

ONLINE EDUCATION DURING COVID -19 PANDEMIC; AN EXPERIENCE OF RIPHAH INTERNATIONAL UNIVERSITY FACULTY OF HEALTH AND MEDICAL SCIENCES

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ABSTRACT

Objective: To evaluate the overall impact of using e-learning resources by Riphah faculty members in terms of their satisfaction and its usefulness for student learning.

Study Design: Cross-sectional survey.

Place and Duration of Study: Conducted in Islamic International Medical College, from 24th Jun to 28th Jun 2020.

Methodology: There were a total of 160 respondents of Riphah faculty of Medical College (n=100), Dental College (n=30) and Rehab Sciences (n=30).

Results: A total of 58.8% of the faculty agreed that online education is convenient for their working and the concept of online mode of teaching was acceptable to 65.6%. Faculty -development workshops were appreciated by 60%. About 70% disagreed that face-face lectures can be replaced by online lectures. Regarding Perception of student online teaching and assessment 66.9% disagreed that they are attentive during the online lectures. As far as the preparedness towards online learning was concerned 33.8% agreed that preparation for online lectures requires a lot of effort. 52.5% agreed that learning of online technologies is difficult to learn. Major challenges faced were those of network issues 56.3% lack of computer skills 64.4%. According to Kirk Patricks' evaluation level-1 regarding the reaction of faculty 96.3% were satisfied with the faculty development program.

Conclusion: Reaction of the employees is recorded to identify aspects, which can be used to make improvements in the training programs. A very high percentage of faculty members were satisfied with the training activities and strengths and weaknesses were elaborated along with the factors, which promote and hinder the students learning activities.

Keywords: COVID-19 Pandemic, E-learning, Faculty, Perception.

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INTRODUCTION

In December 2019 an outbreak of a respiratory illness identified and given the name of COVID-19 emerged from the Wuhan province of China, which immediately engulfed the entire world¹. According to WHO reports up till now it has spread to 213 countries with 202733 deaths worldwide². As a result of this pandemic life style throughout has been disrupted and technology³ has taken the center stage in almost all-important fields including medical education. Over the past few decades in the developed countries e-learning has been started and implemented to a large extent and various e-learning formats have been introduced in the medical education according to the settings of various subjects⁴. E-learning can

be utilized by the medical faculty to improve the efficiency of medical education in the settings of various challenges like the one faced nowadays in the face of COVID-19⁵.

In the e-learning learners have control over the pace of learning its sequence and time⁶. COVID-19 being a global catastrophe has impacted almost all spheres of life including the field of teaching in medicine and it has introduced numerous uncertain variables, which unless addressed properly will have disastrous consequences⁷. Traditionally in the early years of medical teaching the major portion comprises of face-face teaching strategy and now especially in these prevailing conditions innovative patterns & standards have started to enter in medical teaching through e-learning³. This change to an extent is being encountered with resistance both from the faculty and the students alike as they find it diffi-

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cult to establish a positive faculty- student relationship. E-learning is becoming an important component of medical curriculum. Comparable with the technological revolution occurring globally these digitally supported tools implementation is becoming imperative⁸, and they have to be employed in various settings of different medical & dental subjects according to the aims & objectives of the educational enterprise⁹. The making of e-learning material is often time consuming for the medical faculty, and in addition technical expertise is also required for the successful implementation of e-learning¹⁰, as the usage of technology in medical education is not free of challenges and hurdles which has to be overcome by the medical faculty.

There have been several studies on medical students' positive perceptions and extensive use of e-learning resources, but research on faculty perceptions and use of these resources has been limited. Therefore, research on this topic is necessary as faculty perceptions and experiences are fundamental to their adoption of scholastic change. Numerous studies have been conducted on student's perception on use of e-learning, including Pakistan, we identified a gap in the literature regarding qualitative studies focusing on faculty's perception of teaching effectiveness in e-learning. Medical faculty member's satisfaction regarding the use and implementation of e-learning resources is debatable in their teaching strategy. Such a gap in medical faculty's perception and training on e-learning may reflect the challenges in using technology for the delivery of the curriculum in medical education. So the aim of the study was to assess the impact of using e-learning resources by medical, dental and physiotherapy faculty members in terms of their satisfaction and its usefulness for student learning. It would also reflect the challenges in using technology for the delivery of the curriculum in medical education, in Pakistan.

