

US Dermatology Resident Responses about the COVID-19 Pandemic: Results from a Nationwide Survey

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Objectives: The coronavirus disease 2019 (COVID-19) pandemic has drastically changed resident training in the United States. Here, we explore the early perceived effects of COVID-19 on dermatology residents through an electronic sample survey and identify possible areas for targeted improvement in lieu of a possible second wave of COVID-19 cases.

Methods: On April 3, 2020, a survey of link with 25 questions was sent to dermatology program coordinators to be disseminated among dermatology residents in the United States. The survey was closed on April 13, 2020. All of the questions were optional and no personal identifiers were collected.

Results: A total of 140 dermatology residents from 50 different residency programs across 26 states responded to the survey. The majority of respondents (85%) reported negative effects of COVID-19 on their overall wellness. Despite the majority of residents (92%) speculating that COVID-19 will have negative long-term effects on the US economy, only 33% agreed or strongly agreed that it will affect their job prospects. Teledermatology was widely implemented following the declaration of a national emergency (96% of represented residencies compared with only 30% before the pandemic), with heavy resident involvement. The majority of residents (99%) reported having virtual didactics and that they found them to be beneficial. Most residents were uncomfortable with the prospect of being reassigned to a nondermatology specialty during the pandemic. In addition, 22% of residents believed that their leadership were not transparent and prompt in addressing changes relating to COVID-19.

Conclusions: Dermatology residents were affected negatively by COVID-19 in regard to their well-being, clinical training, and education.

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Several areas of improvement were identified that could improve our preparedness for a second wave of the virus.

Key Words: COVID-19 response, dermatology resident response education, online education, teledermatology

Across the United States, coronavirus disease 2019 (COVID-19) has resulted in significant changes in daily living and clinical practice, particularly after being declared a national emergency on March 13, 2020.^{1,2} In this survey study, we aimed to assess US dermatology residents' experiences and perspectives on the pandemic, with a particular focus on how it has affected their well-being, education, clinical duties, and prospects for the future.

Methods

Dermatology residency program coordinators were asked to disseminate an online survey to residents.³ In addition, the survey link was posted to a private dermatology resident group on Slack (a social networking platform). Institutional review board approval was obtained. Informed consent was obtained from participants before initiating the survey. The survey included 25 questions delivered via multiple choice, multiple selection, and open-ended questions.³ The number of respondents to each question varied (all of the questions were optional). For one question regarding

Key Points

- Many dermatology residency programs were slow to close outpatient clinics despite the declaration of coronavirus disease 2019 as a national emergency; however, most programs quickly started to involve residents in teledermatology and continuing clinical education through virtual platforms.
- Most participating dermatology residents were not reassigned to nondermatology duties such as inpatient medicine, the emergency department, and the intensive care unit.
- Dermatology residents believe that coronavirus disease 2019 has negatively affected their well-being, education, and prospects for the future.
- Most graduating residents do not want their board examinations to be postponed to a later date because it may interfere with their work commitments.

wellness, participants were asked to rank on a scale of 0 to 9 how the pandemic affected their overall well-being, with 0 being the most negatively affected and 9 being the most positively affected. Otherwise, a Likert scale was used to assess participants' responses to 14 questions on a 5-point scale: answer choices ranged from "strongly disagree," "disagree," "neutral," "agree," to "strongly agree." Answer choices were tallied and presented as raw numbers or the percentage of total responses for the particular question. Subgroup analysis was performed based on postgraduate year (PGY) using the Mann-Whitney *U* test at a significance level of 0.05 the complete survey may be viewed at Supplemental Digital Content (<http://links.lww.com/SMJ/A192>).

Results

From April 3, 2020 to April 13, 2020, 140 surveys were completed by residents from 50 residency programs across 26 states (Table). According to the 2020 National Resident Matching Program data, 478 dermatology residency spots were offered across

