Disruptions in medical education catalysed by the pandemic

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Abstract
In March 2020, students across the world experienced an unprecedented scenario of having all of their in person classes transition to an electronic platform. This measure was implemented in accordance with the directives of the World Health Organization to reduce the spread of SARS-CoV-2. Medical education has continued to experience a paradigm shift in its manner of delivery, methods of teaching, technology used, definition of classroom and clinical setting, and in how best to meet the needs of the nation's rising students and junior doctors. With the students transitioning back into classrooms, the authors performed a review of literature to understand the effect these disruptions have had on medical education in fostering and inculcating the six core competencies in medical students and residents; In turn interpret its effects on patient care delivered by the future doctors.

Keywords: medical education, virtual learning, Covid-19, disruption

Introduction

On March 17, 2020, the AAMC announced changes in the medical education system in view of the SARS-CoV-2 pandemic declared by the World Health organization (WHO). Since then, medical education has continued to experience a paradigm shift in its manner of delivery, methods of teaching, technology used, definition of classroom and clinical setting, and in how best to meet the needs of the nation's rising students and junior doctors. The effects of the novel coronavirus have been far reaching and are proving to strain every facet of our system, including its effects on medical students and graduates and their resultant pathway into U.S. residency programs. In March 2020, students across the world experienced an unprecedented scenario of having all of their in person classes transition to an electronic platform. This measure was implemented in concordance with what the world had learned previously from the influenza epidemic: social distancing, closing down schools, and ultimately reducing the peak number of cases by reducing the transmission of the virus [1]. As students slowly transition back into the hospital setting after months of backlog or temporarily suspended examinations and exclusively receiving instruction via online and simulated learning. The medical rotations, and conferences were either cancelled, postponed or moved to a virtual medium. We are forced to wonder how these changes are affecting the inculcation of the six core competencies in medical students and residents?

As per the American Medical Association Master file in 2020, International Medical Graduates constitute 24% of the total practicing physicians in the United States [1], and more than 6,000 participate each year in the NRMP Match. How are these changes going to affect the patient care delivered by these future doctors? Furthermore, what can be done to mitigate the effects of these changes and make an improvement in patient care?

Material and Methods

Our research was guided by the question, "the impact the disruption brought by the Covid-19 pandemic has had on Inculcating the six core competencies in medical students and residents".

We searched PubMed, Google Scholar for articles related to "Medical Competencies", and "medical Education", "Covid-19". We only included the articles published in English language, and the ones for which we could access the full manuscripts for. We excluded preprints and non-English language material.

Results

Many educational entities struggled with implementation of changes advised during the pandemic. Some establishments quickly engaged in these challenges, with the help of internal collaborations between the educators and IT departments; they organized live online classes, webinars, online conferences, and created forums for students and teachers to interact with each other. Tech savvy teaching faculty were also found to be exploring different social media, like YouTube channels, Facebook pages, LinkedIn, and Zoom or Skype webinars as means to connect with their students. Also the students used these forums to get together and participate in group study.

During lockdown, all of the traditional study spaces like libraries, study rooms, student centers, parks, and coffee shops were all shut down. All students, including medical and pre-medical students had to master the skills of studying by themselves, becoming problem solvers and more proactive [2]. Students were also forced to become more versatile with different social media and be more innovative in order to thrive academically in their new study environments.

The pressure to perform competitively in the middle of the pandemic was further multiplied by the board and United States Medical Education Licensing Exams (USMLE) being postponed indefinitely. Corona virus Disease 2019 (COVID-19) has provided a context for professionals across the globe to be concerned about one common theme.

There isn't yet a definitive solution for mitigating the medico-socio-economic effects of the pandemic. This provides a rich arena for real time "Problem Based Learning

(PBL)" for the students from different disciplines. Various studies have shown that a PBL approach provides the scope for students to develop a flexible understanding and important life skills [3]. Authors recommend that further studies be conducted to assess how these skills are going to affect the future of patient care and overall healthcare.

