REVIEW ARTICLE

The Crisis of Medical Education in Primary Care Medicine Amid the Covid-19 Pandemic in a Malaysian Higher Institution

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ABSTRACT

The emergence of the COVID-19 pandemic has not only impacted the paradigm of health care delivery, but also the education of future health care providers. Medical faculties are compelled to cease all face-to-face teaching considering the threat of the virus. The ramification of distant learning was heavily endured by primary care educators who not only train the undergraduates but also future family medicine specialists. We have discovered that as a medical educator, it is important to continuously evolve and adapt to current situation. Even in the absence of face-to-face teaching, the primary care curriculum can be successfully delivered using the online platform. Here, we describe the crises faced in this endeavour, the solutions that were undertaken, and the advantages of virtual teaching which we hope will add value to primary care medical education.

Keywords: Primary care medicine, Undergraduate, Postgraduate, Virtual, COVID-19

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INTRODUCTION

The World Health Organization announced Covid-19 a pandemic on the 11th of March 2020 (1). Since then, many countries have gone through lockdowns and movement control orders (MCO). Similarly, the Malaysian government was left with no choice but to implement the MCO as a preventive measure to curb the lethal and aggressive spread of the Covid-19. The first MCO in Malaysia was enforced on the 18th of March 2020. Following this, all medical universities are forced to halt face to face teaching to contain the spread of the virus.

In the face of the Covid-19 pandemic, the role of primary care educators has grown to become exceptionally important. For the most part, our role is to facilitate the government to produce more qualified medical doctors and primary care specialists on the field to combat the spread of the virus. However, the MCO has resulted in massive changes in the primary care clinics set-ups to operate safely. Various standard operating procedures (SOP) are being implemented, including the reorganization of practices to ensure physical distancing, reshuffling of doctors to manage suspected Covid-19 patients and reducing the number of patients that can be seen per-day to accommodate the new SOP (2). This presents new challenges for students to meet their training needs, in which bedside teaching and patient consultation play pivotal roles in their learning experience. Adding to that, in December 2020, Malaysia witnessed a sharp rise of positive Covid-19 cases amongst the front liners (3). This has cause primary care educators to be apprehensive in continuing face-to-face clinical training.

Realizing the need to continue medical education, primary care educators all over the world have quickly adapted to novel methods of delivering primary care training to both medical undergraduates (UG) and postgraduates (PG) (4). At the University of Aberdeen in United Kingdom, innovative video-recorded general practice (GP) consultations have been used as a tool for junior medical students (4) In New Zealand, a group of primary care educators developed online training modules in the effort to replace the UG medical students' clinical GP attachments during the Covid-19 lockdown (5). In the Middle east, primary care educators in Oman and Cairo also have integrated virtual technology into their teaching methods to reach their students situated all over the country (6, 7). In terms of assessments, various online tools have been designed by primary care educators primarily for undergraduates (7, 8). At the PG level, various specialties have conducted virtual examinations for their future specialists with variable successes (9, 10). However, little is known on the degree to which whether online methods can replace face to face clinical learning to produce primary care clinicians that meet the required standards (6). In an attempt to

evaluate this, the European Academy for Teachers in General Practice/Family Medicine (EURACT) has set up a study to obtain a reliable picture of the impact of the Covid-19 pandemic on the training of primary care specialists from the UG level to the specialist level amongst the European countries. (4) However, in Malaysia no similar initiative is in place yet. This is because documentation on the current teaching method amid this pandemic is still lacking and virtual education in medicine is fairly new.

Therefore, this review aims to illustrate our journey in facing the crisis of sustaining medical education in primary care medicine for the undergraduate (UG) and postgraduate (PG) students despite the uncertainty that clouds over the Covid-19 pandemic. This review will illustrate our teaching adaptations, challenges encountered along the way, suggestions that could help improve the situation and the benefits of online learning. It is hoped that the perspectives described in this review paper may assist other institutions to find transferrable solutions to their unique needs.

OUR TRADITIONAL LANDSCAPE OF PRIMARY CARE MEDICINE TEACHING AND ADAPTATIONS TO THE "NEW NORM"

The undergraduate (UG) education

Primary care medicine posting is integral to the UG medical training. This posting allows UG to establish effective communication skills apart from developing competent clinical examinations and problem-solving skills. The program also aims to produce graduates that are skilled in managing common acute and chronic medical diseases in primary care taking into consideration primary and secondary prevention, health promotion and cost-effectiveness. The program essentially applies evidence-based medicine and translating clinical practice guidelines (CPG) into daily clinical practice (11).

