



Short Communication

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## COVID-19 Pandemic and Medical Education in a Developing Country

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In March 2020, the World Health Organization considered coronavirus disease-2019 (COVID-19) as a worldwide pandemic [1]. This leads to serious effects on medical education in medical schools. Medical students are potentially susceptible to COVID-19

owing to their contact with in-patients during the clinical teaching classes and their common rotation between the hospital departments [2]. Closure of medical schools and continuing the educational process from home for both staff and students became urgent to ensure social distancing.



As the COVID-19 problem evolved in Egypt, education in the whole universities was suspended for several weeks. The classes for all six years of the undergraduate medical teaching were stopped. This had a detrimental effect on medical students due to less exposure for clinical teaching classes and patient examination. Clinical teaching and exams using live patients are a crucial part of a medical student's education. Integration of information technology into the teaching and problem-based learning (PBL) methodologies at our medical schools was the solution. Moreover, all medical conferences and presentations carried out by the students were canceled. This affected student's skills and experiences as these methods are used to build up medical student curriculum vitae.

The following alternative modalities for classical teaching were advocated to keep the students on track with the medical curriculum. Streamed online lectures and prepared online modules were used for delivery of the theoretical lectures [3]. PowerPoint presentations with the lecturer's voice were recorded and made available on each faculty website. This was an excellent substitute for collection of large group of students in a lecture hall with high possibility of viral transmission. Besides that, it avoids the rush of the students at 8:00 am to attend the lectures.

In the past decade, many academic institutions worldwide undertook curricular reforms to promote flipped classrooms and active learning that facilitated a transition of preclinical learning to an entirely online exercise. Previous study showed a prior evidence that these active techniques are preferred by trainees and can help develop a valuable learning skills in undergraduate medical students [4]. Many faculties use customizable cloud-based learning management platforms such as "Moodle" to make the online lectures more accessible and organized [5].

Additionally, PBL tutorials and small group sessions have been replaced with interactive Webinars through web conferencing platforms with the medical staff. Our medical school staff used "Zoom" to be a real interaction between them and their students and by this way they can provide information better. This site has already proven to be effective in attracting large number of medical students [6]. One of the most effective ways which use web conferencing is the flipped classroom, in which there is providing learning resources like videos, voices, articles, pictures, online books and YouTube links before the class then the class will be only for the discussion [5]. The main advantage of these learning resources is the easy access from smart phones while staying safe at home.

High-fidelity simulation models were used for recording videos to facilitate student learning and training on the clinical skills [7]. This offers the opportunity for demonstration of essential procedural clinical skills and training in interpersonal communication. Social media can provide an easily accessible and interesting method for

medical education specially Twitter that play an important role in many clinicians' continued education, and online journal clubs or "tweeterials" can enable residents and medical students to interact with world leaders in their areas of interest [8]. Telehealth has become an important factor to develop health care during COVID-19 pandemic so engagement of medical students in this method will be very beneficial for them. Through telehealth, medical students can participate in the virtual room to participate in history taking and to observe virtual physical examination [9].

Finally, regular assessments of student attainment of medical courses were mainly depending on large scale examinations. Using the online tools and platforms was the solution to carry out a formative assessment of their knowledge. The use of online medical education and adapting to open book examination (OPE) will have an impact on medical students [10]. It will reduce the stress symptoms and anxiety during the COVID-19 pandemic instead of exam-hall settings. Our recommendations for final year's exams are to be simplified and consistent with testing necessary learning objectives. Patients will not be allowed to be part of clinical exams and substitution with virtual models will be the best way for testing the clinical and procedural skills.

### Declaration of Interest

The authors state that there are no conflicts of interest.

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