Proceedings S.Z.M.C. Vol: 36(4): pp. 45-50, 2022. PSZMC-863-36-4-2022

Faculty Perception about E-Learning and Teaching Anatomy: An Experience of COVID 19 Pandemic

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ABSTRACT

Introduction: COVID-19 pandemic has led to a drastic shift from traditional teaching to e-learning using various strategies. Awareness and feedback of faculty regarding online education is essential to identify major challenges in online teaching, which will ultimately be helpful in making the online learning methods more effective.
Aims & Objectives: To assess perceptions of medical faculty about students' e-learning and teaching of Anatomy in medical colleges of Lahore.
Place and duration of study: The study was conducted at seven medical institutes of Lahore & study was conducted from December 2020 to August 2021 (9 months).
Material & Methods: Based on Descriptive, cross-sectional design and using convenient sampling Thirty-seven (37) faculty members including demonstrators & Professorial staff from Anatomy Department were selected from different medical colleges of Lahore. Self-administered 2-part questionnaire form was given to participants for data collection after taking their informed verbal consent. Results were described using Percentages, Mean, Median and Mode. They were analyzed using Kruskal Wallis test because the data was not distributed normally, and non-parametric test was applied as the normality value was <0.05. A p-value less than 0.05 were considered statistically significant.
Results: Statistically significant difference was noted amongst three responses out of 13 questions. Most of the faculty members agreed that online education is not a suitable alternative to face to face education (p= 0.028). They agreed that students' scores are lower in e- learning (p=0.04) and technology tools can't replace lectures (p=0.049). Faculty considered e-learning difficult to manage as compared to face to face learning. Moreover, majority were undecided about favorability of distant learning.
Conclusion: Faculty perceived various challenges in implementing distant learning. However, it is essential to embrace this shift towards e-learning and consider this mode of teaching as an inviting challenge. The perspective of Anatomy faculty regarding online learning will improve and support e-learning process in future.
Keywords: Anatomy, COVID-19 pandemic, faculty perception, online education, social perception and teaching.

INTRODUCTION

COVID-19 being a global catastrophe has influenced all domains of our lives[1,2]. The biggest casualty was perhaps the educational system which was affected globally at all levels. The new norm for academic institutions to deal with such abrupt crisis was a paradigm shift to online teaching, which brought in its wake both opportunities and challenges[3,4]. According to guidelines of Higher Education Commission (HEC), all educational institutes of Pakistan had to establish strong learning management systems (LMS) to ensure effective continuity of educational process[5].

The online learning strategies include various e-learning softwares like Moodle/ slate, Google meet, Microsoft Teams, Edmodo and Zoom etc.[6]However, there are major hurdles in implementation of online education system which include lack of access to internet and smart phones in remote areas, inexperience and unawareness among faculty in conducting online classes and poor technical support. Short attention span and lack of interest among the students and faculty are also major factors hindering online education[7].

The perception of faculty and students regrading online learning has been globally studied with conflicting results. A research study performed in Indonesian medical colleges reported both supportive and confounding attributes of e-learning[8]. Another study was conducted in medical colleges of Pakistan where students preferred face to face learning over e-learning[9]. In another study both faculty and students considered online education as a better educational tool during current pandemic[10]. Researchers are now investigating various methods to make online mode of teaching more effective and engaging[11]. Educational resources for undergraduate medical students have expanded rapidly during last decade. Presently, a "Blended learning" concept model has been introduced including both conventional and

distant learning tools i.e., Textbooks, tutorials & lectures[12].

The objective of this study is to determine the perception of faculty towards online anatomy learning & availability of e-resources among various medical colleges in Lahore. Technology enhanced learning is an essential part of our lifestyles and our new generation has already shifted to this pattern. Awareness of faculty and their feedback regarding online education is essential to identify major problems in online teaching, which will ultimately be helpful in making the online learning methods more effective. Understanding the pros and cons of online teaching will provide solutions to the problems faced by faculty and will provide insight to plan future strategies for improving online learning.

MATERIAL AND METHODS

A quantitative, descriptive, and cross-sectional research design was used in our study. The study was conducted after approval from Ethical Review Board (ERB), University College of Medicine & Dentistry, University of Lahore in December 2020 vide no: ERC/26/20/12. This was the time period when medical colleges were in transition to implement newer learning strategies in response to Covid-19 restrictions.

