

Tele-education in the post-COVID period; a new normal

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Abstract

Ischemia-reperfusion injury is a complex, which causes cell damage. In this study, we aimed to investigate the protective effects of dexmedetomidine on lung in the renal IR model in diabetic rats

The concept of tele-education has been present in the background for many years. From the idea of making use of your idle time by distant learning through television to use of simulated courses to enhance your clinical skills and judgements, tele-education has stood the test of time by constantly evolving according to the needs of modern era. In recent times, owing to the current pandemic, tele-education has finally come to shine in all its glory. Whether you want to standardize the learning experience or ensure quality education for everyone in the world, tele-education is the key. It is a vital education tool, cost effective as efficient as traditional learning despite few shortcomings.

Key words: Tele-education; E-learning; Blended learning; Flipped Classroom; Distant learning; Online learning; Digital education

Citation: Furqan Z, Fatima SN, Awan GA. Tele-education in the post-COVID period; a new normal. *Anaesth. pain & intensive care* 2020;24(3):255-258.

Received: 4 June 2020; Reviewed: 5 June 2020; Accepted; 7 June 2020

History tells us that the world can never be the same after a global calamity. With each crisis, there are new lessons learnt and innovations done. Be it the concept of 'patient safety' and the emergence of a new term 'preventable harm' by Florence Nightingale after First Crimean War or the uncovering of thiopentone side effects in Second World War after Pearl Harbor attack, every catastrophe that the human kind faced led to an innovation, and this pandemic has perhaps cemented the idea of Tele-education.

Distance Learning (DL) is an old frontier in education but it hasn't been regularly updated in accordance with latest needs of the modern world.¹ In Pakistan, It started when institutions like Allama Iqbal Open University program started the use of postal service as a way of DL. Later; the same purpose was fulfilled later on by universities like Virtual University Pakistan through television broadcasts.

Tele-education refers to the use of information and communication technologies (ICT) to enhance knowledge and performance.² In 1992, 'Up-to-Date' was launched by Dr. B. Rose who is regarded as the

Steve Jobs of modern tele-education.³ Three years later, Medscape was created which offered CME certificates for online reading of the articles upon successful completion of the MCQs. Soon this concept was streamlined by all the major Royal College journals, for example by Royal College of Anaesthetists (RCOA) in the form of BJA education and by World Federation of Societies of Anaesthesia (WFSA) in the form of Anesthesia Tutorial of the Week (ATOTW).

As appreciation of bioinformatics earned wide-spread acceptance, a new model of learning was introduced termed as 'Blended Learning' (BL).⁴ BL refers to the simultaneous use of class-room teaching with web-hosted teaching. In order to get the maximum benefits from BL, the Royal Colleges in UK then introduced e-Learning for Healthcare (e-LFH), which is the recommended knowledge resource for the exam preparation as well as routine learning. It is needless to say that this form of e-learning has made the textbooks, almost a thing of the past for the busy clinicians as a conventional source of knowledge.

With further advancement in technology, complex sophisticated software models were invented which offered more user integration and customization producing a more targeted, natural and enhanced learning experience.⁵ This heralded the era of platforms like Edx, Coursera, Udemy and the most recent Skillshare. Business models were devised to monetize these tele-education platforms so that this tele-education sector remained financially viable.

The combination of BL and technological innovation revolutionized the teaching model to a “flipped classroom” model (FCM). FCM refers to a teaching model in which the activities, traditionally considered homework, were done into the classroom and the students watch online lectures, participate in web discussions and carry out research at home while engaging in concepts in the classroom under supervision of a moderator.⁶ This financially viable and efficient teaching model has been adopted by world’s renowned universities and is a common practice nowadays. The adoption of this model further enhanced the importance of tele-education.