METHODOLOGY

This cross-sectional survey was conducted on the Riphah Faculty of medicine, dental and

physiotherapy departments and conducted in Islamic International Medical College in collaboration with Riphah Dental College and Riphah College of Rehabilitation Sciences, from 24th-28th June 2020. The proposal of this study was reviewed and approved by the Dean FHMS Riphah University, and after taking permission from the institutional ethical review committee of Islamic International Medical College (Ref No. Riphah/IIMC/ IRC/119).

Questionnaire content was formulated through literature review and sent to the experts in medical education for content validation. After that questionnaire was further refined and piloted on some of faculty members to observe their understanding. It was with 4-point Likert scale.

It was a Cross-sectional survey consisting of two parts; first part consisted of a preformed structured questionnaire consisting of 25 questions to establish the perception of faculty towards e-learning with a four point Likert scale as following: 1) strongly agree, 2) agree, 3) Disagree, 4) strongly disagree. The second part comprised of questions to find out about the impact of training programs following the Kirkpatrick's four level training evaluation model's ¹¹ i.e. to identify the reaction of the employees.

Convenient sampling technique was used. Sample size was calculated by using sample size calculator 12 assuming the population size as 250, with 5% margin of error at 95% of confidence interval. Both parts of the questionnaire were approved and validated by the team of medical educationists. The questionnaire was created through Google forms and the link was sent through Riphah email to the faculty members of Riphah International University to determine their experiences towards e-learning. The survey was voluntary and confidential. Any faculty member who refused to participate in the study was excluded. Cronbach alpha was calculated for each sub scale separately.

All the data was analyzed by (SPSS) version 21. The data was presented in the form of frequency and percentages.

RESULTS

Online structured questionnaire was sent to Riphah faculty of Medical College (n=100), Dental College (n=30) and Rehab sciences (n=30). It was an anonymous survey and no demographic data was required. There were a total of 160 responses, and the respondents were from

below. Table-I presents faculty responses of their perceptions towards e-learning. 58.8% of the faculty agreed that online education is convenient for their working and only 9.4% strongly disagreed. The concept of online mode of teaching was acceptable to 65.6%, while 56.3% were anxious with e-learning usage, even though 64.4 were aware of different modes of e-learning.

Table-I: Faculty's perception towards online learning.

Questions	Strongly Agree n (%)	Agree n (%)	Disagree n (%)	Strongly Disagree n (%)
Online education usage is convenient for faculty working	18 (11.3)	94(58.8)	33 (20.6)	15(9.4)
Online education mode of teaching concept is acceptable by faculty	8 (5)	105 (65.6)	33 (20.6)	14 (8.8)
As a faculty member do you feel anxiety in using online education as mode of teaching	26 (16.3)	28 (17.5)	90 (56.3)	16 (10)
Have you been aware of different modes of online education system in the past?	5 (3.1)	103 (64.4)	47(29.4)	5 (3.1)
Faculty development workshop are successful in training faculty in online education offered by the institute	45 (28.1)	96 (60)	10 (6.3)	9 (5.6)
Faculty members are enthusiastic for adoptingthe online education system	13(8.1)	95 (59.4)	46 (28.8)	6 (3.8)
Online education systemhelps in enhancing the learning of students	15 (9.4)	101 (63.1)	38 (23.8)	6 (3.8)
Online education is helpful in clarifying difficult concepts	22(13.8)	88 (55)	45 (28.1)	5(3.1)
Use ofinteractive lectures during live video sessions enhances the students learning understanding	49 (30.6)	103 (64.4)	4 (2.5)	4 (2.5)
E-learning can replace face-face learning	5 (3.1)	25 (15.6)	113 (70.6)	17 (10.6)
The student teacher interaction level during online teaching is appropriate and manageable	10 (6.3)	42 (26.3)	92 (57.5)	16 (10)
The faculty is aware of the assessment and grading policy available for online education in your institute	12 (7.5)	132 (82.5)	13 (8.1)	3 (1.9)

Table-II: Faculty's perception of student online teaching and assessment.

Questions	Strongly agree n (%)	Agree n (%)	Disagree n (%)	Strongly Disagree n (%)
Students remain attentive during the online lectures	4 (2.5)	20 (12.5)	107(66.9)	29(18.1)
Online education stimulate interest of students in a particular discipline	5 (3.1)	36 (22.5)	95(59.4)	24(15)
Students are aware of grading and assessment policy for online education and is explained to them.	8 (5)	126 (78.8)	24(15)	2 (1.3)

the different departments of basics and clinical sciences. Survey questions related to the following main categories are given in the tables

Faculty development workshops were appreciated by 60% of the faculty, 70% disagreed that face-face lectures can bereplaced by online

lectures and 57.5% faculty was not satisfied with student’s teacher interaction.