Another important event to note is the cancellation of medical conferences. Preparing, volunteering, participating, and presenting in these conferences has been an integral part of medical education. The main purpose of medical conferences is to foster sharing of knowledge on a particular subject matter or area. Apart from helping the students build their resumes, they also provide an opportunity for personal development and interpersonal skills enhancement. The online format of the conferences thankfully do allow for a far reaching and diverse level of participation, especially from IMGs in developing countries. Sethi RK and his colleagues note that virtual format transcends geographical and financial barriers. They note that virtual conferences have their own challenges, for example the participants might be frequently distracted by their personal or professional commitments. They note a 10% increase in participation during the virtual Question & Answer sessions [4]. Some organizers have created multi-room breakout sessions after a presentation. In virtual mode, all the sessions are recorded and available for the participants to view at their convenience. Usually surgeons continue to learn new, advanced techniques through hands-on learning experience and cadaver sessions. The pandemic, social distancing has definitely put a halt to this training format. While the world was in physical lockdown, the strides in disruption, healthcare innovation has been a steep upward curve. Pandemic has provided an accelerated push in the incorporation of technological advancements in healthcare; such as 3D procedural simulation, virtual reality and augmented reality for remote teaching of new procedural skills. This does hold a promise for increased safety, and value in healthcare delivery. In the near future, the conferences will be held either online or in a hybrid format. Sethi RK and colleagues also note that the virtual format of medical conferences has seen an increased participation from other disciplines, fostering more frequent interdisciplinary collaboration, which might facilitate new partnerships and new direction to the research to improve medical care.

Else H mentions COVID cascade in their research publication, stating by December 2020 it is estimated that there will be more than 200,000 articles either in print or preprint. This, according to Elseiver, is a 92% increase in health and science topics compared to 2019 [5].

With all of the professional interactions shifting online, deploying various social media platforms geographical reach is wide spread but there are various challenges. The inherent ones are related to the internet connectivity, or technology related. Pandemic has seen a surge in telehealth, telemedicine. The interactions with patients for most part had transitioned to become contact less. Medical students, externs and graduates have all been forced to learn in non traditional patient care settings. This has its inherent challenges, especially for surgical speciality, also in terms of assessing domestic violence and in terms of maintaining patient privacy (imagine a doctor having to interview the patient who is streaming from their living room). One of the most important components of patient care at any time is empathy and demonstration of compassion by health care professionals towards their patients.

The medical residency training in the United States has been volume and time based training. During the pandemic, apart from the fact that all the non emergent surgeries were cancelled, there has been a stark health care shortage to treat the COVID-19 positive patients. The residents from various specialties have been forced to spend their time triaging and treating COVID-19 patients instead. This certainly is going to bear its impact on the proficiencies of the outgoing board certified specialists in their respective fields. Few residency programs have opted to experiment in the future with competency based training of the residents, instead of the traditional volume based and time based training. Goldhamer MEJ and colleagues explore in their article if COVID is catalysing this transformation. The authors go on to recommend that real time, evidence based assessment of the graduating physicians should be used to plan future medical education courses [6].

Unlike in face to face communication, online email or chat conversations are available at a later time for reference and video calls can be recorded easily for future reference, too. This online medium also provides an opportunity to connect with a wider, more diverse audience. This context emphasizes on responsible precise virtual communication. In case a person is not familiar with an accent, face to face communication provides an opportunity to lip read, but this advantage is compromised during audio only virtual communication. For IMGs, an aspect of the language barrier is the differences in accents. Phonetic reliance accelerates the second language, accent acquisition in adults [7]. Equations to gauge professionalism have altered during the pandemic lockdown.

Virtual interactions have magnified the emphasis on facial mannersims, gestures and sitting posture. We would certainly have to wait and watch the effect this is going to have on the post COVID-19 onsite professional interactions. In short, apart from the emphasis on IQ, EQ medical students, graduates, and IMGs are also required to be proficient in 'Virtual Quotient" (VQ).

Conclusion
Patient care and systems based learning are core competencies which are in constant debate. All healthcare professionals and semiskilled workers involved in direct patient care during the pandemic were called "frontliners". The states which had a steep doctor shortage (including New York and Newjersey) began to consider revoking the licence of recently retired nurses, doctors, speeding up the process of graduating final year medical students and providing temporary licences for the internationally trained medical doctors (IMGs) in the workforce. Mathema S elaborates in his article about different policy changes required at the center, states in liaison with Educational Commission for Foreign Medical Graduates (ECFMG) to involve IMGs in direct patient care. Kelly K and colleagues [8], elaborate how involving Final year students, or IMGs in patient care should be determined only by the healthcare shortage, but it certainly has to take into account if the organization is able to assure their safety by providing adequate personal protective equipments, testing kits and also ensuring that the experience is educative.

We suggest that further longitudinal studies be undertaken to better understand the effect on patient care that the virtual learning methodology has had on this cohort of students. The authors suggest that the findings from these studies could be consolidated to refine medical education. Furthermore, it should be compared with the patient care received from students who graduated in the previous years. We also suggest further studies be done to enhance clinical skills either through simulated labs or by the means of virtual reality.

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Conflict of Interest
The authors declare no conflict of interest.

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