The posting is an 8-week rotation in year four. Students are required to attend our primary care specialist clinics and Ministry of Health (MoH) clinics throughout the posting. They are expected to observe and participate to a certain extent in the management of acute cases, chronic disease care, emergency treatment, maternal and child health clinics as well as school-based immunization programs. As part of their continuous assessment, they are expected to perform directly observed consultation (DOC) that requires the student to take a clinical history and perform clinical examination on a patient, produce a family case study that involves a more in-depth and holistic consultation and examination and complete a logbook consisting of procedures relevant to primary care. They are also required to attend supervised home visits as part of their training in community palliative care (11).

When the Covid-19 strikes, primary care educators were left with no option but to conduct most of the curriculum virtually. Lectures and seminars were delivered via online teaching platform such as Zoom Video Communication®, Microsoft Teams® and Google Meet®. Slides were uploaded onto existing institutional database such as I-learn. At the end of the teaching session, some educators conducted Kahoot® sessions relevant to the topic to encourage interactions. Clinical consultation teaching was conducted via pre-recorded DOC. The students were instructed to perform history taking and clinical examination with a primer and the consultation was recorded. The video is then shared with the other students in their assigned groups on the online platform and assessed by a primary care educator. Feedback session and discussion on the consultation was conducted afterwards. All students are required to produce a DOC video. Meanwhile, to introduce the experience of government health clinics, a series of videos showcasing the roles and services available in government health were produced. The videos attempt to simulate as close as possible, the first-hand experience of a government health clinic for the students to understand the intricacies in community health care delivery. Unfortunately, palliative home visits had to be cancelled to respect the limitations of the hospice provider during this challenging time.

The Postgraduate (PG) education

Apart from UG teaching, the postgraduate teaching for Master of Medicine (Family Medicine) were also affected. The PG students are trained to be competent gatekeepers and coordinates patient management in the primary health care system. (11) The 4-year training program is divided into 3 phases. The students will rotate through various postings in different tertiary hospitals. Phase 1 students will go through Medicine, Paediatric, Obstetrics & Gynaecology and sub-specialty postings. This is followed by 6 months of minor hospital postings at Otorhinolaryngology, Ophthalmology, Psychiatry, Orthopaedics, Surgery and Dermatology. Phase 2 comprises of institutional primary care training, palliative care and emergency medicine postings. Phase 3 is the final phase in which trainees spend most of that year in the MoH health clinics (11).

While the UG face-to-face clinical training had to be postponed until further notice, the specialists in training were able to continue their practice in the clinical setting. As registered medical officers, their services are very much needed during this difficult time. The phase one students carried on with their hospital rotations. However, those assigned to Hospital Sg buloh (HSB) had to be transferred to another hospital as HSB was transitioning into a Covid-19 hospital. The phase 2 and phase 3 students continue their training at the community health clinic.

The PG have weekly dedicated time for clinical chart audit discussion and journal club. Additionally, they also have weekly seminars/workshops/lectures on topics based on the PG curriculum. The chart audit is a discussion of selected cases that they have encountered during the week, while the journal club discusses selected journal papers of interest. They also have thesis dissertations as part of their final year requirements. These teaching requirements have been successfully conducted online using available virtual teaching platforms. However, while some of the learning needs of primary care medicine can be met via online learning, it cannot be used as an equivalent substitute (6). One important limitation is teaching clinical examination skills where it inevitably requires patient contact. Evidence is scarce to support an entirely online program to replace what is supposed to be a clinical attachment, (4, 6, 14) but in the current pandemic predicament, online teaching becomes the next best option. (6)

THE CHALLENGES FACED IN CONDUCTING VIRTUAL PRIMARY CARE MEDICINE TEACHING

Infrastructural barriers

When the pandemic hits, cultural shock in academia hits home. The most significant change during this pandemic was to abruptly transition from face to face, hands-on teaching to completely virtual (12, 13,14). In the eastern part of Malaysia (Sabah and Sarawak), many students have limited internet access especially from the rural parts of the state. The situation has forced some of them to undertake dangerous measures such as hiking the high peaks for hours and climbing the tallest trees, deep in the forest to get a good internet connection (15). Nevertheless, internet connection has also become a problem in the more urbanized parts of the country. This may be due to the large numbers of Malaysians being online during the period of MCO. Apart from internet coverage, economic status can also become a barrier to internet access. Medical students coming from the lower socioeconomic background may not have the financial leverage to sustain adequate internet data to participate in virtual teaching. Some may not even have a computer available at home. Even if they do, some of them are sharing it with other family members who are also studying and working from home.

