail, WhatsApp and shared on social media platforms with teaching faculty fulfilling the inclusion criteria. All faculty members, demonstrators and above of PMC recognized medical and dental colleges who were 25 years old and above and were using E-learning teaching methods were included in the study. However, those faculty members not using E-learning teaching methods were excluded from the study. Convenient sampling technique was used, The WHO sample size calculator was used for calculating sample size keeping 95% confidence level, 0.05 as absolute precision and 0.65 as anticipated proportion (proportion of the faculty with positive opinion towards e-learning). Electronic consent was taken from the participants and the responses received were 368. The data was entered using SPSS version 22.0. Each participant received a score ranging from 1 to 5 for each question because the responses were on a 5-point Likert scale. The points from each section were added together to produce a total score. The total scores were categorized into poor (score 5-10), fair (score 11-17) and good (score 18-25). Quantitative variables like age, and total score for knowledge, attitude and practice were calculated as mean \pm SD. Qualitative variables like gender, education level, knowledge, attitude, and practice were presented as frequency (%). Cronbach's alpha was recalculated to assess the questionnaire's reliability.

RESULTS

Among the 368 participants, aged between 26->55 years, 192 were males and 176 were females, having a ratio of 1:1.1. Zoom was reported (69.0%) as the most used software, while Google meet (7.1%) was reported as the least preferred one (Table 1).

Variables	N=368	F (%)
Age (years)	26-35	142 (38.6%)
	36-45	106 (28.8%)
	46-55	82 (22.3%)
	>55	38 (10.3%)
Gender	Male	192 (52.2%)
	Female	176 (47.8%)
Education level	Graduation	84 (22.8%)
	Post-Graduation	216 (58.7%)
	PhD	68 (18.5%)
Experience in teaching (years)	<5	118 (32.1%)
	6-10	106 (28.8%)
	11-15	98 (26.6%)
	>15	46 (12.5%)

Academic designation	Demonstrator	90 (24.5%)
	Senior Registrar / Lecturer	62 (16.8%)
	Assistant Professor	100 (27.2%)
	Associate Professor	66 (17.9%)
	Professor	50 (13.6%)
Type of digital software in use	Google Classroom	62 (16.8%)
	Google Meet	26 (7.1%)
	Learning Management System & Zoom	26 (7.1%)
	Zoom	254 (69.0%)

Table 1: Participants' basic characteristics

Current study reported 56% participants considered E-learning teaching modalities beneficial, 43% of the participants didn't feel any anxiousness while delivering lectures online (Table 2).

Knowledge	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
I have attended workshops/lectures on e-learning methods	9.2%	39.1%	10.9%	36.4%	4.3%
I have sound knowledge to utilize available infrastructure for teaching purpose	4.3%	29.9%	23.9%	36.4%	5.4%
I have good command over synchronous/asynchronous methods of E-learning	4.3%	39.1%	23.4%	28.8%	4.3%
I have adequate knowledge/skills on how to engage participant during online lectures/discussions	2.7%	32.1%	26.6%	34.8%	3.8%
I am familiar with student performance evaluation methods based on E-learning	3.8%	37%	22.3%	32.1%	4.9%
Attitude					
E learning modalities are useful tools in medical education	1.6%	5.4%	12%	56%	25%
I prefer using e-learning techniques over conventional method for teaching	4.3%	35.3%	18.5%	35.3%	6.5%
I do not resist to change from traditional educational method to more technology based	2.7%	29.9%	17.9%	40.2%	9.2%
E learning is less time demanding than traditional education process	16.8%	30.4%	14.1%	29.9%	8.7%
Technological infrastructure is crucial for successful implementation	0.5%	2.7%	8.7%	46.2%	41.8%
Practice					
I have access to sufficient infrastructure to adopt e-learning	3.3%	16.3%	19%	56%	5.4%
I can easily prepare and deliver the online lecture in given	0.5%	12%	27.7%	51.1%	8.7%
I always make my lecture content concise and easy to grasp	0.5%	10.3%	25%	54.3%	9.8%
I frequently use images and videos to grab the attention of students	0	4.9%	11.4%	62.5%	21.2%
I don't feel computer anxiety while delivering online lectures	3.8%	20.7%	17.4%	43.5%	14.7%
E learning results makes students evaluation easier	3.8%	32.6%	21.2%	36.4%	6%
In your opinion does E-learning results in improvement in study	9.8%	27.7%	22.8%	32.6%	7.1%

Table 2: Response from participants

The mean knowledge, attitude and practice scores were observed as 14.88 ± 4.41 , 17.34 ± 3.28 and 24.14 ± 3.51 respectively (Table 3).

