

## COMMENTARY

# Virtual Anatomy Practical: The Challenge for Anatomist During The 2020 Pandemic

Razif Abas, Shamala Devi Subramaniam

Department of Human Anatomy, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia

Corresponding author's email: razifabas@gmail.com; Tel: +60133946543

## INTRODUCTION

As medicine is one of the challenging undergraduate courses which requires the continuous learning commitment and hands-on application, this pandemic situation forces the academic to build up a creativity new norm to improvise the coaching methods. The Malaysian government had announced the movement-controlled order since March 2020 and declared no schools or universities are to be opened (1). The beginning of the quarantine episode somehow worrying the academics especially in the medical course since the practical and clinical duties are been omitted, which has never been expected, and no subsequent preparations have been developed. To overcome this, all academic meetings emphasized the impacts of improper medical training hence several new methods are designed. In this commentary, we review the academic challenges during the pandemic in Universiti Putra Malaysia (UPM) from the Anatomist perspective especially on anatomy practical.

In Malaysia, the cohort of each academic medical study is divided into preclinical and clinical phases. The preclinical phase comprises of the first year and second-year medical students whereas the clinical phase comprises the third, fourth, and fifth year medical students (2). Preclinical students are required to complete their basic sciences subject based on the systemic modules such as cardiovascular system, respiratory system, musculoskeletal system, and so on. Each of the modules comprises integrated subjects of anatomy, physiology, biochemistry, pharmacology, pathology, and microbiology. Interestingly, between all the subjects, anatomy is considered to have the highest credit hours hence making it the most important foundation of the basic medical sciences subject (3).

In total, nine public universities in Malaysia are offering undergraduate Medical Doctor degrees, and one of them is UPM which is located near the suburban area. The average intake of medical undergraduate is 100 students per year and currently, there is five number of Anatomists in UPM. During the pandemic, all the undergraduate students are being instructed to conduct

non-face-to-face learning with their academics until the end of 2020. Even though the clinical students are allowed to continue their face-to-face learning beginning in July, unfortunately, the preclinical students remain for non-face-to-face. As a result, preclinical students have their doubtful different perceptions of continuing the learning process, making further uneasiness to the academics especially for the preparation of upcoming major examinations (4).

Anatomy learning requires a hand-on session; gross anatomy dissection and histology practical sessions. These sessions are compulsory for all medical students undergone the Anatomy curriculum. During the dissection, students are required to identify the anatomical structures based on the theory learned. The practical session runs approximately for three hours and the number of sessions is depending on their respective module, which is heavier during the musculoskeletal system. On the other hand, the histology practical session also covers the study of microscopic anatomy. A previous study showed that anatomy learning was successfully delivered via web-based learning during the 2003 severe acute respiratory syndrome (SARS) pandemic, and indeed few medical schools worldwide are not practically involved with the cadavers (5). However, medical students' perceptions was unsatisfied for the anatomy learning (6). Even though virtual learning upskilled science and technology resources, a study in the United Kingdom and the Republic of Ireland demonstrated online engagement reduced students' engagement and weaken the student-teacher rapport (7).

## OVERVIEW OF COVID-19

The ongoing new coronavirus pneumonia (Corona Virus Disease 2019, COVID-19) outbreak was begun in China. It was first reported in late December 2019 in Wuhan Hubei province and the disease was officially named COVID-19 by the World Health Organization (WHO) on 12th January 2020 (8). The virus was originated in bats and was transmitted to humans through yet unknown intermediary animals. Human to human transmission occurs among close contacts including family members and relatives (9). This virus has spread

quickly throughout the world including Malaysia. The COVID-19 pandemic outbreak creates the most impact on the economy, trade, education, and tourism.

In Malaysia, the first case was reported on 25th January 2020 upon local transmission from the neighboring country. Movement-controlled order (MCO) was declared by the Malaysia government from 16th March 2020 until 9th June 2020 (10). It is known that children with COVID-19 appeared to have the milder symptoms. The adults with a pre-existing illness such as hypertension, diabetes, heart disease, and chronic kidney disease manifest severity of the symptoms. The major cluster affected during the COVID-19 in Malaysia was a tabligh group (3,375 cases), the religious event held in Sri Petaling Mosque, Kuala Lumpur. All the positive cases were quarantined in the designated hospitals. The Malaysian protocol declares the procedure of discharging the patients in two consecutive negative upper respiratory swabs. As for 6th July 2020, there were 8,668 COVID-19 cases including 121 deaths, and 8,476 cases were recovered as reported by the Ministry of Health (MOH) Malaysia, which exhibits a good prognosis.

## THE CHALLENGES

Despite the students' obstacles, the enthusiasm of the academics to overcome the pandemic situations remains doubtful. We are threatened either to focus on the students' needs or the students' well-being. As to relieve the burden, students are provided with a minimum of 3 hours on-line lectures for each academic in the given specific module, which few free internet data has been provided. The inadequacy of lecturing time somehow manifests the different learning perspectives from both parties because of jeopardizing their future clinical applications. Hence, few methods are improvised to overcome this situation.