137 programs, suggesting that there are approximately 1434 dermatology residency positions nationwide.⁴ The survey was sent to programs through the program coordinators' e-mail listserv and to dermatology residents in a Slack group; thus, the response rate is estimated to be 10% of all of the dermatology residents. Twenty (14%) participants chose not to disclose their program. When asked how the pandemic affected their overall well-being, 119 of 140 (85%) residents reported that they were affected negatively. The majority (92%) of participants agreed or strongly agreed that COVID-19 will have negative long-term effects on the US economy (Fig); however, most participants (67%) were neutral or disagreed or strongly disagreed regarding whether this would affect their ability to secure a job after graduation, although PGY-3 and PGY-4 participants were statistically more likely to be concerned as compared with PGY-2 ($P < 0.05$) participants. Following the declaration of a national emergency on March 13, 2020, 60% and 56% of respondents reported that their departments stopped all nonurgent/nonemergent surgeries and outpatient clinics by March 16, 2020, respectively. Subsequently, residents from 48 of 50 (96%) residencies reported that their department offered tele dermatology, as compared with 15 of 50 (30%) pre-COVID-19. The majority of residents (67%) were comfortable using tele dermatology; however, most (59%) did not believe it should be used for the bulk of nonprocedure visits in the future. The majority of residents were not comfortable with the possibility of being reassigned to inpatient floors (62%), the emergency department (ED; 74%), or the intensive care unit (ICU; 84%) (Fig). PGY-4 but not PGY-3 residents were more uncomfortable with being reassigned to the ED compared with PGY-2 residents ($P < 0.05$). No statistical difference was found regarding PGY year and level of comfort in being reassigned to inpatient floors or the ICU. Notably, most respondents (83%) from 41 of 50 (82%) programs were not reassigned to nondermatological healthcare activities at the time of response. Of the deployed residents, 9 of 24 (38%) were comfortable with their new duties. Overall, dermatology residents continued to be involved in clinical duties via participating in tele dermatology visits (77%) and dermatology consults (73% seen with an attending present, 27% seen without an attending present). The majority thought that COVID-19 affected their education, as 126 of 140 responders (90%) reported feeling that their education was negatively affected by COVID-19, although the majority (92%) believed that remote learning was useful overall. Residents were equally concerned about the effects of COVID-19 on their education and well-being, independent of PGY. In regard to satisfaction with departmental leadership transparency, a large subgroup of residents (22%) did not believe that their departmental leadership was transparent and prompt in addressing changes related to COVID-19. Regarding board examination, 47% of PGY-4 residents preferred not to delay it; however, many suggested that an online board examination would be more suitable given the risk of large-group gatherings and also cited concerns about taking the boards after starting a job.

Table. Characteristics of participants who completed the online survey

Characteristics	No. (%)
Age, y (average \pm SD)	31 \pm 3
Sex, female (n = 140)	95 (68)
Race/ethnicity (n = 136)	
White	100 (74)
Black/African American	8 (6)
Asian	23 (17)
Other	5 (4)
Relationship status (n = 139)	
Single	33 (24)
Dating	22 (16)
Married or common law	83 (60)
Divorced	1 (1)
No. children (n = 140)	
0	111 (79)
1	18 (13)
≥ 2	6 (4)
Year in residency (n = 140)	
PGY-2	43 (31)
PGY-3	38 (27)
PGY-4	59 (42)
Setting of residency (n = 139)	
Urban	103 (74)
Suburban	10 (7)
Rural	2 (1)
Mixed	24 (17)

Because all of the questions were optional, the total number of respondents per question varied for the demographics section. PGY, postgraduate year; SD, standard deviation.

Discussion

In this convenience sample survey, the effects of COVID-19 on dermatology residents' well-being, education, and outlook for the future were investigated. Overall, residents reported that the pandemic negatively affected their well-being and education. This is unsurprising and likely reflects the present situation of residents across specialties. Dermatology residents reported that alternative methods of education (ie, online learning and teledermatology) were implemented and beneficial overall. Specifically, they found virtual lectures in medical dermatology, dermatopathology, and board-review questions to be high-yield methods. This suggests that future didactic education could be moved to virtual platforms, which would better facilitate interinstitution collaboration and knowledge exchange. In addition, this would allow residents who are off-site to gain access to didactic education. Furthermore, although the majority of residents (58%) reported that their program director or chairperson was transparent in providing them with COVID-19-related updates, a large subgroup of respondents (22%) disagreed or strongly disagreed, whereas 20% remained neutral toward this statement. It will be important to further improve transparency and communication between leadership and residents given the uncertainties still ahead. In addition, many programs were slow in closing down nonessential outpatient clinics and canceling nonurgent procedures, which would be an important area to rectify in the event of a second wave of COVID-19 infections. In this regard, it is important to underscore that Medicare has removed many restrictions on evaluation and management codes, and thus virtual and in-person visits are paid at the same rate.⁵

