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Online Clinical Teaching and Learning for Medical Undergraduates during the COVID-19 Pandemic: The Universiti Sains Malaysia (USM) Experience

Nik Lah Nik-Ahmad-Zuky^{1*}, Kamarul Aryffin Baharuddin², Ahmad Fuad Abdul Rahim³

¹*Obstetrics and Gynaecology Department, School of Medical Sciences, Universiti Sains Malaysia, Kelantan MALAYSIA*

²*Emergency Medicine Department, School of Medical Sciences, Universiti Sains Malaysia, Kelantan MALAYSIA*

³*Medical Education Department, School of Medical Sciences, Universiti Sains Malaysia, Kelantan MALAYSIA*

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ABSTRACT

The COVID-19 pandemic has forced medical universities in Malaysia to switch from face-to-face teaching to online teaching and learning (T&L). This new learning paradigm requires students' self-motivation to learn in front of a computer, good access to the internet especially for those in rural areas and greater lecturers' commitment to upload learning material into the e-learning platform as well as spending more time online for synchronous teaching. Also, adjustments have to be made in the form of teaching activities, semester examinations, and final examination timetables. The online T&L and assignments are designed to ensure that students achieve the learning outcomes for each respective course. Concerns regarding online assessment methods include efficiency and accountability, and they must be at par if not more stringent than usual examination methods. Any changes in the assessment methods have to go through review and quality assurance procedures and ultimately be approved by the university's senate and must be in full compliance with the directives and guidelines issued by the Malaysian Qualification Agency (MQA) and Malaysian Medical Council (MMC). Being in the medical field where competency is of utmost importance, practical learning with real patients is still the best way of learning and is difficult to be replaced by online learning.

Keywords: *Online clinical teaching, COVID-19 pandemic, Psychomotor competency*

CORRESPONDING AUTHOR

Nik Lah Nik-Ahmad-Zuky, Obstetrics and Gynaecology Department, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan MALAYSIA | Email: nikzuky@gmail.com

INTRODUCTION

The COVID-19 pandemic has changed the learning strategies in medical schools all over the world. Medical training institutions worldwide, including in Malaysia have temporarily closed their institutions for students. The Malaysian government announced the first phase of a movement control order (MCO) from 18 March 2020 to 30 March 2020 to curb the spread of the coronavirus infection. As a result, the majority of the university students returned home, while a smaller number remained in their hostels. At the moment of writing, about 70% of the clinical-year Universiti Sains Malaysia (USM) medical degree students are staying at home. The MCO has now entered the fourth phase and will end on 12 May 2020 with a high probability of it being extended. Given that probability, USM has decided that only final year medical students will be given priority to return to the institution in early July 2020 for face-to-face (F2F) teaching activities when conditions permit. Other clinical year students will most likely be asked to continue to remain at home for online teaching and learning (T&L) until September 2020.

This crisis has interrupted the usual learning process and altered the teaching calendar, students' T&L and assessments. This article will describe the alterations made in the T&L process of the clinical-year programme (Years 3, 4 and 5) in the School of Medical Sciences (SMS), USM in response to this crisis, in the hope that it will benefit other institutions facing similar problems.

ADJUSTMENTS TO THE ACADEMIC CALENDAR

Each university has its way of handling online teaching and conducting examinations. As for the SMS, academicians together with the Medical Education Department discussed the best ways

to continue teaching and learning and examinations per guidelines from the Malaysian Medical Council (MMC).

Each medical institution has its academic calendar to be followed by its teaching faculty and students. At the time of the gazettelement of the 1st-phase MCO, the teaching period was nearing the end of the first half of the year. Year 3, 4 and 5 students had two main course rotations that were supposed to begin in the second half of the year (Semesters 6, 8 and 10 respectively), and it was decided that they will be taught fully online until they are permitted back to the institution.

Year 3 students were in Semester 5 and at the final week of their postings when the MCO was initiated. Teaching activities such as student seminars, clinical work and clinical presentations were nearly completed in all courses. In that final week, they were supposed to undergo a clinical examination at the department level and the majority of the departments had almost completed their examinations. The Semester 5 theory exam which was supposed to be held at the end of the semester, was not able to be conducted as the date was within the MCO period and no mass gatherings were allowed. It was decided, following a university-wide decision, to substitute the clinical F2F examinations with an online approach. The school also decided to postpone the Semester 5 examinations to August, to be held together with Semester 6 examinations.

Year 4 students, who were in semester 7, had similar numbers of remaining postings as Year 3 and a similar decision involving implementation of online teaching and examination postponement was taken.

Year 5 students have not completed two main rotations of six weeks each. It was decided to conduct the first half of the rotations mainly online. The other half of the rotations will be completed F2F later. The final professional two assessment was rescheduled to early September 2020.

