needs to be promptly recognized and treated for better patient outcome.

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Dermatology residents and COVID-19: life behind the frontlines

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The Coronavirus Disease 2019 (COVID-19) pandemic outbreak in Italy completely changed patient access to healthcare systems and therefore the doctor–patient relationship, particularly during the national lockdown (11 March−18 May). Strict measures were implemented at our Dermatology Unit (University of Bologna) in order to prevent presymptomatic and asymptomatic transmission of the causative virus, severe acute respiratory syndrome–coronavirus-2 (SARS-CoV-2[1]) between and among patients and medical personnel. This situation dramatically changed our daily hospital-based activities: the number of both outpatient visits and surgical procedures was drastically reduced, as only urgent and oncological visits were allowed.[2] Furthermore, a new system of teledermatology consultations for most of the noncritically ill patients in COVID-19 wards and intensive care units was implemented, similar to those applied in other countries.[3]

The reorganization of our unit had a particularly heavy impact on medical residents. Although dermatology residents were not redeployed to support the overburdened COVID-19 wards, their training was disrupted in many ways. The reduction of outpatient visits and elective surgical procedures, the cancellation of in-person academic activities (teaching seminars and conferences), and the postponement of clinical rotations between the different hospitals within our region were the main challenges faced by our residency programme. These pandemic-related problems were also observed in other hospitals and medical specialties, highlighting a dilemma that unites all the affected countries.[4]

Furthermore, residents were forced to observe stricter social distancing measures than those followed by the general population, placing a significant strain on residents' well-being and morale.

Since 18 May, the outpatient activity of our Dermatology Unit has recommenced, as the SARS-CoV-2 pandemic in Italy seems to be slowing down. Nevertheless, in-person academic and teaching activities are still suspended, and it is likely that the aforementioned difficulties will persist in the coming months. Nationwide recommendations regarding this crucial aspect of the Italian National Health Service have not yet been issued; nonetheless, several innovative solutions have become available, including virtual classrooms with online questions, academic teleconferences, telehealth outpatient clinics and the development of surgical videos.[5]

However, despite these difficulties, the 16 dermatology residents from our University Hospital in Bologna increased their scientific production over the past few months. Since 1 March, 23 scientific papers written by our staff were accepted by international journals, and an additional 28 are currently under review, several of which concern the COVID-19 pandemic. Both the interest in investigating SARS-CoV-2 from the dermatological point of view and the greater time made available because of the reduction of clinical work played an important role in stepping up their productivity.

In conclusion, a great deal of flexibility was and will be required from medical residents during this unprecedented pandemic due to the working, academic and personal adversities. However, not all changes are necessarily bad, and the past few months have highlighted the possibility of increasing residents' scientific production by providing them with more time to focus on this task.

Collaboration between residency programmes and medical organizations will be key to maintaining high-quality clinical education and to achieve a new balance in the aftermath of the SARS-CoV-2 pandemic.

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Learning new ways of teaching and assessment: the impact of COVID-19 on undergraduate dermatology education

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COVID-19 has resulted in unprecedented global disruption. As this global pandemic persists with no end in sight, its impact on undergraduate medical education must not be ignored.

Dermatology undergraduate exposure is variable, limited and often suboptimal. It has been shown that medical students and qualified doctors are not adequately confident in their ability to assess and manage skin conditions, and many feel that their undergraduate dermatology teaching was not satisfactory.[1,2] In addition to curriculum requirements, it is important to introduce medical students to the field of dermatology, in an effort to promote career interest in our specialty.

In March 2020, Irish universities were closed and clinical rotations suspended. This presented educators with an immediate need to adapt our teaching methods to limit the negative impact on undergraduate dermatology exposure. We report our experience of undergraduate dermatology teaching during this extraordinary time.

We adopted the platform Microsoft Teams to deliver online teaching to medical students. This collaboration tool facilitated video lectures with active student participation, real-time discussion and document sharing. Teaching sessions included didactic lectures, interactive tutorials, and student-led case and topic presentations.

Remote assessment is challenging, as all online assessments from home are essentially open-book. We sought to devise a rigorous tool to assess students' dermatology knowledge. We designed an online 30-question multiple-choice examination using the online learning management platform Canvas, with each question based on a clinical image. We felt that the use of clinical images would offset any potential benefit of additional information resources available to students in the home environment, and a maximum time of 30 min was allocated to complete the examination. Students were allowed to take the examination in any 30-min period during a 24-h window, in order to accommodate time differences for overseas students, who had returned home upon closure of the universities.

Studies have demonstrated that university students have experienced increased symptoms of anxiety and depression due to the COVID-19 pandemic, which may in part be attributable to the effect on their studies.[3,4] In an effort to alleviate anxiety related to their dermatology rotation, we allocated a specialist registrar in dermatology as a point of contact, and encouraged students to reach out with any concerns related to their rotation.

On reflection, we successfully substituted scheduled in-person teaching and assessments with online alternatives, but did not implement a suitable alternative to clinical patient interaction. As we slowly return to a 'new normal' with video consultations, virtual clinics and a gradual increase in in-person consultations, we must consider how best to incorporate our dermatology students into this new clinical setting. Social distancing is likely to dictate our practice, with a significant impact and reduction in clinical rotations likely for the months and potentially years ahead.

In addition to our current teaching methods as outlined above, we will invite medical students to participate in our virtual weekly journal club, and departmental clinical and multidisciplinary meetings, which are now established online. We plan to upload short videos on Canvas demonstrating surgical techniques and procedures. We also plan to develop dermatology podcasts for medical students. In order to protect the invaluable experience of patient encounters while facilitating the requisite social distancing, participation of medical students in video consultations and virtual patient visits via online applications will also be explored.

While virtual learning cannot replace hands-on clinical experience and patient exposure, the unique circumstances of COVID-19 have promoted innovation in medical education. We must continue to develop alternative

