

## COMMENTARY

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# The Change of Medical Education Landscape in the Midst of COVID-19 Pandemic

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## ABSTRACT

The COVID-19 outbreak started late 2019 has systematically changed the lives of people around the globe. Medical schools have to implement changes in the teaching methodology to observe social distancing order. The pandemic perpetuates a paradigm shift in medical teaching, from face-to-face to virtual and online teaching. Virtual teaching has become the new learning norm but limited in replacing clinical teaching. It has been considered as one of the most viable options for the long-term durability and continuity of medical education. The fluidity of such educational changes, especially during the pandemic warrants preparation of the online infrastructure learning, literacy of the learners and preparation by the teachers during this period.

**Keywords:** *Medical education, COVID-19, Pandemic, Virtual learning, Online teaching*

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## INTRODUCTION

Natural disaster, armed conflict, migration and epidemic have impacted on many lives causing death, displacement and financial woes. Healthcare burden during these catastrophic events has posed many challenges to medical education and even clinical learning. These public health emergencies stretch the healthcare system beyond its current capacity (1). The change of healthcare landscape affects the societal livelihood and ecosystem leading to unparallel consequences in the future. This was evident in the previous catastrophes such as the Iraq war, the Indonesian

tsunami, the Spanish flu epidemic and the most recently, the COVID-19 pandemic.

In a war conflict, medical students were drafted into healthcare workforce due to the massive influx of injured patients to the hospital. This was primarily done to support the displaced population medically and socially. The students have to learn as they face the real-life situation at that time. In the modern era, medical students have yet to face calamity in a global scale pandemic such as COVID-19. The Malaysian government has implemented the movement control order to halt the spread of the disease by imposing social

distancing measures (2). During the pandemic, the demands and needs in the healthcare services have increased globally. This resulted in the disruption of the healthcare delivery, the financial constraints and educational challenges. The medical education system is at the juncture of change and adjustment, where a restructuring process is required for more innovative measures. These measures need to consider many factors – the safety and well-being of the lecturers and students involved, the continuity of the disrupted medical programme, the new learning methodology in a virtual interface and the infrastructure preparedness during the pandemic climate. Such obstacles are minimised with the advancement of the current medical informatics and education; and this has paved for way for a new learning formula in the medical curriculum which could be delivered to every corner of the world (3).

Multiple methods such as videotaped vignettes, online chatroom, webcasting or mannequin stimulators have been successfully employed during the SARS outbreak (4). However, the model can be challenging when it is applied for the clinical experiential learning. In a virtual world, there are identified issues related to interactive and communication process, and the realism of such experience. Simulated learning can improve theoretical reasoning but unfortunately not the clinical skill experience by the future junior doctors. The importance of examining “live” patients rather than simulated one is an essential skill set as part of standard of competency despite the awareness on the risk of contracting the contagious disease.

## EDUCATION APPROACHES

Many medical schools worldwide have reverted to teaching online during the COVID-19 pandemic. The online education and consultation were first operated using the satellite-based internet system. This

medium was used in the healthcare system where geographical distance was a problem. The activities were associated with the disaster drill training, telehealth education and medical educational activities. At this point of time, there were a number of literatures focusing on undergraduate online learning at this stage (5–7). Hence, virtual learning has become a crucial medium for learning due to self-isolation at home. It provides a flexible, consistent, stable platform essential for continuity of medical learning for the medical students (8). To accommodate this, medical schools are pushed to be academically creative and prepare adequate contents that will ensure a conducive learning environment to medical students even outside the university walls.

The paradigm shift from conventional lecture, tutorial-based learning to a small-group online didactic session with a focus on case-based and simulation learning has paved way for a new medical education model (9). These simulations help to strengthen students’ knowledge in a virtually and clinically safe environment. Students’ professionalism, technical skills and applied knowledge could also be effectively strengthened during these sessions. This includes professionalism when interacting with other students, confidentiality of patient’s information when discussing in the online classroom, leadership skills to handle group discussion, and technicality for searching the right materials for discussion from established and evidence-based website. These simulated cases provide a quality healthcare education to persons restricted by the geographical boundary (7). Additionally, the platform has also multiple purposes – from simple diagnostic consultation, treatment monitoring and expert advice via a direct and live interactive activity. Utilisation of the internet and the World Wide Web have offered unsurmountable resources and literature support. It facilitated in the creation, storage and delivery of information with other users. Users need to improve their computer literacy skills using computer application

and platform. This integrated system would bring benefit to users by a diverse programme application and multimedia with an efficient and cost-efficient data transfer throughout the world.

