

# Impact of COVID-19 pandemic on dermatology practice: a review of two years of experience

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Since December 2019, coronavirus disease 2019 (COVID-19) has been considered a major health issue. Even in the initial days of the pandemic, dermatologists faced several challenges in preventing, diagnosing, and treating COVID-19. Like other physicians, dermatologists encountered several ethical issues. Dermatologists have served a significant role as front liners, focusing on the cutaneous manifestations of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. The COVID-19 pandemic affected medical practice significantly. Due to the health emergencies caused by SARS-CoV-2, medical students' education, patients' prioritization, care, and cosmetic procedures were affected. Additionally, new strategies were devised to reduce the risk of transmission. This review article examines the effects of the COVID-19 pandemic on dermatology practice. We reviewed 33 articles following a search of the PubMed and Google Scholar databases for articles studying how COVID-19 affected dermatology practice.

**Keywords:** dermatology, COVID-19, ethical issues

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## INTRODUCTION

Since December 2019, coronavirus disease 2019 (COVID-19) has been considered a major health issue <sup>1</sup>. Even in the initial days of the pandemic, dermatologists faced several challenges in preventing, diagnosing, and treating COVID-19. Dermatologists have served a significant role as front liners, focusing

on the cutaneous manifestations of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection <sup>2</sup>. Like other physicians, dermatologists encountered several ethical issues. First, after the lockdown, many dermatology clinics, including academic centers, were closed, and only patients with emergency conditions were referred to skin

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clinics<sup>3-5</sup>. Lasers and other cosmetic procedures were banned in many countries to reduce the virus transmission rate<sup>5</sup>. Due to the recommendation to reduce the number of patients referring to medical centers, the use of telemedicine increased during the pandemic. Teledermatology, as a valuable tool of risk-free counselling with no transmission of infection, provided an opportunity to manage patients with skin problems and educate residents<sup>6</sup>. It can also be said that the pandemic affected dermatology residents in various ways, such as their clinical practice and occupational life<sup>7</sup>.

In this review article, we intended to study the effects of the COVID-19 pandemic on dermatology practice, including residents' education and careers, patient prioritization and care, cosmetic procedures, and teledermatology.

## METHODS

We completed a search of PubMed and Google Scholar using related keywords and MeSH terms. Additionally, the references cited in each study were evaluated to find relevant studies and reports. We included clinical trials, prospective/retrospective observational studies, case reports, and case series that evaluated the impact of the COVID-19 pandemic on dermatology practice.

## RESULTS

### Pandemic effects on residents' education and other educational and psychological aspects

The COVID-19 pandemic has affected the typical residency phase in a variety of ways; some of them may never go back to what they were before. Residents' emotional and mental health and educational programs were affected<sup>7</sup>.

An article revealed high anxiety for board exams due to the COVID-19 pandemic in 84% of 3<sup>rd</sup>-year dermatology residents. In one study, 234 surgical residents were evaluated by a questionnaire detecting generalized anxiety disorder (GAD), for which half were positive. In addition, experiencing anxiety was highly associated with the male gender<sup>8</sup>. There is a lack of information in the field of dermatology. Moreover, all emergency department shifts and education methods have changed because of clinical limitations during this pandemic<sup>7</sup>.

The pandemic disrupted the typical educational

curriculum of residency, and residency programs are adapting to this novel environment using online learning strategies and virtual learning tools. Classes and other meetings took place in Zoom, WebX, Microsoft Team, and other video conference applications. Asynchronous education has also become more popular due to the pandemic<sup>9</sup>.

To better understand this issue, we will refer to the changes in the university curriculum and give examples of them. In a hospital in Milan, educational courses of residency were rearranged; classes were canceled, and scientific activities were recommended to continue at home<sup>10</sup>. One hospital in Italy held all lessons for medical students online and reduced all medical staff shifts<sup>11</sup>.

Dermatology is a visually oriented specialty; this factor helps the success of these new education tools<sup>12</sup>.

### Pandemic effects in the field of giving priority to the patients

To restrain the spread of COVID-19, it was recommended to halt non-emergent dermatology clinical visits<sup>13</sup>. Several dermatological consulting rooms and hospitals were completely closed throughout the pandemic to reduce the risk of virus spread by avoiding patient crowding and decreasing health resources (e.g., personnel)<sup>11</sup>. For instance, several non-essential visits and surgical procedures were deferred in the Dermatological Clinic of United Hospitals of Ancona<sup>13</sup>. Even though necessary services and facilities related to oncology persisted<sup>3</sup>, outpatient services were decreased, and it has not been life-threatening because merely a few severe skin diseases can place the patients' lives in danger<sup>14</sup>.

The idea of screening patients before their schedules for those with high temperatures is unsatisfactory because of the asymptomatic viral transmission. Additionally, the incubation time is long<sup>15</sup>. Managing to decrease the number of outpatient visits from 1000 to 100 patients weekly during the COVID-19 pandemic is appropriate<sup>10</sup>.

One study demonstrated that the fundamental questions of the patients in the course of the pandemic were: "When can I come back to visit without taking risks? How can I get my medicines? How can I contact you if I need to? A new lesion appeared... can I send you a photo?"<sup>16</sup>.

It can be said that priority should be given to

patients of older ages and those with severe life-threatening conditions such as mycosis fungoides or other skin cancers<sup>11,17</sup>.

As a final point, the following strategies should be devised during infectious disease outbreaks:

1. All elective outpatient appointments should be canceled.
2. Essential outpatient visits must be continued (including surgical procedures for invasive malignancies).
3. Physicians at health risk (e.g., those aged 60 or above; immunocompromised or pregnant physicians) should not conduct in-person visits.
4. Trainee exposure (residents/fellows) should be diminished.