Overall, dermatology residents reported being uncomfortable with the idea of performing nondermatology tasks. Most dermatology residents complete only 1 year of general medicine, transitional year, or surgical training before entering 3 years of dermatology-specific training. Some dermatology residents have never practiced within an ED or ICU. In this survey, PGY-4 residents were less comfortable with being reassigned to the ED as compared with PGY-2 residents. This is perhaps because junior residents more recently completed their medical internship compared with graduating residents. Despite resident concerns regarding deployment, only a small proportion of respondents were reassigned to other medical duties. If the need for medical deployment grows, then it is crucial to provide subspecialty residents and fellows with appropriate training well in advance. As such, a proactive approach would include starting training courses and inpatient care refreshers as soon as possible to avoid similar chaos in case a second wave of COVID-19 infection occurs.

There are several limitations to this study. Given that convenience sampling was performed, the results of this survey may not be generalizable. Also, it is unclear whether all of the program coordinators were able to distribute the survey link or whether they were able to do so within the survey timeline. Moreover, comments from several anonymous residents reported feeling intimidated about the possibility of being identified by their programs and facing subsequent repercussions. This also may have affected the response rate. The overall response rate for this study was 10%, which is similar to that of previous studies published in the dermatology literature.⁶⁻⁸ The pandemic is rapidly changing and this survey was distributed during the early stages

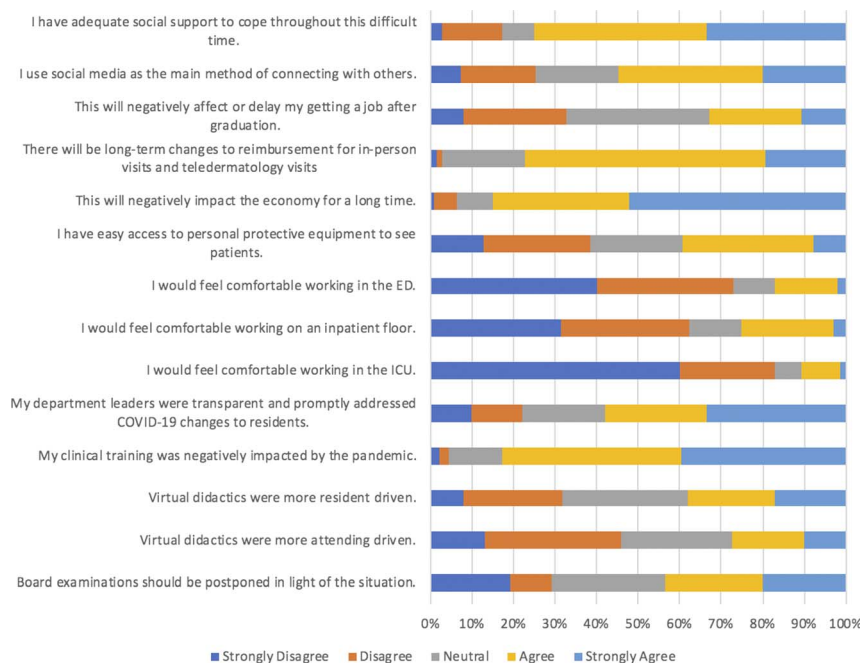


Fig. Dermatology residents' response to the coronavirus disease 2019 pandemic ranked on a 5-point scale. Participants were asked to choose one of the following: strongly disagree, disagree, neutral, agree, or strongly agree. COVID-19, coronavirus disease 2019; ED, emergency department; ICU, intensive care unit.

of COVID-19. Nonetheless, these results can help us understand how the pandemic has thus far affected dermatology residents and how to better prepare them for a possible second wave of COVID-19 cases. A follow-up survey regarding later perceptions of the pandemic a few months from now may provide additional insights.

Conclusions

Dermatology residents were profoundly affected by COVID-19 in terms of their well-being and education; however, multiple learning opportunities were identified, such as the benefit of the institution of Web-based lectures and teledermatology. To improve and optimize conditions in the event of a new wave of COVID-19 cases, refresher courses for the ED, inpatient floors, and the ICU should be implemented for dermatology residents and other subspecialty residents.

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