Various tools used to support teaching and learning during the COVID-19 pandemic are introduced based on widely practiced in other Malaysian universities as well as from other countries (8–10). Video teleconferencing has been popular as a social media platform for student and tutor interaction, discussion on clinical-based medical discussion (11). Teleconferencing in a real-time and live interactive event between different sets of participants at different locations can be accessed using

Skype, Zoom, Webex, Google Chat or even Facebook live as per example of undergraduate activities during the pandemic in Table 1. Valuable clinical audio, images and video could be used as part of virtual resources for learning and revision. It even creates the opportunity for the tele-mentoring of students by facilitating a two-way conversation through the adult learning process and assessment (12). This effectively saves costs and time. A successful programme would require the availability of smart devices, acquiring necessary computer skills and access to the internet streaming. Students need to be an independent learner by exploring their retained knowledge and experiential learning following exposure to online learning (13).

**Table 1:** Example of the teaching activities and assessment that are available for undergraduate students at Universiti Sains Malaysia during the COVID-19 pandemic

Original activity	Activity during pandemic	Supporting platform	Comments
Lecture	Audio recorded in e-learning. Live streaming.	Moodle Webex	Lecturer either recorded the session or conducted live.
Support system weekly e-mentoring	Chatroom.	Google Meet, Webex, group WhatsApp call	Weekly support system or supervision to students.
Clinical presentation	History taking by group (live). Online history taking. Guided learning.	Webex, Zoom, Google Meet, Skype	Students either clerk patient via online platform live (within a group or personally). The focus only for history taking. Clinical examinations are deferred after the pandemic is over.
E-learning	Self-learning using Microsoft PowerPoint, article and video, guided by lecturers.	Moodle	Access to materials and resources based on each medical rotation.
Conference (multi-disciplinary team case-based discussion)	Online video streaming.	Webex, Facebook or YouTube streaming	Allowing multi teams involvement and students' participation.
Problem/clinical based learning, tutorial	Live streaming. Recorded session for poor internet.	Webex and trigger for the topic in the Moodle	Small group discussions are done live. For students who have poor internet access, the session will be recorded.
Exam	Theory and OSCE-based.	Moodle	Online assessment monitored by the invigilators.

Virtual studying during the pandemic requires a blended learning approach, a mixture of traditional and online teaching to achieve an effective learning outcome. This will balance the teaching methodologies – face-to-face and online teaching that integrates into the “flipped classroom” model. The concept emphasised on learning in a group environment and putting the learning outcome into the individual’s learning space. Priority must be given to emphasise on a general approach, conceptual framework, clarifying principles, focusing on educational needs and training requirements. Medical students should be proactively aware of the learning objectives, lecture contents and outcome similar to the traditional classroom or clinical teaching. Adequate time for students’ preparation is crucial prior to the commencement of the online teaching.

Another option is e-learning in the form of web-based materials. This would require lecturers to build the learning content using multimedia and virtual platform to enhance both teaching and learning. The website must have a good interactive features, updated content, personalised instruction and standardisation of materials. Learners have control over the content, learning sequence, pace of learning, time and media, which allow them to tailor their learning experience to meet personal learning objectives (14). Students should be able to retrieve notes; actively engage in an online discussion with lecturers’ guidance; and having access to current online literature, databases and knowledge. Video or photographs of clinical scenario could be complementary to clinical teaching method (15).

The changes from the traditional face-to-face learning to online formats for undergraduate and postgraduate clinical programmes possibly have led to a reduction of the learning outcomes, especially those related to clinical applications and the acquisition of new skills (16).