During the academic session of 2020—2021 following Covid-19 restrictions, online teaching was done from December 2020 to May 2021 followed by face-to-face teaching from June to August 2021 once the restrictions were lifted.

The study duration was 9 months including time period from data collection, compilation of results and statistical analysis. The sample size was calculated by using formula n= z2* p(1-p)/d2 through convenient sampling. The participants included demonstrators & Professorial staff from anatomy departments of seven medical colleges of Lahore including both public and private institutes with well-established Learning Management System and faculty e-learning training program, who had been involved in both online and face to face teaching of the same group of students were selected. Faculty members who had not been involved in both online and face to face teaching in the same academic session were excluded from the study.

Perceptions of thirty-seven (37) faculty members regarding student learning, class dynamics and their experience were noted.

A pilot study was conducted beforehand with validated questionnaire form. The survey was performed through a self-administered questionnaire and informed verbal consent was taken after a brief introduction about the objectives of the study and the questionnaire. Data was compiled on the same day. The validated questionnaire was based on Rome and Ryan's study on faculty perception towards distant learning[13] (Table-2). Permission from the original authors was taken. The first section dealt with demographic data and professional profile of faculty members. The second section included faculty's perception towards E-learning. The form had 12 items and one global question with Cronbach's alpha of 0.841. The 12 items were divided into 3 broad areas: student learning, class dynamics & faculty experience (13). A 5-point Likert scale format was selected for responses (1 = strongly disagree - 5 = strongly agree). For interpretation of data, following scale was used strongly disagree (SD) = 0.00-1.00, Disagree (D) = 1.01-2.00, Undecided (U) = 2.01–3.00, Agree (A) = 3.00-4.00, Strongly agree (SA) = 4.01–5.00.

Statistical Analysis:

The data collected was compiled and analyzed using SPSS version 25. Percentages, Mean, Median and Mode were used to describe data. Normality of data was assessed by Shapiro-Wilk test. As data was not distributed normally, Kruskal Wallis test was applied to determine statistically significant differences between two or more groups of an independent variable. The p-value less than 0.05 were considered statistically significant.

RESULTS

In this study the data was collected from 37 participants from 5 private and 2 public medical institutes (Table-1).

Majority of the participants (91.8%) were female with the academic ranks of Demonstrator (36.1%), Senior demonstrator (8.3%), Assistant Professor (27%), Associate Professor (16.7%) and Professor (13.9%) (Fig-1). According to demographic profile all the participants had baseline computer skills.

In the first category regarding student learning the faculty had an opinion that online learning is not available alternative to face-to-face learning because both student learning and grades are affected (mean=4.02$\pm$1.20). They strongly believed that not only learning of students was compromised during online education (mean=3.97$\pm$ 0.99) but their grades following online classes were also lower as compared to

their scores after face-to-face teaching (mean=3.58±0.9) (Table-2).

College		Frequency	Percent
Private	**Public**		
	PGMI	5	13.9
	KEMU	5	13.9
UCM		6	16.21
Azra Naheed		5	13.9
Rashid Latif		5	13.9
Al-Aleem		6	16.7
Central Park		5	13.9
Total		37	100.0

Table-1: Frequency of participants depending upon demographic profile from Medical Colleges.

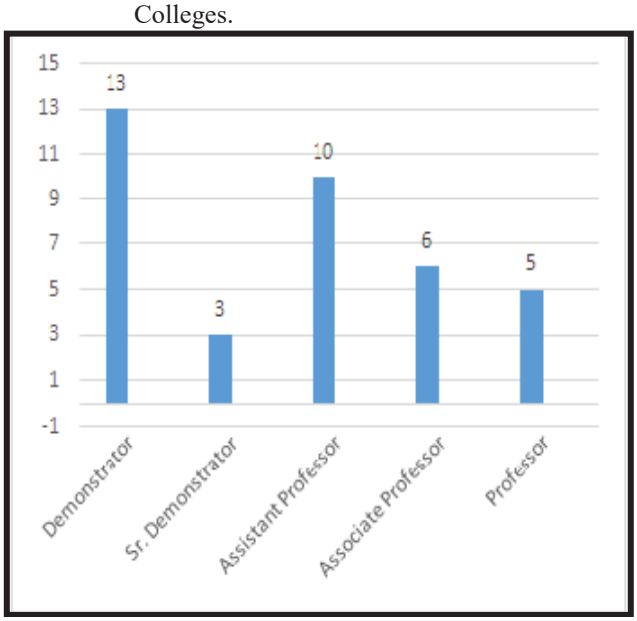

Fig-1: Academic rank of faculty members.