Adaptation to the new method of content delivery

The implementation of virtual education platform in primary care medicine teaching has its distinctive challenges namely with regards to its content delivery. Educators who are accustomed to "chalk talks", where figures are drawn on the board to illustrate a concept are now expected to develop similar content to convey the same information through virtual teaching (16). Like many other clinical academicians in higher institutions, administrative work, publishing research and clinical responsibilities encroach educational time (16). Development of new lecture content can be time-consuming especially in times of uncertainty caused by the pandemic and increasing clinical demand. For UG recorded DOC that involves examination skills, educators are expected to identify mistakes and rectifying them through a virtual consult. This can be extremely difficult especially when attempting to improve their clinical examination technique where traditionally, it involves bedside hand-on teaching.

Compromised lecturer and student interaction

In contemporary higher education, face-to-face teachings are designed to be interactive. Therefore, an educator relies on student reactions, verbal and non-verbal responses as well as their interaction with other students to guide the direction of the content and topic emphasis. This method also allows educators to identify knowledge gaps. (16) However, during virtual teaching, interaction is only possible if both students and lecturers activate their video application which we discovered, was not commonly done. The luxury of staying at home has led to the complacency of students not having to be presentable for class and hence the preference to engage in only audio conferencing. Lecturer and student engagement is important for the development of the affective aspect related to character building as a doctor. The validity of virtual clinical teaching for future doctors One of the main critiques of virtual learning is the extent to which clinical lectures can provide an authentic patient experience to medical students (1). The most profound learning experience is during the clinical teaching as medical students begin to relate and consolidate their theoretical knowledge to the organic nature of a patient. Although case-based simulations using primers and virtual standardized patients may offer a certain degree of training such as skills for physical examination and clinical reasoning, they are considerably regarded as supplementary rather than a replacement of face-to-face teaching (17). Furthermore, competency assessment based on virtual evaluation is limited. Virtual objective structured clinical examinations (OSCE) can be used to evaluate remaining competencies required for graduation such as patient counselling and history taking, but these techniques have never before served as substitutes for direct patient care (16, 17). The potential under-fulfilment of competencies required for the primary care medicine training via virtual learning poses a particular dilemma. However, if the medical school decides to postpone their medical students' clinical experience to when the situation permits, there would be an influx of medical students and education can still be affected by the density of learners (13). Furthermore, there is no certainty as to how long will medical education endure this "new norm" and there is always the possibility of the community being re-engaged in social distancing and quarantine due to similar outbreaks (13). For students who are deemed to have inadequate clinical competencies during primary care medicine training, it is unknown whether clinical experiences that should be met during the posting can be substituted through future

specialty placement (5). Thus, even with the rigorous efforts, this current adaptation cannot be sustained without jeopardizing the quality of medical education for future professional doctors (2).

Mental health issues among medical students

When the entire curriclum is transitioned into a virtually delivered format, campus activities involving social interactions such as student clubs, sports and recreational activities become unavailable. The education ministry has ordered all students in higher institutions to return to the safety of their hometown. Social distancing and house quarantine have resulted in prolonged social isolation among medical students. The stringent measures have been associated with depressive and anxiety symptoms especially among extroverted individuals as it is unnatural for them to function in such circumstances (18). Some of the typical indicators of students suffering from mental health may not be evident through virtual teaching. When educators are face to face with students, interactions convey a lot of information beyond the context of the conversation. Educators can discern nonverbal cues such as facial expressions, body language, voice pitch and the emotional tenor of the discussion. Virtual conversation limits this ability as it takes a lot more to read the imperceptible cues that come so easily when in person. Therefore, mental health issues related to the pandemic may remain unnoticeable without active detection. This is alarming because medical students are already a vulnerable group to psychological complications such as depression, anxiety and suicidal ideation (19). They have been also found to have stigmatization towards depression and are less likely to seek assistance for such symptoms (19).

SUGGESTIONS TO OVERCOME THE CHALLENGES IN TEACHING DURING THE PANDEMIC

Identifying and managing "Digital Poverty" among medical students

Digital poverty is the lack of economic capacity for the students to own a computer, laptop or tablet and also high-speed internet access (20, 21). From a recent statistic under the Ministry of education, 37% or 1.7 million Malaysian students do not have the devices to enable them to participate in virtual education (7). Like many other students in our local higher institution, some medical students in our institution struggle financially without the support of their family members. They could barely afford a daily balanced meal, let alone purchasing a laptop and internet data. This might be less of an issue for the PG students as they are employed with wages. Students who are at risk of being left behind due to digital poverty should be carefully identified. Higher institutions can support deserving medical students to close the digital divide by creating a laptop loaning service and providing data allowances for the use of virtual teaching sessions. The Malaysian government has shown great support in curbing digital poverty among students. Recently, the finance ministry allocated RM50.4 billion under the 2021 budget to help narrow this digital gap (20). The government has also invested in the JENDELA (the National Digital Network Initiative) to boost broadband access all over the country. Furthermore, the 2021 budget has also allocated 150 million to the Cerdik Fund, a pilot project that aims to provide laptops to 150,000 students (20).