ELECTRONIC LEARNING (E-LEARNING)

This change in the teaching environment and delivery methods have put a massive adjustment burden on academicians in our university. They must now learn to use information technology (IT) as the tool to communicate with and teach their students.

E-learning refers to the delivery of education and training through digital resources where the internet is used in delivering 80–100% of the content (1). E-learning is classified as asynchronous or synchronous formats (2). The asynchronous format involves the delivery of T&L materials via institutional e-learning platforms or with the use of other T&L applications such as email or WhatsApp. The materials are then accessed at the student's convenience.

On the other hand, the synchronous format involves online T&L conducted using real-time video webinar platforms or chat-based media like Microsoft Teams®, WEBEX®, Skype®, Zoom® or WhatsApp®. Lecturers and students can have face-to-face tutorials or discussions like a classroom setting. The medium enables users to stay in touch with their lecturers or fellow students. Synchronous learning also facilitates dynamic learning where the lecturer demonstrates certain procedures to students, and have two-way communication online. The teaching time and topic are given earlier allowing students time to adequately prepare before attending the scheduled online teaching class. A 'flipped classroom' is best to describe this approach (3).

USM is fortunate to have an established web-based e-learning platform since 2009, known as e-learning@USM (4); one of the earliest universities in Malaysia to introduce e-learning as a T&L platform to their undergraduate and postgraduate students. Each USM medical student receives an email address during the initial student registration as a personal passport to log into the e-learning platform. The USM

e-learning platform delivers T&L online to undergraduate students of all years. They are encouraged to log in at any convenient time for self-reading of any T&L material uploaded by their respective coordinators or lecturers. This method was aimed to improve student-centred learning, in turn furnishing the student with the ability to fit learning around their circumstances.

Since the introduction of e-learning@USM regular face-to-face, hands-on e-learning training has been conducted in the school to guide faculty on how to construct their respective T&L course materials using the e-learning platform. Initial use was more on providing supplementary T&L materials (articles, journal papers, e-books, YouTube videos and online collaborative tools) and assessments, forums and quizzes. Most of the participants during the yearly training were course coordinators from various departments. Therefore, the concept and practice of e-learning were not wide-spread among lecturers. Furthermore, the platform was not popular among the students.

However, since the COVID-19 pandemic, there has been a push from university authorities to ensure that effective learning continues being delivered to students (5). There is a sudden move to online classes and subsequently, there was a tremendously high request for training on e-learning from lecturers and clinicians. The MCO, as well as work-from-home orders, saw many of them enthusiastically enrolling in online e-learning training courses conducted by the Medical Education Department. T&L materials from various departments began being uploaded in the e-learning platform in earnest. We are also seeing the increased use of synchronous methods for online teaching.

MODIFICATIONS FOR CLINICAL TEACHING AND LEARNING

Student medical ward activities involve clerking patients, performing physical examinations, following ward rounds, performing ward work such as taking blood

from patients and many others. Since the gazettement of the MCO, no students are allowed in the wards. Many of them are worried that they might become less competent clinically.

However, this situation should not stop lecturers from teaching clinical skills to medical students. Adaptations utilising e-learning methods are being implemented with the creativity of the lecturers. Using video communication applications, students take clinical history online directly from real patients selected from the ward, after explaining to them regarding the online clerking session and obtaining consent. The patients are then invited to a room and briefed on how to respond to students' questions. A lecturer acts as a moderator, selects a student to start the session by calling the name and switches on the microphone. After some time, the moderator asks another student to continue asking questions until all information is gathered. Another student is given the task to present the case to the whole group. During history taking, the student must turn on his/her video camera so that the patient feels much more comfortable answering questions from a student he can see in the monitor. It fits the idea of virtual F2F teaching and learning for the student. Other students who are online but have muted themselves and turned off the video camera but are listening and following the conversation and presentation learn from their friends how to correctly get a good clinical history from the patient and correctly present the case. The moderator finally discusses and comments on the process and guides them accordingly. This online team learning on clerking the patient's clinical history, clinical presentation and discussion are ideally introduced in the future in all medical schools because it can be done in a big group of students in which everyone is involved in the activities in a similar environment. Furthermore, every student can review the recorded video of the session in the future for revision.

Regarding physical examination, the moderator videotapes the general and specific physical examination using a smartphone after obtaining consent from a patient. The video is then shown to students through the webinar platform after presenting the clinical history. Explanation to and discussion with the students about the physical examination in the video then follows. The moderator could then discuss actively the management of that patient with the students. This method temporally replaces F2F clinical bedside teaching in this MCO period. Alternatively, if videotaping is not permitted by the patient, the moderator explains how he or she examines the patient and discusses expected clinical signs before presenting the findings to the students.

