
Can COVID-19 Pandemic Push Medical Schools in a More Innovative and Positive Direction?

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Abstract

The profound effects of coronavirus disease 2019 (COVID-19) outbreak, may change the direction of the delivery of medical education. The disruption of medical courses has shifted education from classrooms to online formats. New strategies have been implemented during the pandemic because of physical distancing. Preclinical and clinical education involve teaching design and learning environments for moving forward the medical education in response to the disease outbreak. Suggestions for innovative teaching methods, assessments and various learning environments during COVID-19 pandemic are discussed.

Introduction

Prior to COVID-19 crisis, there were many suggestions about how best to transform medical programs to enhance the student experience, motivation and learning outcomes [1]. It is worth noting that lectures given in amphitheatres are often characterized by low attendance rates. Coronavirus disease (COVID-19) pandemic has exerted a worldwide impact on the population, economy and medical care. In an attempt to decrease the spread of the virus, or to “*flatten the curve*” many measures were taken, as closure of schools and

universities. The emergence of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has caused a global emergency concerning disruption of medical education [2]. This disruption presents many challenges and requires a lot of attention from medical educators. The pandemic resulted in a massive and rapid change in the medical education landscape with the implementation of innovative teaching methods and various modes of remote instruction, which fit well with student's preference for technological integration into learning environments. Physical distancing led to wholly-online education. During this time, educators have the opportunity to explore online teaching platforms, rethink modes of learning, engaging students in a whole new way. It is broadly known that blended approaches to education offer the advantage of flexibility and interactivity expectations of learners with the combination of online and face to face teaching [3]. Educational approaches with the incorporation of innovative online education formats and assessment modes were implemented.

This article describes how COVID-19 may affect learning environments and explores the potential conclusions that can be drawn from COVID-19 for moving forward the medical education.

Preclinical (Non-Patient Contact-Based) Teaching

It is known that social distancing is the most effective prevention strategy for COVID-19 pandemic because of the lack of a vaccine and effective treatment. This means that students cannot be gathering in learning amphitheatres, labs and small classrooms. Most university campuses have been closed by the Covid-19 outbreak. However some medical schools have adopted the "flipping" classroom with individualized instruction following the asynchronous learning anytime/anywhere [4]. Additionally, students can be gathered in small-groups if they meet social distancing requirements, attending laboratory sessions and virtual simulations. The emergence of COVID-19 shifted inevitably and quickly the medical education to online formats of the basic sciences material. There is the transition from the workplace or medical school setting to home isolation and increased use of computer tools. Medical students prefer more technological incorporation into learning than previous generations because they grow up with almost lifelong access to the Internet. Student groups interact online in virtual settings. Preclinical teaching may involve video conference applications. During the pandemic, there is a shift to online teaching for medical students. Live teaching can be possible through video conferencing (for example Zoom, Skype for business applications) and telehealth.

Examinations and assessments have noticeably transitioned to online formats [5,6]. An important advantage of this online learning approach is the possibility of the updating learning content. This approach offers more autonomy for medical schools and educators and more student choice and independence.

Clinical (Patient Contact-Based) Teaching

Clinical exercises may occur partially online. Some medical educators preferred to defer the sessions. A medical student in the clinical environment besides teaching, needs supervision. Because of the contagious pandemic, in a clinical setting students may transmit the virus as asymptomatic or contract the disease. Also, there is a lack of adequate personal protective equipment (PPE) in many COVID-19 emergency hospitals. It is recognized more broadly that medical students receive inadequate PPE training. It is important that medical students be trained in the use of PPE, given the contagious nature of SARS-CoV-2 [7].

Many medical schools removed medical students from hospitals and deferred clinical rotations. Some universities adopted clinical didactic sessions online preparing medical students to follow clinical patient contact experience later. Usually in the clinical years students have been removed from clinical rotations or have their clinical exposure in hospitals considerably reduced. Also, there is the possibility of small teaching groups in person under social distancing requirements. The transition to telehealth environments is very useful in this critical time of the pandemic and students can acquire additional experience and skills. The use of *telehealth* among physicians and medical students is very useful during social distancing. Because physicians begin to use telehealth (video visits, and communication) to contact with their patients, students should be included and trained in this learning environment. It is possible that telehealth will remain after the pandemic as a method of distance interaction [8]. This interpersonal relation results in a better education in parallel with online distant learning. Sustaining high-quality approaches of education for medical students no longer enrolled in the traditional medical school amphitheatres and ward experiences, poses a major challenge for medical educators. There is uncertainty regarding the duration of pandemic with quarantines and social distancing. The fact that COVID-19 pandemic is a critical situation with great demand for health care workers, medical students of last year of education may be absorbed into the workforce voluntarily, developing authentic patient experiences. Thus, they can acquire experience and education in the clinical environment under these circumstances.

Conclusion

It is recognized that COVID-19 pandemic causes a disruption to medical education with unprecedented challenges for the delivery of education to medical students.

This crisis has pushed for an urgent need for innovation. The need for physical distancing during a pandemic has imposed innovative teaching methods. These involve the online-based teaching and telehealth systems. There is also a role for medical students to voluntarily participate to the COVID-19 response under safety conditions. Furthermore continuing education is absolutely necessary for medical personnel and this can be achieved by medical school educators using online teaching platforms. The COVID-19 epidemic may represent a necessary transformation, adapting the medical programs to involve pandemic management training.

Ultimately, medical curricular innovation and transformation have emerged from COVID-19 with new practices to meet future disruptions. This can contribute to a new generation of future doctors well trained to respond to future global infectious disease outbreaks.

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