Infrastructure development and training for a dedicated virtual teaching platform

As virtual teaching is gradually becoming mainstream, the Malaysian higher institutions should be geared towards the development of technological innovation creating a virtual education platform as part of their key performance index (9). Efforts should be invested in the training of educators to utilize technology and to spark their creativity. Educators should be supported with a dedicated IT careline during working hours to assist them with any problems that arise such as slow internet connection and technological unfamiliarity (16, 22). For classes with a huge number of students, student and lecturer interaction can be improved by developing a virtual classroom. A virtual classroom is a lecture hall in the institution whereby a screen that is sizeable enough for educators to view all students simultaneously is provided. This way, students can also view their lecturer as if they are in a classroom making the teaching session formal and interactive (22). This virtual method is conducted at the Harvard Business school since 2014, where it permits synchronous interaction with students from all over the world (22). Another method is to separate students into smaller groups or break out rooms such as that in the ZOOM platform to improve two-way communication.

Inculcating positive attitude towards using technology in the classroom

Medical schools in developed nations had invested in technological innovation for infrastructural development long before the pandemic happen. This includes E-learning platform, modern lecture recording and delivery software to improve students engagement and remote learning (13). The educators' knowledge and confidence towards technology have been shown to affect their attitude and motivation in applying this method in their teaching (12). In our situational context, educators who are less savvy in handling virtual teaching should not be left to themselves. Training should be provided to promote inclusion and motivation. Staff recruitment and career promotions should now focus on employees with strength in information technology.

Screen for mental health issues among students and "pandemic fatigue"

Pandemic fatigue and mental health issue are both side effects of prolonged endurance of the stringent measures to curb the spread of the virus. They are both not mutually

exclusive. Psychologists describe pandemic fatigue as a state of burnout after many months of adherence against following strict measures such as wearing a mask, social distancing and quarantine (23). This is often a result of psychological complications (24, 25). Therefore, mental health issues among students should be taken seriously as it is not only a barrier to their academic success but their adherence to safety precautions during the pandemic. Students should be proactively screened for mental health-related issues using validated available screening questionnaires and their motivations to adhere to preventive measures. Those with suggestive warning signs should be kept in touch and referred to a professional counsellor for active measures. Support groups among students should be encouraged and student activities should still be held through a virtual medium. One example would be Zoomaroke, a virtual karaoke session via Zoom.

ADVANTAGES OF VIRTUAL TEACHING

Despite its limitation, virtual teaching offers many benefits compared to traditional methods. Virtual learning enabled students to exert greater control over their learning and allow them flexibility over the pace of their learning (7). Feedback from the students who had to undergo virtual medical teaching reports that the structured organization of their online learning did not leave them feeling amiss except for the lack of clinical attachment. Looking forward, the application and integration of new technology into medical learning has the potential to increase learning, if it is applied and integrated in a way that adds value. Discussions over the online platform allow students to feel more comfortable actively participate while receiving immediate feedback. Participation in medical e-learning modules has also been shown to boost motivation to continuously acquire knowledge and develop critical thinking in clinical decision-making which are essential to provide high-quality patient care (7). Learning using virtual simulated or real-life primary care consultations allows the students to watch, deliberate and reflect on the kind of complex consultations that they could not experience directly (4, 26). Furthermore, the use of the virtual method allows classes to be held in the comfort of everyone's home. Time can be managed more efficiently with the reduced traveling time.

CONCLUSION

Human beings have fought through many ancient plagues. Early people might have had some knowledge of medicine, but this would have not been sufficient to prevent the disease from claiming their lives. The only defence they had at the time, was the innate desire to survive. The Covid-19 pandemic has been a harsh wake-up call to our inadequacy in facing the unprecedented, in clinical and medical teaching alike. Remote learning is undoubtedly the next step forward, albeit the steep learning curve in adapting to the new norm. It is hoped that with the accumulation of new knowledge, primary care educators are able to evolve through these adversities and develop new ideas to revolutionize the teaching of primary care medicine in the future.

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