

COVID-19 PANDEMIC

THE IMPACT OF COVID-19 ON UNDERGRADUATE MEDICAL EDUCATION

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ABSTRACT • Coronavirus disease COVID-19 upended the whole world with everyone needing to practice social distancing, and quarantine. These measures affected education in general, and medical education in particular. Educators were faced with the dilemma of protecting the students versus fulfilling the mission of preparing qualified future healthcare providers. In Lebanon, the seven medical schools had to act quickly to set up distance education in response to the requested closure of universities and social distancing measures, in a way that preserves student education despite the challenging times. This paper will focus on the changes introduced to the curricula of the undergraduate medical education programs in Lebanon, involving both the teaching and learning facets and the assessment component at the pre-clinical and clinical phases.

Keywords: medical education; distance learning; COVID-19; Lebanon

INTRODUCTION

During the 20th century, the modern world witnessed three influenza pandemics: the Spanish flu (1918-1919) caused by the influenza A virus H1N1 subtype, the Asian flu (1957-1958) linked to the H2N2 subtype, and the Honk Kong flu (1968-1969) caused by the H3N2 subtype. In the current century, a new H1N1 pandemic resurged in 2009, followed by the ravaging COVID-19 outbreak that the whole world is currently witnessing, affecting more than 8 million subjects worldwide and causing the death of more than 400 000 to date.

On 21 February 2020, Lebanon confirmed the first case of COVID-19 infection when a 45-year-old woman traveling from Iran tested positive for SARS-CoV-2. One week later, in a preemptive step to impede a coronavirus spread among students, Lebanon's Education Ministry issued a circular on the 28th of February mandating a nationwide week-long closure of all academic institutions as the cumulative number of patients who had tested positive was four. In a media statement issued

by the Ministry, Dr Al Majzoub said: "In the interest of the health of students and their families, all educational institutions including kindergartens, schools, high schools, vocational institutions and universities are requested to shut down for a week, between March 1 and March 8 as a precaution against the spread of the disease." A governmental committee dedicated to follow up on the preventive measures against the Coronavirus was formed and extended, on the 6th of March, the closure of schools, universities and nurseries till March 14 over Coronavirus concerns. The committee also ordered the closure of gyms, cinemas, theatres and nightclubs.

On 15 March 2020, Prime Minister Hassan Diab, declared after an extraordinary cabinet session, a state of general mobilization until March 31st, 2020.

He announced a set of additional measures and decisions taken by the government to deal with the emerging Coronavirus COVID-19 outbreak, with the aim of protecting Lebanon and its citizens. All educational institutions would remain closed during this phase. Afterwards, the Lebanese government continued to extend the general mobilization depending on daily numbers of positive tests until May 7, stressing on social separation and preventing gatherings in different public and private places.

The internal security forces and army assisted in ensuring compliance with these measures. Despite the progressive ease of lockdown that was announced starting May 8, schools and universities would remain closed until the 25th of May, until further notice.

COVID-19 AND MEDICAL EDUCATION IN THE WORLD AND LEBANON

Coronavirus disease COVID-19 upended the whole world who turned to the healthcare frontlines, shedding the spotlights on the medical and paramedical professionals, the real soldiers of this "war" against an invisible and highly contagious enemy.

The pandemic forced the earthlings to adopt the same measures irrespective of their residence, gender, nationality, ethnicity, economic standing and educational level. It was everyone's call to practice social distancing, and

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quarantine when prescribed, as only effective weapons [1].

These measures affected education in general, and medical education in particular. Educators and administrators were faced with the dilemma of protecting the students versus fulfilling the mission of preparing qualified future healthcare providers. Most programs, if not all, felt the obligation to replace the “in-person” classes with online equivalents using various websites and platforms. Likewise, the clerkships, crucial for the acquisition of various skills and professional attitudes, were challenged by many factors forcing schools around the world to remove students from the clerkship environment. In March 2020, the Association of American Medical Colleges (AAMC) provided guidelines suggesting that medical schools support pausing clinical rotations for medical students [2].

In Lebanon, the seven medical schools had to act quickly by moving to distance education in response to the requested university closure and the social distancing measures, in a way that preserves student education despite the challenging times.

This paper will focus on the changes introduced to the curricula of the undergraduate medical education programs in Lebanon, involving both the teaching and learning facet and the assessment component at the pre-clinical and clinical phases.