Faculty gave their opinion regarding the students attitude towards issues including their attentiveness for lectures which 66.9% disagreed that they are attentive during the online lectures, similarly 59.4% disagreed that e-learning can stimulate the interest of students in any discipline. 78.8% agreed that the students were aware of assessment policy, table-II.

support, and 50.6% were in the favor of faculty training before implementation. Blend of lectures was preferred by 55% as compared to video recorded lectures, which was disagreed by 53.8% table-III.

56.6% of faculty showed agreement that the learning objectives are achieved in online system, but major challenges faced were those of network issues 56.3% and lack of computer skills 64.4%, table-IV.

Table-III: Faculty’s perception of preparedness towards online learning.

Questions	Strongly agree n (%)	Agree n (%)	Disagree n (%)	Strongly disagree n (%)
Preparation of online education for lectures, skill lab and SGDs are time consuming and need more effort then face to face.	62 (38.8)	93 (58.1)	3 (1.9)	2 (1.3)
As a faculty development lot of time and effort is required to learn the online technologies because it’s a transformation of teaching strategy.	51 (31.9)	84 (52.5)	21 (13.1)	4 (2.5)
The support staff (coordinators & IT) is helpful in tackling various issues of e-learning?	53 (33.1)	96 (60)	7 (4.4)	4 (2.5)
Proper training of faculty should be done before implementation of on line education in your institute.	72 (45)	81 (50.6)	4 (2.5)	3 (1.9)
Live video sessions preferable for online education.	29 (18.1)	109 (68.1)	18 (11.3)	4 (2.5)
Recorded video lectures are preferable for online education	9 (5.6)	56 (35)	86 (53.8)	9 (5.6)
Blend of recorded and live video sessions are preferable for online education	46 (28.8)	88 (55)	19 (11.9)	7 (4.4)

Table-IV: Faculty’s perception of challenges faced due to online learning.

	Strongly agree n (%)	Agree n (%)	Disagree n (%)	Strongly disagree n (%)
The desired learning objectives of a lesson are achieved in online education	10 (6.3)	91 (56.9)	50 (31.3)	9 (5.6)
The network system in remote areas of our country hinder the online education	70 (43.8)	90 (56.3)	-	-
Lack of students and teachers computer skills hinder online education	44 (27.5)	103 (64.4)	13 (8.1)	-

Faculty was asked about the preparedness issues of online education. 33.8% out of those strongly agreed that preparation for online lectures requires a lot of effort, and 52.5% agreed that learning of online technologies is difficult to learn, and majority i.e. 60% appreciated the IT

By using the Kirk Patricks’ evaluation level-1 regarding the reaction of faculty towards the effectiveness of the faculty development-training program during COVID-19 lockdown majority of the respondents 96.3% agreed it was worth their time, and 82.5% of the respondents found the

trainings successful. The faculty responses towards the strengths and weakness of the training showed mixed views and regarding the strengths 41.9% agreed upon the effective knowledge transfer as compared to employee involvement 37.5%, and consistent training 20.6%. Almost half the faculty 49.4% said that the main weakness is no face-to-face contact. 86.3% of the faculty was satisfied with the teaching and presentation style, whereas 85% found the training activities engaging.

How the faculty viewed the three important aspects of the training? Only 39.4% agreed about encountering of technical difficulties both by the students and teachers alike and 37.5% were of the view that online courses focus mainly on the theoretical content. 60% of the participants were of the opinion that technical expertise is very important for the application of online learning. Out of the three aspects, which were extremely helpful for promoting students online learning, majority 63.8% agreed that it was the development of successful online learning strategy by the institution. While the most important factor 56.3%, hindering the students learning is their attention span. As far as the improving the online education system 45% were for flexible learning strategy, followed by lectures with videos 30%.