Class dynamics were influenced because of reduced student teacher interaction (mean= 4.19± 0.82) and more academic dishonesty (mean= 4.08±1.15). When asked about student discussion during online courses, majority of faculty strongly agreed that discussions during these sessions were less interactive as compared with face-to-face sessions (mean= 4.13± 0.9).

While sharing their thoughts on faculty experience, majority of participants were indecisive whether time required to develop online lectures is comparable to that for face-to-face sessions (mean= 2.77±1.22). They were not certain if online teaching will impact their face-to-face classes (mean =2.38± 1.07). However, they agreed that technology tools cannot replace lectures (mean = 3.41± 1.18). It was also difficult for teachers to gauge the level of preparedness among students especially in a large class format (mean =3.47±1.13).

	Questions	Mean (M)	Median	Mode
Student Learning	Online education is not a viable alternative to learning compared to face-to-face environment	4.02± 1.20	4	5
	Students learn less in online educational courses	3.97± 0.99	4	4
	Grades will be lower for students in an online educational class	3.58± 0.9	4	4
Class Dynamics	There is less student-teacher interaction in online learning environments	4.19± 0.82	4	4
	There is more academic dishonesty in online course	4.08± 1.15	4	5
	Student discussions in online education courses will seem impersonal and lack feeling compared to face to face classes	4.13± 0.9	4	5
Faculty Experience	The time commitment for developing online educational courses is comparable to those in face to face classes	2.77± 1.22	2	2
	Teaching online will have no impact on my face to face courses and instruction	2.38± 1.07	2	2
	My lectures cannot be replaced by technology tools	3.41± 1.18	4	4
	There is no way for teachers to know if students did the reading in an online education class	3.47± 1.13	4	4
	The technology of online education courses is difficult to manage	3.33± 1.01	4	4
	Good teaching principles will carry over from face to face to online education courses	3.33± 1.17	4	4
Favorability towards online education	Overall, I am in favor of online education	2.41± 1.07	2	2

Table-2: Questionnaire of perception of online education among faculty members of medical colleges (Mean=M). **SD** = 0.00-1.00, **D** = .01-2.00, **U** = 2.01–3.00, **A** = 3.00-4.00, **SA** = 4.01–5.00

Although it was challenging for teachers to cope with online teaching (mean = 3.33± 1.01) but they still believed that good teaching principles can be implemented effectively in online education as well (mean= 3.33± 1.17). Overall, most of the participants were undecided about favorability and complete shift towards online education (mean = 2.41±1.07).

Kruskal-Wallis test was done to study the differences in favorability towards online education among medical colleges. As the data was not distributed normally so a non-parametric test was applied, and the normality value is <0.05 (Table-3). Out of 13 questions statistically significant difference was noted in p values of three responses. As more time is consumed to prepare online lectures, e-learning is not considered a suitable alternative to face to face learning (p= 0.028). A significant percentage of faculty members made their opinion that students' scores are lower in an online course (p= 0.04). A significant difference was observed as most of the participants agreed that technology tools cannot replace their lectures (p=0.049).

Q.	UCMD	Azra-Naheed	PGMI	Rashid Latif	Al-Alem	KEMU	Central Park	P-value
Q.1	11.2	22.7	7.1	22.7	24.92	19.8	19.8	**0.03***
Q.2	26	16.5	8.4	25.2	17.17	19.2	17.3	0.08
Q.3	21	24.4	11.5	18.5	18.17	26.8	9.2	**0.04***
Q.4	15.5	13.5	23.7	20.3	16.33	27.1	13.5	0.11
Q.5	13.6	19.8	16.9	18.5	19.5	21.2	19.8	0.91
Q.6	15.4	17	16.4	20	17.5	23.4	20	0.87
Q.7	24	15.7	16.9	18.2	18.83	15	20.8	0.81
Q.8	25.2	10.9	16.6	13.1	20.17	16.5	26.7	0.10
Q.9	11	21.9	9.6	20.9	17.25	27.6	21.5	**0.05***
Q.10	16.2	21.4	7.3	19.4	19.92	20.3	24.7	0.17
Q.11	15.6	25	9.8	19	18.17	21.4	20.6	0.29
Q.12	22.5	15.6	24.5	20.6	12.25	17.4	17.9	0.47
Q.13	26.1	10.6	25.4	16.5	16.33	21.8	13.2	0.09

Table-3: Perception of faculty members toward online education among medical colleges.