I. Teaching and Learning

A. Large and small group teaching

In compliance with physical distancing safety measures, all medical schools initiated remote teaching to deliver the knowledge that students should normally acquire in preclinical and clinical phases.

To that end, multiple platforms for web teaching were available, namely Zoom, Webex, Microsoft TEAMS and Moodle.

Each medical school used one or more of those platforms to allow a fruitful interaction between the teacher and the students. Through the Web, information efficiently reached large groups of learners; whereas most of the small group events were either deferred or replaced by large group online activities.

Only rarely, small group case discussions occurred on social media tools like WhatsApp.

Frequently, power point presentations were provided with audio or video support; occasionally they were sent by email to students for convenience.

The advantage of online platforms compared to power point presentations and Moodle, is the fact that they allow a live interaction between lecturers and students and provide room for questions and feedback.

B. Clerkships

Clinical clerkships are essential for students to develop the ability to obtain a pertinent history from a patient, perform a proper physical examination, formulate a differential diagnosis and develop a diagnostic and therapeutic plan, develop communication skills when dealing with patients and their families and cultivate a professional relationship with patients, peers and healthcare professionals.

However, the clerkships were challenged by several factors [3]:

- diminished educational value with the cancellation of routine admissions, surgical procedures and outpatient appointments,
- risk that the students contract the disease or transmit it unknowingly to their patients and families,
- lack of universal COVID-19 testing at the start of the pandemic,
- shortage in adequate Personal Protective Equipment (PPE) for the protection of healthcare personnel.

All university hospitals developed COVID-19 units to welcome and care for affected patients. Two hospitals attended more than 50 COVID-19 patients, two hospitals provided care for 10 to 50 patients, and one hospital managed less than 10 patients. Hospital occupancy significantly decreased; 30 to 65% beds were vacant in all university hospitals and medical centers. All hospitals, except one, halted elective surgical procedures and close to 50% of hospitals decreased elective medical admissions.

Consequently, the number of students rotating in various hospital departments was significantly reduced by 40 to 100%. Night-shift duties were cancelled for medical students in most clinical rotations.

To compensate for the lack of clinical encounters, certain medical schools provided students with various online resources that offer supporting teaching material, video resources and virtual sample cases in various disciplines. Examples of such resources include Online-MedEd and Aquifer.

In most university hospitals, students were kept out of the COVID-19 units and therefore, did not participate in the clinical care of any affected patient. This measure was implemented to protect the wellbeing of medical students and avoid putting them at the forefront of this highly infectious disease.

Many students assisted in specialized COVID-19 call centers to guide men and women with any questions and concerns.

Many students also volunteered in awareness campaigns via posters and social media.

II. Assessment

A. Overview

Though online teaching rapidly evolved to provide maximum education to students under coronavirus lockdown, yet the online approach for assessment, particularly for summative assessment, raises some challenges on different fronts: psychological, legal, logistical and ethical.

- *Psychological challenges* mainly related to the mindset of students, faculty and officials living in an unprecedented health and economic crisis; the vast majority were preoccupied by the unknowns of such crisis and felt unprepared for assessment.
- *Legal challenges* related to Lebanese laws regarding distance education or what is defined by the Ministry as “Internet education”. Thus, the law regulating “the higher education” n° 2014/258 has no mention of distance education. In addition, the “Committee for the Recognition and Equivalence of Diplomas” can recognize so-called online certificates or programs only under “very specific” conditions, linked above all to “the proportion of courses authorized to be taught in an online mode” and which should not exceed “a percentage of the total of the courses included in the programs of universities and higher institutes legally recognized”. In addition, the official website of the Ministry of Education and Higher Education states that diplomas issued for completion of programs using “Internet studies” are not eligible for recognition or equivalence.
- *Logistical challenges* linked to several factors such as:
 - The number of faculty and administrative staff needed to complete online assessment, especially tests necessitating one-to-one interaction, and the time necessary to conduct these assessments would be exhaustive and very resource demanding.
 - Performance assessments, testing for clinical performance in the workplace, poses significant challenges for the online approach.
 - The testing site has moved from the university or the workplace to the examinee’s home. This has been associated with many concerns related to proper proctoring (exam security and fairness) and the challenge of stable connection with a proper traffic quota and bandwidth to support videoconferencing. On the other hand, conducting exams on the university premises

was limited by the need to rearrange the physical facilities to accommodate students with proper physical distancing.