DISCUSSION

This survey has been conducted during the COVID-19 lockdown. It is an extraordinary situation and was encountered unexpectedly. Teaching institutes in Pakistan have to adopt e-learning technology to continue online education system. As it involves the use of various Internet technologies the Universities has to make immense changes both in the institutional Information Technology departments and how to manage the training programs of their faculty. Efforts were made to integrate the infrastructure with the curricular requirement. Various faculty development-training programs were also run by Riphah University to train their teaching staff and based on those programs and changes we wanted to find the perceptions of faculty members

regarding online education. According to McKenzie¹², when students and the faculty are faced with the new technology they are either going to adopt the change or would ignore it. Medical students in these trying times are not only required to acquire traditional clinical education but also to keep themselves up-to-date with the latest technologies, as according to Childs *et al* technical skills can be both a barrier and solution¹³, which makes it more demanding for the medical faculty to continuously update their teaching skills to keep themselves digitally literate.

In this survey majority of faculty members were abreast of different teaching methods, and the concept of online mode of teaching was acceptable to Riphah faculty and they also agreed that online education is more convenient for working.

With the option of e-learning being introduced by the medical universities, it is imperative to find out about the students attitude after shifting from face-face lectures to online delivery. According to Ong *et al*¹⁴ awareness regarding the learners attitude towards e-learning may influence the level of online education utility. We surveyed the perception of our faculty regarding the attitudes of their students towards issues like attentiveness for lectures and the stimulation of interest in a particular discipline, and majority of the faculty was of the opinion that the students are not attentive during online lectures as compared to face-face lectures. Motivation and cognition are suppose to play an important role in learning¹⁵ but anxiety and academic overload might lead to a surface approach¹⁶ and now when the system totally changes to e-learning for medical students computer anxiety can also play a role because in medical sciences the curriculum is overloaded with material¹⁷. Advancement in technology for e-learning necessitates it for the faculty members to devise new methods to prepare and deliver their learning material¹⁸. Majority of the respondents agreed that for online deliverance of lectures more effort is required. Some authors argue that online teaching

strategies are not different from face-face teaching¹⁹, but other authors do not agree with this concept and according to them the teaching roles for online and classroom are quite different²⁰. Deliverance of online lectures requires the use of Moodle (learning management system), and for this purpose faculty is supposed to be proficient with computer skills and should have a good knowledge of technology tools²¹. Riphah faculty members were satisfied with the support of their institution IT department. The change from face-face learning to online teaching is not without challenges. In our study the faculty members agreed that the learning objectives are achieved in online lectures and this is in accordance with the study carried out by Johnson's²², in which they concluded that program outcomes and learning objectives do not change and students can gain knowledge in the same manner as face-face learning. The respondents complained of network issues and of computer skills. Results from a study conducted agreed to the fact that faculty should be provided continuous technical support²³.

In the medical education system faculty development signifies activities, which improve the knowledge and skills of the teaching faculty²⁴, and such activities are extremely important for maintaining dynamism in medical education. In response to the COVID-19 Pandemic a crisis was created which led to the closure of the teaching institution and to deal with the situation framework was created by the higher education commission for the delivery of courses on line. In this regard Riphah University was in the forefront and they developed various faculty development programs ranging from working and use of Moodle to assessment and grading. Reaction of the employees is recorded to identify aspects, which can be used to make improvements in the training programs. In this the data was collected to measure the perception of the faculty regarding online education. A very high percentage of faculty members were satisfied with the training activities and strengths and weaknesses were elaborated along with the factors, which promote

and hinder the students learning activities. In a study conducted by Qamar *et al*²⁵ it was observed that learning considerably improved after training at Kirkpatrick level¹.

LIMITATION OF STUDY

This study was done during the pandemic when the faculty was still getting training for the various aspects of e-learning. Moreover separate study should be carried out to find out the perception of students as well as the faculty for the performance of skills in basic sciences and clinical trainings in hospital settings along with the assessments on how they should be conducted and the faculty's satisfaction level.

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CONCLUSION

COVID-19 pandemic has created an alarming situation by which all the segments of the society have been affected, especially the education sector. Reaction of the employees recorded to identify aspects, can be used to make improvements in the training programs as majority of the faculty agreed that they found online education convenient and they were already aware with different modes of e-learning most probably because of the already existing faculty development programs run by the university. But still the majority considered face-face learning as irreplaceable, as the students are not found to be attentive during online lectures. A very high percentage of faculty members were satisfied with the training activities and strengths and weaknesses were elaborated along with the factors, such as technical difficulties of internet connection and limited computer expertise of certain number of students which hinder their learning activities. New teaching techniques which are already being used in developed countries for online courses can be adopted which will have a positive impact on our e-learning.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