DISCUSSION

The present study analyzed opinion of faculty members of different medical colleges of Lahore regarding online learning during ongoing pandemic crisis. The results of our study depicted that most of the participants were uncertain about the effectiveness of online education. This response is in accordance with the 3-stage change model by Kurt Lewin, who also noted similar inconsistent response to transitional changes[14].

The majority of participants were indecisive whether time required to develop online lectures is comparable to that for face-to-face sessions (mean = 2.77± 1.22) and if online teaching will impact their face to face classes (mean = 2.38± 1.07). The uncertainty can be attributed to limited resources and stringent financial support from institutes. The resistance of faculty members to technology integration can also be due to their inadequate training[15].Wingo and colleagues have emphasized on the need for effective technical support in their study[16]. Negative feedback regarding online learning has also been reported in previous research[17].

The findings of current study proposed that one to one interaction of faculty and engagement with students during online classes is relatable to both physical and social presence[18].

In the current study, regarding student learning the faculty had an opinion that online learning is not a vialable alternative to face-to-face learning because both student learning and grades are affected (mean=4.02±1.20). The significant difference was observed in perception of faculty regarding efficiency of online education as compared to face-to-face learning (Table-3). It is worth noting that formal training of most of the participants was not done before commencement of online teaching. It is essential that faculty members should acquire necessary skills and competencies to ensure effective online education in order to improve student outcome[19].

The faculty members also differed in their opinion regarding results of students attending online courses (Table-3). They strongly believed that not only learning of students was compromised during online education (mean=3.97±0.99) but their grades following online classes were also lower as compared to their scores after face to face teaching (mean=3.58± 0.9).In a study conducted in United States of America, no significant difference was observed in grades of students during online and face to face learning[20]. A study conducted by Arias has reported that the grades of students are influenced by course objectives and mode of assessment rather than online or face to face learning[21].

Results of this study also showed that there was a significant difference in opinion of participants regarding use of technology tools as a substitute to lectures. Most of the faculty members agreed that lectures cannot be replaced by technology tools. There were few limitations of the study that it was conducted in those medical colleges which have well developed online learning management system. Faculty members in University of Tetovo, Europe also disagreed about changing the traditional teaching methodology with online learning[22]. Another research reported

interpersonal, technological, institutional, and cost analysis obstacles during online learning[23]. It was stated in earlier research that there is a need of improvement in the competency of faculty members in communication and technology tools[24]. Meta-analysis indicated that distant learning is linked with positive outcomes. Previous studies depicted that there are various barriers in implementing e-learning in medical institutes including inadequate infrastructure, time constraints, support, lack of institutional strategies and inadequate technical skills. We can address all the factors acting as barriers in implementation of an effective distant learning[12].

Regarding limitations of this study, each factor must be studied individually to improve scope of future studies. It is recommended that concerns of faculty should be addressed, and new technology learning tools should be incorporated thereby decreasing their unwillingness to adopt online learning. Online learning should be considered as a viable alternative to face-to-face education and to improve the quality of medical education by ensuring flexibility of timings and shift of the onus towards student centered learning. In addition to this, the perception of faculty members of other disciplines should also be taken to have a broad range of opinion. Certain dynamics work well in online learning as compared to face-to-face teaching and vice versa. Proper faculty development programs and infrastructure of the institutes should be monitored to improve online learning.

CONCLUSION

Faculty perceived various challenges in implementing distant learning. Faculty must embrace the shift towards e-learning and consider this mode of teaching as inviting challenge. The perspective of Anatomy faculty regarding online learning will improve and support e-learning process in future. Further research can be conducted by inviting different subjects of research for having broader perspectives and should focus on which teaching method is preferable by getting maximum benefit from each method.

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