Generalized lockdown and consequently the closure of the academic institutions due to COVID-19 have strengthened our beliefs in tele-education. The most notable event in this case is Cambridge announcing suspension of all the traditional classroom teaching and shifting all its classes online. The technologies have advanced so far that the classroom model looks to be regarded as being redundant now. Technology and services like Zoom and Microsoft Classrooms have transformed e-webinars to be equivalent to the old-fashioned face-to-face seminars, with the audience being able to interact with the speaker sitting afar. The borders have been abolished, and the hurdles of securing visa and the huge expenses on boarding/lodging etc. in between the delegates and the seminar / conference attendance have been obliterated.

The innovations in technology are pushing the boundaries to which the e-learning can be utilized in medical education. The work is already underway to incorporate virtual reality (VR) systems and artificial intelligence for simulation drills and critical incident training exercises in anesthesia and critical care, in which the e-delegate would do role playing in an artificially enhanced, clinically enriched, real life simulated scenarios, making the experience an invaluable one for its participants.⁷⁻⁹ The time might be

closer than we think, when we will have courses like BLS, ALS, ATLS and EPALS being taught online and the delegates being assessed via VR-AI simulation. Similarly, exam OSCE’s will be held as VR-AI scenarios and candidates will be marked according to their actual clinical performance rather than their memory skills and oratory, eliminating the inherent bias with the traditional system.¹⁰ The constituent technologies have already been devised and work is underway to seamlessly integrate them.

It has also led to drastic reduction in the seminar organization and attendance expenses, thus positively contributing to the enhancement of clinical education. In the pre-Covid world, there was already a surge in e-tech investments worldwide which reached a magnanimous figure of \$18.9 billion by the end of 2019 and the current forecast is to reach \$350 billion by 2025, since there has been an exponential increase in the usage of e-Learning platforms.^{11,12} So, there is also a monetary benefit associated with development in this spectrum of education.

The conduct of an e-learning course requires three basic steps namely course planning and writing, technical resourcing and marketing. Each step in this process is itself composed of several small steps and sub-steps. The whole process from scratch to the delivery is governed by project management principles, which are no different from hosting a face-to-face medical event. The only difference being the medium of delivery and technical logistics.

While most e-webinars are conducted on Zoom, but there are already better digital hosting solutions coming into e-education market, the most notable of which is Lark™. Lark is a software suite for unlimited video conferencing, hosting, real time co-editing of project work, with so many additional benefits when compared to Zoom.¹³ Similarly, Ali Baba’s DL solution Ding-talk is another option but offers limited functionality than Lark. Lark also offers unlimited video-conferencing time.

The effectiveness of e-Learning has been compared with face-to-face learning in different studies. BL was found to be superior to traditional learning by Marchalot et al. who compared this learning with lecturing in first year anesthesia and critical care residents in Rouen University Hospital in 2011.¹² He found increase in the mean scores in a standardized multiple choice questions of BL group than the control

group which only had class room teaching. It is logical to think that BL fared better because students spent more time in learning as a whole than the classroom teaching alone. Recent systematic reviews and meta-analyses done by Tudor Car L et al. and Brusamento et al. have proved digital education to be at least as effective as traditional learning and more effective than no learning.^{13,14} However, in 2019, Zainuddin Zamzami et al. in addition to establishing the effectiveness of the online education, also pointed out a lack of students' motivation to study the contents outside of the class or to engage in online learning at homes for the FCM to work.^{15,16}

Tele-education is an inevitable future that we cannot shy away from.¹⁶ We must seize the opportunity by devising world renowned courses that can be made widely available using already present platforms. The 'online certificate course on Covid-19', organized by Agha Khan University Hospital, Karachi is a step in this direction. The first author has been working on a similar international project 'IMROVE™' and would welcome contribution from Pakistani educators and scholars to put Pakistan on the e-academic map of the world.

1. Conflict of interest

Z Furqan and SN Fatima are members of course directors panel on 'IMPROVE', an international web based clinical educational, patient safety and quality improvement course.

2. Authors' contribution

KS: Designing and conducting the work

ZF: Conception, design, writing

SNF: Writing

GAA: Proof reading

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