The students are been given the practical handout upon completion of the academic lecturers on each respective module. Practical handout of gross anatomy and histology comprises of the objective and subjective question; fill in the blank and short essay clinical scenarios. Students are instructed to watch the lecturers' video performing the demonstration and dissection of the gross anatomy beforehand within no designated allocated time, with the help of supporting staff as the cameraman, since the academic are allowed to resume to work from the office. However, during the histology demonstration, a different problem was encountered; focusing an image on the screen has seriously struggled. Few manipulations of the video camera angles are required to obtain the best sharpness of the histology slides to view, especially at the higher microscopic magnification, hence demanding longer time-setting.

Subsequently, an on-line practical session was scheduled in relation to the respective module. Students are requested to show a demonstration on their creativity to mimic the anatomy structure. Toys, teddy bears, or adopting their relatives as a simulated patient making the practical demonstration more interesting. Alongside with poor internet connections for some rural areas, students struggle to reconnect the on-line platform hence prolonged the teaching session. Furthermore, the clarity of the image on the screen was not sharpened creating redundant explanation and clarification. Thus, the recorded session is compulsory for each virtual discussion.

Students are obliged to draw the histology features on specific organs and display the illustrations on their camera during the on-line live teaching. The poor internet connectivity disguises the original colour of its specific drawing, especially in the routine hematoxylin and eosin (H&E) staining. Besides, students also are required to demonstrate the functions and clinical features of the histologic sections which might be challenging. Thus, the importance of academics' lecture notes plays major guidance in the students.

As the future final examinations are conducted on-line, the OSPE (Objective-Structured Physical Examination) questions would potentially differ from the real specimens (11). All the diagram for the OSPE questions is based on the schematic pictures obtained from the on-line sources which might gain different anatomists' perceptions and appreciation. Hence, multiple mock examinations are performed with the students to familiarize the diagram. After all the obstacles for the Anatomist to overcome this pandemic situation, we believed that the passion of teaching and learning has conquered it all.

## THE RECOMMENDATIONS AND OPPORTUNITIES

We would explore the software companies for free access or even renting the programmed to the teachers and students. Some of the smartphones are also compatible with the AR (Augmented Reality) and VR (Virtual Reality) software for the anatomy images which manageable. As the world embraces and moves towards the Industry 4.0 transformation (IR4.0), YouTube (TM) videos (YouTube, San Bruno, CA) and Complete Anatomy (3D4Medical/ Elsevier, Dublin, Republic of Ireland) also were advised as a delivery method and reading online materials. Indirectly, teachers would actively collaborate academically with other institutions as to discuss the updated online learning, hence the fusion of online blended learning in the future development of the medical curriculum.

### Keywords:

Anatomy, Academic, COVID-19, Pandemic, Students

## ACKNOWLEDGEMENTS

We acknowledge Head of Human Anatomy Department and Dean of Faculty of Medicine and Health Sciences, Universiti Putra Malaysia. We also acknowledge the Anatomy Technicians; Siti Nur Aishah Ramlee, Khairul Amri Mohamed Saroji and Nurlina Basir for helping us with the setting up the video camera.

## REFERENCES

1. Khor V, Arunasalam A, Azli S, Khairul-Asri MG, Fahmy O. Experience from Malaysia During the COVID-19 Movement Control Order. *J Urology*. 2020.
2. Lim VK. Medical education in Malaysia. *Journal of Medical Teacher*. 2008;30(2):119-23.
3. Pamidi N. Use of essential analogies in clinical anatomy active learning curriculum: A personal reflection. *J Translational Research in Anatomy*. 2020;18:100062.
4. Mohd Sidik S, Rampal L, Kaneson N. Prevalence of emotional disorders among medical students in a Malaysian university. *Asia Pacific Family Medicine*. 2003;2(4):213-7.
5. Evans DJ, Bay BH, Wilson TD, Smith CF, Lachman N, Pawlina W. Going Virtual to Support Anatomy Education: A STOPGAP in the Midst of the Covid-19 Pandemic. *Anatomical Sciences Education*. 2020.
6. Franchi T. The Impact of the Covid-19 Pandemic on Current Anatomy Education and Future Careers: A Student's Perspective. *Anatomical Sciences Education*. 2020;13(3):312-5.
7. Longhurst GJ, Stone DM, Duloherly K, Scully D, Campbell T, Smith CF. Strength, Weakness, Opportunity, Threat (SWOT) Analysis of the Adaptations to Anatomical Education in the United Kingdom and Republic of Ireland in Response to the Covid-19 Pandemic. *Anatomical sciences education*. 2020;13(3):301-11.
8. Birhman N, Singh MK, Tomar S, Pundir S. Covid-19: A Silent Killer. *J Int J Curr Microbiol App Sci*. 2020;9(5):2710-9.
9. Ciotti M, Angeletti S, Minieri M, Giovannetti M, Benvenuto D, Pascarella S, et al. COVID-19 outbreak: an overview. *Chemotherapy*. 2019;64(5-6):215-23.
10. Tang KHD. Movement control as an effective measure against Covid-19 spread in Malaysia: an overview. *Journal of Public Health*. 2020:1-4.
11. Singh G, Singh R. Practical skills evaluation of undergraduate medical students by an objective structured practical examination (OSPE): An effective tool for formative assessment in microbiology. *Journal of Medical Sciences*. 2020;7(2):74.