Parameter	Knowledge	Attitude	Practice
Mean score	14.88 ± 4.41	17.34 ± 3.28	24.14 ± 3.51
Good	128 (34.8%)	176 (47.8%)	356 (96.7%)
Fair	160 (43.5%)	188 (51.1%)	12 (3.3%)
Poor	80 (21.7%)	4 (1.1%)	0 (0.0%)

Table 3: Knowledge, attitude and practice score of participants

As the Cronbach's alpha is >0.70 , therefore the questionnaire was acceptable and reliable to collect required information (Table 4).

Characteristic	Value
N of items	17
Cronbach's Alpha	0.774
Cronbach's Alpha if item deleted (1) E learning is less time demanding than traditional education and (2) In your opinion does E-learning results in improvement in study	0.785

Table 4: Reliability of questionnaire

DISCUSSION

The COVID crisis has made new technologies acceptable even to previously resistant institutions. The medical education sector has had a difficult time dealing with the current scenario [16]. E-learning increases the possibility of student-teacher involvement and has the ability to maximize resource utilization with few faculty members [17]. Visiting faculty members who are stuck in far off areas can even continue to impart valuable knowledge through online classes and demonstrations. E-learning programs can meet the complex demands of the modern world [18]. The current study found that the average knowledge score attained by faculty was 14.88 ± 4.41 , thus out of all participants, good knowledge was observed in 128 (34.8%) participants, while 80 (21.7%) participants had poor knowledge about E-learning. Similarly, the mean attitude

score was 17.34 ± 3.28 , good attitude was observed in 176 (47.8%) participants while 4 (1.1%) participants had poor attitude towards E-learning. In our investigation, the average practice score was found to be 24.14 ± 3.51 , and 356 (96.7%) participants started using E-learning methods and continue to use. The overall reliability of the questionnaire used in our research was re-calculated and was 0.774. This showed that as the Cronbach's alpha is >0.70 , therefore the questionnaire was acceptable and reliable to collect required information [19]. However, it is recommended that more such studies should be conducted for comparison and further evaluation of questionnaire reliability. A Korean study by Kim *et al.*, discovered a difference between medical faculty's perception and the actual use of online learning materials in teaching. This gap was attributed to lack of required specific content, lack of awareness of about resources and the lack of ability to utilize the available resources. These findings are more or less consistent with the findings of current study as we can observe that knowledge of faculty needs to improve regarding synchronous and asynchronous methods of E-learning and methods of evaluation and performance assessment. The need for institutional support and faculty awareness strategies were recommended to bridge the gap [15]. The resources are there but the need is to create awareness and help the faculty to gain good command over utilizing those resources. In another study, the need for formal training and arranging workshops for faculty was highlighted to make the transition from traditional learning to blended approach and E-learning smooth, since integration of E-learning in medical education has become imperative. It has been shown that the majority of participants (56.1%) strongly agreed that the technical abilities required to conduct online courses boost the educational value of faculty and staff members' experience [20]. Our study results also back up the findings of prior studies by Bhardwaj and Jamlan [9, 21]. Most of the current study respondents (30.4%) disagreed that E-learning is less demanding than traditional education methods, which is consistent with previous research findings that faculty members believed E-learning can take time, lead to student monitoring difficulties, and reduce interest in direct traditional teaching [9]. In the current study 43.5% participants reported that they didn't feel any anxiousness while delivering online lectures, similar results were reported in another study [18]. However, a prior study discovered that teachers felt nervous when using online methods to take lessons [22]. According to Frehywot *et al.*, and Dhawan research, the use of E-learning can reduce education costs while increasing learning possibilities for students in low and middle-income nations [23, 24]. The World Health Organization actually exhorts poor and

medium-income nations to use E-learning as a method for closing knowledge and capacity gaps among health workers [25]. Co *et al.* reported that distance learning pedagogy has the potential to enhance learner motivation and performance in a comprehensive review. Simple E-learning tools can be used to teach medical students difficult skills like surgery [26]. In light of this, E-learning has the potential to enhance student learning outcomes and experiences, particularly in low-and-middle income countries [27].

CONCLUSIONS

This study found that the participants used E-learning teaching modalities to the best of their abilities within the provided infrastructure. They are comfortable with the current mode of teaching and do not resist the change from traditional educational methods. However, they do consider it demanding as technically sound infrastructure is necessary for its uninterrupted use.

Conflicts of Interest

The authors declare no conflict of interest.

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