- The exam dates had to be [done] within a reasonable time frame as not to affect the cycle of graduation-internship-residency, which in turn would affect the workflow at the hospitals.
- *Ethical challenges* stemmed from the need to maintain fairness, validity and transparency of the assessment in order to make just inferences and preserve patient safety. Such important characteristics of assessment are easily challenged by the online format and the risk of cheating in the absence of sufficient institutional oversight.

Given the complexity of the situation, decisions specific to each school were issued as detailed below.

B. Preclinical phase

Six medical schools practiced online *formative* assessment of student learning using a multitude of online tools (posting of clinical vignettes, feedbacks and others).

Summative exams were delayed at all seven medical schools. Afterwards, two medical schools decided to postpone all summative exams to a later date corresponding to a possible reopening of universities; two other schools made the decision to use online tests; one medical school used online assessment for low-stakes exams and administered high-stakes, onsite tests from various locations involving more than one university campus to respect physical distancing; one medical school adopted the online format for continuous assessment and deferred high-stakes exams to a later date, and one medical school opted initially for partial online assessment and deferral of final exams, to readopt, at a later stage, the full online assessment approach after positive experiences were published.

Regarding the types of assessments and monitoring systems used, some medical schools administered quizzes and multiple-choice questions controlled by an “automated proctoring tool”, others gave homework assignments and projects, and one school adopted “open book tests” without any control program. The first feedback obtained from students was quite positive while waiting for the end of the academic year to further capture and analyze all opinions from students and faculty.

C. Clinical phase

Most medical schools initially opted for postponing scheduled final written exams. After few weeks had elapsed, three medical schools readjusted to perform the exams online using all the available technology to ensure maximal monitoring and security, and one medical school

resumed on-site administration of exams using various locations as stated above for the preclinical phase. The remaining three schools elected to move written exams to later dates when they could administer on-site examinations respecting physical distancing.

Given the difficulty of ensuring safe logistics to perform Objective Structured Clinical Examinations (OSCE) and other forms of in person standardized clinical exams, most medical schools postponed these tests to a proposed date when it would be safe to conduct them on premises. One medical school cancelled these exams, one school postponed them and conducted them in May, and one medical school conducted for the first time an online virtual OSCE for the graduating class while respecting all requirements for distancing.

The clinical evaluation of students' performance in the workplace was completely fulfilled after direct observation using online platforms in five medical schools with a switch to the Pass/Fail grading, while it was postponed till the students resume fully their rotations at two medical schools.

In three medical schools where a thesis is a graduation requirement, students submitted their theses online and assessment was fulfilled using this approach.

CONCLUSION

The impact of COVID-19 was unexpected, quick, and harsh, disrupting all sectors including medical education. Medical educators were faced worldwide, including here in Lebanon, with a disrupted system but not much past experience in tackling such challenging issues. However, with their collaborative efforts, educators have led the rapid creative development and implementation of new methods bypassing problems in curriculum content delivery, clinical placement, adjusting assessment methods, and making up for lost time.

Our seven medical schools were faced with similar problems; however, our advantage as a smaller country is that we were all affected similarly since there was no

regional variations in the spread of COVID-19. While students were quarantined at home, the different medical schools had to find alternative ways to accomplish competency goals and use the remaining academic time wisely upon their return.

Clinical placement for clerkships was particularly challenging since that could not be resolved entirely by an online experience. Many factors came into play such as students' safety, their health care insurance coverage, availability of PPEs, faculty supervision, and availability of PCR testing. All of that was taken into account while trying to keep the students' experiences somewhat uniform and comparable while fulfilling the clinical objectives of each rotation.

Ethical issues came up in terms of exposing students to COVID-19. Definitely, student safety is primordial; however, they need to realize that they are eventually joining a profession where providing care to patients does sometimes require placing oneself at risk. This is a phase where transparency and communication between administrators and students are very important. Both parties should acknowledge stressors and work together in order to find solutions that are suitable for both. COVID-19 remains unpredictable with the possibility of a second wave affecting us later on in the year. Our medical schools will continue to evaluate the situation on a regular basis to make appropriate decisions regarding students in order to continue meeting their educational objectives and proficiencies without compromising their health and safety.

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