### **Pandemic effects in the field of cosmetic procedures**

Before the COVID-19 pandemic, dermatologists flourished in cosmetic procedures<sup>18</sup>. It can be said that the COVID-19 pandemic also affected these procedures<sup>4</sup>. Some cosmetic procedures, such as skin biopsy, have a high priority even during a pandemic, while others have a low priority<sup>19</sup>. At the beginning of the worldwide spread, all of these procedures were canceled by calling the patients and postponing their appointments<sup>5,3</sup>. Additionally, dermatology clinics were reduced, and laser clinics were closed<sup>4</sup>. Moreover, the safety of resurfacing lasers and procedures in dermatology became doubtful, considering the risk of COVID-19 transmission<sup>20</sup>.

In contrast, diagnostic biopsies of all skin malignancies, precancerous skin abrasions, and possibly fatal dermatological disorders (e.g., autoimmune bullous dermatoses) continued for diagnostic or staging purposes<sup>21,22</sup>. Considering the desire for cosmetic procedures inhibiting aging, especially among women, preventing patients from visiting unlicensed illegal centers was necessary during the pandemic<sup>23,24</sup>. Gaining control over the pandemic facilitated a reduced need for strict lockdown measures, meaning that medical clinics with elective procedures are expected to continue their work<sup>20</sup>.

Finally, teledermatology allowed access between patients and physicians despite the decreased availability of dermatological clinics throughout the COVID-19 pandemic<sup>25</sup>.

### **The pandemic's effects on teledermatology**

Dermatology on the clinical scale faced a dramatic barrier because of COVID-19, though clinical efforts continued in different paths.

Teledermatology has made it possible to meet patients' needs risk-free of COVID-19 transmission<sup>4</sup>. Telemedicine is "the utility of digital information and communication technologies to meet the requirements of patients in the health field, in case of distance segregating health care experts from their patients." Formats like images, texts, audio messages, and videos can be used to share essential data needed to make clinical judgments<sup>26</sup>. There are two types: synchronous and asynchronous. The first is a live interactive consultation (video call) in which the patient and physician can interact simultaneously. On the other hand, the latter is based on a store-and-forward system: patients' medical information is stored and then reviewed later by a medical provider<sup>27</sup>. One study implied that combining store-and-forward with live interactive approaches usually enabled a better evaluation of patients' concerns<sup>28</sup>.

Deciding the best platform to launch telemedicine, one has to consider security, cost, accessibility, and speed. Different options exist, like Skype, WhatsApp, Zoom, Google Meet, and Telegram. Video calls allow live consultations, though some health experts may prefer to respond to the patient's concerns at a time of their convenience<sup>29</sup>.

New concerns usually emerge when introducing a change in any system, and telemedicine is no exception. As mentioned, in the field of medicine, ethical and legal considerations are a must. There must be a mutual understanding of privacy codes between the physician, the platform provider, and the patient. Furthermore, there is a lack of a verified legal guideline for telemedicine, putting weight on the shoulders of governments to create directives like Directive 95/46/European Union, General Data Protection Regulation (GDPR), Directive 98/34/EU, Information Society Services Directive, Directive 2000/31/EU, the directive on electronic commerce, directive 2002/58/EU, the directive on privacy and electronic communication, and directive 2011/24/EU, specifically for telemedicine. Some country-based protocols exist, like Italy's Ministry of Health Guidelines on Telemedicine, issued in 2010<sup>16</sup>. Nonetheless, a need for worldwide standards and

more detailed guidelines is felt. Another concern that has been raised is malpractice in telemedicine, so it is advised that a course be designed to teach physicians how to approach patients in telemedicine and practice in a way that keeps patients' information confidential and secure <sup>25</sup>.

Another aspect to consider is the patient's perception of this new route and their satisfaction. Mostafa *et al.* conducted a study, and after analyzing both synchronous and asynchronous teledermatology via questionnaires, they claimed that there was satisfaction in general, with a forthcoming usage score between the interviewed patients of 91.0%, a usefulness score of 93.7%, interface and interaction value scores of 85.9% and 87.0%, ease of use and learnability score of 87.8%, and a reliability score of 86.7% <sup>30</sup>.

There is a dark side, of course, and limitations come with teledermatology, such as the lack of a compensation system that can be relied. The newly formulated policies from the Centers for Medicare and Medicaid Services (CMS) and participating private payers partially alleviate this problem, but many will offer coverage for a limited time (i.e., 90 days or until mid-June). The impact of these policies on patient-provider expectations for continued telehealth care is still ambiguous. Other than that, institutions may be unable to provide the infrastructure or technology required to implement teledermatology. Also, physicians and patients may undergo challenges using this technology. Patients will need accurate and down-to-earth supervision before virtual appointments. Even with accurate instruction, patients may struggle to show lesions correctly, and visits may lag due to technological malfunctions and bandwidth restrictions. Using "virtual in-person visits" in tandem with "store and forward" formats helps overcome these challenges, but dermatologists may face workflow disruptions <sup>31</sup>.

Based on the data provided, the positive functionality of teledermatology is evident, meaning that even after this pandemic, parts of this modality will remain in our lives and will never be the same as in the pre-COVID-19 era <sup>32</sup>.

## CONCLUSION

COVID-19 had a colossal effect on dermatology practice. Though we cannot say that this condition

will have a long-lasting impact on some aspects of dermatology practice, such as virtual education and cosmetic procedures, teledermatology is becoming a crucial tool and is here to stay.

## Authors' contributions

FA wrote the manuscript. LO and SS wrote and corrected the manuscript for its scientific basis. RMR collected the data for the study. SD revised the manuscript for grammar and syntax mistakes. All authors read and approved the final manuscript.

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