Certain departments have assigned a clinical lecturer to briefly summarise cases in the ward every morning on starting the synchronous teaching. The rationale is for the student to be aware of cases being managed in the ward and openly discuss the management. Sharing interesting cases with the students have obtained encouraging feedback and indirectly stimulates them to learn more about the cases.

ASSIGNMENTS

Blood-taking and other ward work by students are also unfeasible during the MCO. However, with the creativity of some lecturers, some initiatives have been implemented. Some clinicians discuss logbook procedures online with students. This gives some comprehension to the students about the procedures in the logbook. The students later can fill out the logbook with a better understanding of the procedures once they return to the hospital after the MCO is lifted. If the MCO is extended, then multiple-choice questions (MCQs) can be used to test the content knowledge of the students regarding logbook matters.

Clinical case write-up submissions by the students are considered compulsory assignments in many medical schools. In SMS, clinical case write-ups provide significant weightage in the continuous assessment marking. In this MCO period, the students are still required to submit at least one clinical case write-up. The students are given an option to choose any case that has been collectively clerked by them online. They would be given a due date for the online submission to their respective lecturers and the marks are given based on the usual standard marking.

ASSESSMENTS

Examinations are a difficult issue for the SMS during the MCO. Theory papers in the form of MCQs, scenario-based questions (SBQ) and objective structure clinical examination (OSCE) can be conducted online through the e-learning platform. A clinical scenario with photos can be used in OSCE examinations. An interactive OSCE in real-time might be impossible for a large group of students.

If the MCO is extended until the end of this year, the medical school must find other creative ways to conduct clinical examinations. One suggestion for a long-case clinical examination is to have a group of five students' clerk the same patient online under the supervision of a moderator cum examiner. They are given a fixed time of 30 minutes to complete the clerking. Then each of them is separately examined by different examiners online. Each student-examiner pair uses a different webinar interface and the examination process simultaneously starts for all pairs. After the clinical history presentation, the examiner then asks the student to describe the expected clinical signs in their patients. Discussion about the management starts once the discussion about clinical signs is completed.

For a short case, a video of a patient with positive clinical signs is shown to the students for them to describe the findings. Alternatively, they are shown a video of a doctor examining or performing a procedure on a patient for them to pick up the findings and discuss. Any good video from YouTube can be used for this.

All examination methods suggested above are limited to the cognitive aspects of clinical skills and it should be noted that the students' psychomotor competency is not assessed. Psychomotor assessment looks at the ability of the students to demonstrate the correct method of physical examination on the patient which is impossible with the home lockdown situation. Psychomotor assessments need to be done at a later date and results from the current examinations should be considered as provisional and subject to a subsequent examination of psychomotor skills.

CONCLUSION

Effective T&L for clinical year medical students during this pandemic is very challenging for all users. On the lecturers' side, since many lecturers still come to the hospital for ward work, they can manage online T&L with students in their department, where facilities and internet coverage are excellent. On the other hand, students who reside in rural areas might have difficulties to access the e-learning portal or to join a synchronous teaching session due to poor internet coverage. This may psychologically discourage the student to join the learning activities and demotivate them.

Being in the medical field where competency is of utmost importance, practical learning with real patients is still the best way of learning and is difficult to be replaced by online T&L. Most students prefer learning by doing with direct guidance and instruction from lecturers. They feel

less confident to perform by learning from videos or live streaming. Clinicians or lecturers are therefore urged to use their creativity in delivering T&L using new technology. They must have basic IT background knowledge, a prerequisite that does not favour many senior staff. Hopefully, the crucial need of e-learning especially during this MCO has greatly changed the medical academician's mindset towards online T&L in the 'new normal' to achieve learning outcomes set-up by the institution.

REFERENCES

1. Charmonman S. Regional report 2008 on ASEAN university-level eLearning. Fifth International Conference on eLearning for Knowledge-Based Society. Bangkok, Thailand. 2008; 11–12 Dec.
2. Hrastinski S. Asynchronous and synchronous e-learning. *EDUCAUSE Quarterly*. 2008;31(4):51–5. Available from: <http://www.educause.edu/ero/article/asynchronous-and-synchronous-e-learning>
3. Arnold-Garza S. The flipped classroom teaching model and its use for information literacy instruction. *Communications in Information Literacy*. 2014;8(1): 7–22. <https://doi.org/10.15760/comminfolit.2014.8.1.161>
4. Ng SK, Omar B, and Mohamed R. Towards student-centred learning: factors contributing to the adoption of E-Learn@USM. *Malaysian Journal of Distance Education*. 2012;14(2):1–24.
5. Professor Dr. Faisal Rafiq Mahamd Adikan: USM scenario planning for COVID-19. COVID-19 USM update-announcements; 23 Mar 2020. Available from: <https://www.usm.my/index.php/covid19/announcements/768-23-march-2020-usm-scenario-planning-for-covid-19>