REFERENCES

- Adhikari SP, Meng S, Wu YJ, Mao YP, Ye RX, Wang QZ, et al. Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. *Infect Dis Poverty* 2020; 9(1): 29-31.
- Coronavirus disease 2019 [Internet]. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- Kim KJ, Kang Y, Kim G. The gap between medical faculty's perceptions and use of e-learning resources. *Med Educ Online* 2017; 22(1): 1338504.
- Back DA, Behringer F, Harms T, Plener J, Sostmann K, Peters H. Survey of e-learning implementation and faculty support strategies in a cluster of mid-European medical schools. *BMC Med Educ* 2015; 15(1): 145-49.
- Ruiz JG, Mintzer MJ, Leipzig RM. The impact of e-learning in medical education. *Acad Med* 2006; 81(1): 207-12.
- Chodorow S. Educators must take the electronic revolution seriously. *Acad Med* 1996; 71(1): 221-26.
- Goh PS. A vision of the use of technology in medical education after the COVID-19 pandemic. *Med Ed Publish* 2020; 9(1): 1-5.
- Back DA, Behringer F, Harms T, Plener J, Sostmann K, Peters H. Survey of e-learning implementation and faculty support strategies in a cluster of mid-European medical schools. *BMC Med Educ* 2015; 15(1): 145-49.
- Xeroulis GJ, Park J, Moulton CA, Reznick RK, LeBlanc V. Teaching suturing and knot-tying skills to medical students: A randomized controlled study comparing computer-based video instruction and (concurrent and summary) expert feedback. *Surgery* 2007; 141(4): 442-49.
- Nawaz A, Khan MZ. Issues of technical support for e-Learning systems in higher education institutions. *Int J Mod Educ Comput Sci* 2012; 4(2): 38-44.
- Kirkpatrick's Training Evaluation Model - Learning skills from MindTools.com. 2020. [Internet] Available from: <https://www.mindtools.com/pages/article/kirkpatrick.html>
- Check Market. Sample size calculator. [Internet] Available from: <https://www.checkmarket.com/sample-size-calculator/>
- Jamlan M. View of faculty opinions towards introducing e-learning at the university of bahrain. Available from: <http://www.irrodl.org/index.php/irrodl/article/view/185/802>
- Childs S, Blenkinsopp E, Hall A, Walton G. Effective e-learning for health professionals and students-barriers and their solutions. A systematic review of the literature-findings from the HeXL project. *Health Info Libr J* 2005; 22(s2): 20-32.
- Ong CS, Lai JY. Gender differences in perceptions and relationships among dominants of e-learning acceptance. *Comput Human Behav* 2006; 22(5): 816-29.
- Ainley M. Connecting with learning: Motivation, affect and cognition in interest processes. *Educ Psychol Rev* 2006; 18(4): 391-405.
- Undergraduate students' Experience of Learning at the University of Oxford | Paul Ashwin - Academia.edu. Available from: https://www.academia.edu/1258197/Undergraduate_students_Experience_of_Learning_at_the_University_of_Oxford
- Svirko E, Mellanby J. Attitudes to e-learning, learning style and achievement in learning neuroanatomy by medical students. *Med Teach* 2008; 30(9-10): e219-27.
- Pagliari L, Batts D, McFadden C. Desired versus actual training for online instructors in community colleges. *J Dist Learn Admin* 2009; 12(4): 1-15 .
- Bawane J, Spector JM. Prioritization of online instructor roles: Implications for competency-based teacher education programs. *Distance Educ* 2009; 30(3): 383-97.
- Teaching Online: A Practical Guide - 4th Edition - Susan Ko - Steve. Available from: <https://www.routledge.com/Teaching-Online-A-Practical-Guide/Ko-Rossen/p/book/9780415832434>
- Martin F, Budhrani K, Wang C, Martin F, Budhrani K, Wang C. Examining faculty perception of their readiness to teach online. *Online Learning* 2019; 23(3): 97-119.
- Johnson AE. A nursing faculty's transition to teaching online. *Nurs Educ Perspect* 2008; 29(1): 17-22.
- De-Gagne JC, Walters K. Online teaching experience: A Qualitative Metasynthesis (QMS). 2009; 5(4): 577-89.
- Burgess A, Matar E, Neuen B, Fox GJ. A longitudinal faculty development program: Supporting a culture of teaching. *BMC Med Educ* 2019; 19(1): 400.
- Masood RQ, Usmani MAW. Evaluation of medical teacher's training program through Kirkpatrick's Model. *Khyber Med Univ J* 2015; 7(2): 76-80.