

Educating Future Doctors in Covid-19 Times: Anatomists Lead the Way!

To the Editor, *Anatomical Sciences Education*:

We have read, with great interest, several articles published in the *Anatomical Sciences Education* regarding anatomy teaching in the Covid-19 pandemic (Evans et al, 2020; Pather et al., 2020; Smith and Pawlina, 2021) and would like to reflect on the subject.

The Covid-19 (SARS-CoV-2) pandemic ravaged the world, claiming lives, shutting down economies, and affected many aspects of everyday life, including academic education (Bar Ilan University, 2021; Ben Gurion University, 2021). Like most countries, Israel was influenced dramatically by this outbreak. Although the death toll per capita was relatively low, the infection rate was exceedingly high, causing the government to declare several mandatory nationwide lockdowns (Israeli Ministry of Health, 2021), which included the cessation of all face-to-face academic activities. The impact of this decision was predominantly felt in pre-clinical human anatomy courses (Brassett et al., 2020; Harmon et al., 2021; Lemos et al., 2021; Yoo et al., 2021). A key component in early medical education, anatomy is considered one of the most challenging and resource-demanding courses for students, lecturers, and institutions. This is particularly true when considering the practice of human cadaver dissection, with its associated logistical complexity, possible health risks, and need for skillful instructors and knowledgeable faculty members. Although data are not fully available, many medical schools shut down their dissection halls, as part of necessary social distancing requirements, and switched to a virtual teaching platform (Evans et al., 2020; Smith and Pawlina, 2021). This shutdown was coupled, in many cases, with emerging calls to change the dissection-based curriculum to more-cost effective, technological, and chiefly virtual solutions (Evans et al., 2020; Byrnes et al., 2021; Chumbley et al., 2021; Saverino, 2021; Singal et al., 2021). In fact, it is interesting to note that only a handful of published articles have called to continue dissections, contingent on proper adaptations (Carroll et al., 2020; Ross et al., 2021).

The anatomy course at the Azrieli Faculty of Medicine, which usually runs from November to January, is an intensive daily, 10-week course that includes lectures, dissection, and imaging laboratories. Comprising approximately 300 hours, (of which about 100 are devoted to dissections, and 40 hours to radiology) it is by far the most time-consuming course in

the pre-clinical curriculum. Student assessment is performed through two theoretical and two practical examinations, at the middle and end of the course, respectively. Over the last five years, student course assessments averaged a 3.40 on a five-point Likert scale, which was slightly higher than other pre-clinical courses in the Azrieli Faculty of Medicine. Prior to the start of the academic year, in August 2020, the course directors took a decision, together with the faculty academic administration, to preserve as much of the regular course outline as possible, including dissections and small group imaging sessions. The decision was approved by the Azrieli Faculty of Medicine and Bar Ilan University, under the guidance of the Israeli Council for Higher Education (CHE, 2021). This unorthodox choice was not merely a scholastic decision. As we strongly believe, pre-clinical courses are more than solely the description and memorization of parts of the human body and a list of diseases. They are part of the “hidden curriculum,” the first step in building a doctor’s professional identity, which is as important as the transfer of knowledge (Netterström and Kayser, 2008; Ghosh and Kumar, 2019; Pawlina, 2019). The current crisis, brought on by the Covid-19 pandemic, allowed teaching faculty to come up with bold ideas and project them to students, which serves as a strong lesson in leadership (O’Connell and Pascoe, 2004; Ghosh, 2017; Smith and Pawlina, 2021).

Consequently, while lectures became virtual, dissection and imaging laboratories were continued in person, in a pre-Covid-19 fashion. This required three major adaptations: (1) all laboratory practitioners, students as well as instructors and faculty members, were required to be fully protected, as it would be impossible to adhere to social distancing protocols (i.e., distance between students and the total number of students and faculty per room). This meant that vital protective gear, in accordance with Center for Diseases Control and Prevention (CDC, 2020) and local authorities’ guidelines, was provided by the faculty, to all personnel attending the laboratory, including: (1) disposable N95 respirators (per laboratory member, per dissection), which gave full protection to the wearer, but no protection to surrounding personnel. Thus, all laboratory attendees had to wear them throughout the laboratory session. (2) Facial protection visors, per laboratory member, which were sterilized after each laboratory. These were personal and students took them to other activities outside the dissection hall, such as imaging laboratories. (3) Disposable personal protective equipment (PPE) such as laboratory coats, disposable gloves, and an abundance of hand sanitizing solutions, which were also provided by the faculty. (2) Students needed to remain in assigned small groups of 15 throughout the entire course and laboratory sessions, in order to minimize the possibility of exposure, in the event an individual was diagnosed as Covid-19 positive or displayed symptoms. Usually, all 75–80 students attend the laboratory in a single open space, with 7–8 students dissecting a donor. This year, in

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order to maintain dissecting skills and the important ethical and emotional connection to the donor (Kissler et al., 2016; Goss et al., 2019), the same number of donors was maintained, so that each dissecting group conducted the full laboratory as in previous years. With 75 students in the current class, this meant that the same dissection was repeated five times and dissection practical examination had to be repeated five times, twice throughout the course. Furthermore, this meant that, on many occasions, faculty members had to spend days and nights preparing for upcoming dissections. (3) Normally, about five faculty-trained second and third-year near-peer student-instructors (NPI) are employed, to work alongside the regular faculty (Dickman et al., 2017), but considering the immense amount of dissection hours needed, this would interfere with the NPIs' own studies. Consequently, 15 NPIs were recruited to allow for ten hours of work per dissection day, with rotating students and instructors, while faculty members were present throughout the day.

Although a handful of students had to go into mandatory isolation after been exposed to Covid-19 positive patients outside the faculty, none of the students developed symptoms or tested positive for Covid-19. Fortunately, toward the end of the course, most students, NPIs, and faculty were vaccinated for Covid-19, thanks to a national decision to vaccinate medical students together with all healthcare professionals. The class average grade was 84%, about the same as previous years, indicating that the high scholarly level was not compromised. Students, however, were extremely appreciative and the overall course assessment was a 4.66 on a five-point Likert scale, which is higher than previous years.

The success of the course this year would not have been possible without the combined efforts of students and faculty: the mutual understating and perseverance by student-learners as well as NPIs and teachers; the trust the Faculty of Medicine administration gave anatomy course directors, and the necessary capital provided for protective gear and extra NPI labor. In the anatomy profession, there is a saying that the dead teach the living “*Mortui Vivos Docent*,” and although this is very true, students should also learn leadership from faculty members. Endurance, perseverance, and resourcefulness are as important as scholastic knowledge and are needed in every healthcare profession. Let us not forget that medical school is about educating future doctors. It is our obligation to set the example of what we expect from them.

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