## CONCLUSION

The rapid COVID-19 disaster has brought forth the new pathway for continuing medical learning. Videoconferencing, despite its limitation, still have advantages and could be appropriate learning method in the era of the pandemic. Despite the complexity of the scenario, learners and teachers must proactively ensure the learning ensue even in the COVID-19 battle.

## REFERENCES

1. Hameed W, Hussain MM, Butt IF, Aslam M. Medical education and training for disaster management: an urgent need. *Pak Armed Forces Med J.* 2006;56(4):425–32.
2. Okada Y, Haruki Y, Ogushi Y. Disaster drills and continuous medical education using satellite-based internet. *Methods Inf Med.* 2000;39:343–7. <https://doi.org/10.1055/s-0038-1634445>
3. Gormley GJ, Collins K, Boohan M, Bickle IC, Stevenson M. Is there a place for e-learning in clinical skills? A survey of undergraduate medical students’ experiences and attitudes. *Med Teach.* 2009;31:e6–12. <https://doi.org/10.1080/01421590802334317>
4. Lim ECH, Oh VMS, Koh DR, Seet RCS. The challenges of “continuing medical education” in a pandemic era. *Ann Acad Med Singapore.* 2009;38:724–6.
5. Kaur N, Dwivedi D, Arora J, Ghandi A. Study of effectiveness of e-learning to conventional teaching in medical undergraduates amid COVID-19 pandemic. *Natl J Physiol Pharm Pharmacol.* 2020;10(7):563–7. <https://doi.org/10.5455/njppp.2020.10.04096202028042020>
6. Liang ZC, Ooi SBS, Wang W. Pandemic and their impact on medical training: lessons from Singapore. *Acad Med.* 2020;95(9):1359–61. <https://doi.org/10.1097/ACM.0000000000003441>

7. Farooq F, Rathore FA, Mansoor SN. Challenges of online medical education in Pakistan during COVID-19 pandemic. *J Coll Physicians Surg Pak*. 2020;30:S67–9. <https://doi.org/10.29271/jcpsp.2020.Supp1.S67>
8. Andreatta PB, Maslowski E, Petty S, Shim W, Marsh M, Hall T, et al. Virtual reality triage training provides a viable solution for disaster-preparedness. *Acad Emerg Med*. 2010;17:870–6. <https://doi.org/10.1111/j.1553-2712.2010.00728.x>
9. Chakravarthy B, Ter Haar E, Bhat SS, McCoy CE, Denmark TK, Lotfipour S. Simulation in medical school education: review for emergency medicine. *West J Emerg Med*. 2011;12(4):461–6. <https://doi.org/10.5811/westjem.2010.10.1909>
10. Garshnek V, Burkle FM. Applications of telemedicine and telecommunications to disaster medicine: historical and future perspectives. *J Am Med Inform Assoc*. 1999;6(1):26–37. <https://doi.org/10.1136/jamia.1999.0060026>
11. Ian A, Khan S. Medical education during pandemics: a UK perspective. *BMC Med*. 2020;18(1):18–9. <https://doi.org/10.1186/s12916-020-01577-y>
12. Rajab MH, Gazal AM, Alkattan K. Challenges to online medical education during the COVID-19 pandemic. *Cureus*. 2020;12(7):e8966. <https://doi.org/10.7759/cureus.8966>
13. Singh K, Srivastav S, Bhardwaj A, Dixit A, Misra S. Medical education during the COVID-19 pandemic: a single institution experience. *Indian Pediatr*. 2020;57(7):678–9. <https://doi.org/10.1007/s13312-020-1899-2>
14. Lau F, Bates J. A review of e-learning practices for undergraduate medical education. *J Med Syst*. 2004;28(1):71–87. <https://doi.org/10.1023/B:JOMS.0000021522.30587.ff>
15. Lamba P. Teleconferencing in medical education: a useful tool. *Australas Med J*. 2011;4(8):442–7. <https://doi.org/10.4066/AMJ.2011.823>
16. Morton CE, Saleh SN, Smith SF, Hemani A, Ameen A, Bennie TD, et al. Blended learning: how can we optimise undergraduate student engagement? *BMC Med Educ*. 2016;16:195. <https://doi.org/10.1186/s12909-016-0716-z>