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# The Impact of the COVID-19 Pandemic on Global Health Dermatology



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## KEYWORDS

• COVID-19 • Global health • Dermatology • Pandemic • International

## KEY POINTS

- The COVID-19 pandemic has affected patient care, research, education, and collaborations worldwide in dermatology.
- Many of the challenges that have arisen during the pandemic highlight inequalities and structural vulnerabilities that existed before COVID-19.
- Dermatologists around the world are working to adapt and innovate to overcome obstacles and to create more robust, sustainable systems that will benefit the field for years to come.

## BACKGROUND

Skin disease is one of the most common human illnesses worldwide, affecting up to 70% of people.<sup>1</sup> Individuals living in resource-poor settings with limited access to health care face even higher rates of skin disease. Collectively, these diseases are a leading cause of morbidity across the globe and have been shown to result in more years lost because of disability than such diseases as diabetes mellitus, asthma, migraines, and chronic obstructive lung disease.<sup>1</sup> Additionally, skin conditions are among the most common reasons for presentation to a primary care setting and can serve as a valuable entry point into the health care system for individuals otherwise unlikely to seek care. The appropriate diagnosis and management of dermatologic disease can prevent physical disability, psychosocial distress, and even mortality.

Despite the significant global burden of skin disease, there is a critical shortage of dermatologists worldwide and the field is currently unable to meet

demand for the care of these conditions, particularly in at-risk populations.<sup>2,3</sup> Global health dermatology is dedicated to addressing these health care discrepancies between and within countries to improve skin health for vulnerable populations worldwide. This growing community of dermatologists aims to reduce the global burden of skin disease through direct patient care and involvement with health policy organizations, research, and education of trainees domestically and abroad.<sup>4,5</sup>

In December 2019, the city of Wuhan in China identified a series of unexplained cases of pneumonia. This disease rapidly spread throughout China, followed shortly thereafter by an increasing number of cases in countries throughout the world. It is now known that this illness, designated COVID-19, is caused by a novel coronavirus, named SARS-CoV-2. At the time of this article, more than 150 million people have been infected with SARS-CoV-2 and more than 3 million have died. In addition to its direct impact on morbidity and mortality, the pandemic has also placed tremendous strain on health, economic,

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educational, and food systems, leading to a myriad of downstream consequences. Although the scope of the indirect effects of this pandemic cannot yet be fully grasped, it is already evident that vulnerable populations are suffering disproportionately because of such factors as poverty and socioeconomic disparities,<sup>6,7</sup> and that the care of patients with noncommunicable diseases has been markedly disrupted.<sup>8</sup> These effects have greatly impacted global health programs, collaborations, and projects.

In this article, we discuss some of the ways the COVID-19 pandemic has impacted global health dermatology. We surveyed more than 20 global health dermatologists via email and informal interviews, including dermatologists in the United States and Europe with various international collaborations, and dermatologists currently working in other regions of the world. In doing so, we gained insights into how COVID-19 has impacted patient care, control of neglected tropical diseases (NTDs), collaborations, education, and telemedicine across six continents, including programs in Botswana, China, Ethiopia, Fiji, Guatemala, Kenya, Mali, Nepal, Peru, Tajikistan, and Uganda.

### IMPACT ON DIRECT PATIENT CARE

With most global health care resources focused on the COVID-19 crisis, routine care for chronic diseases has been markedly affected.<sup>9</sup> Nearly all dermatologists we interviewed reported either a significant reduction or complete cessation of outpatient dermatology services. For some, this period was limited to the peak of the pandemic, whereas others reported ongoing clinic closures. Although most places attempted to prioritize in-person visits for complex or serious skin conditions, this was not always possible for a variety of reasons. A dermatologist in South America noted that even their patients with pemphigus vulgaris, a potentially life-threatening disease, have been unable to receive face-to-face care. Although most private and academic dermatology practices are transitioning back toward full capacity, many nonprofit organizations that provide free or income-based health care to underserved populations remain closed. In the United States, dermatologists reported interruptions in face-to-face dermatology visits at free clinics. Even if patients are able to schedule in-person appointments, they face many barriers to successfully attending the visit, including public transportation closures and early mandatory curfews. These travel barriers have also prevented some dermatologists from participating in community outreach programs to rural and remote areas. In Botswana, one

dermatologist noted that lockdown and travel restrictions disrupted an outreach clinic service, preventing visits to various rural sites for between 2 and 4 months. These community outreach programs provide vital care to patients who otherwise would not have access to dermatologic expertise in their area.

In addition to physical barriers, many patients are unwilling to be seen in person because of the risks of acquiring an infectious illness. The looming threat of contracting COVID-19 is a legitimate concern for patients and health care workers, particularly in low- and middle-income countries (LMIC) where access to clean water and severe shortages of expensive personal protective equipment limit basic hygiene practices.<sup>10</sup> Many interviewed dermatologists reported shortages or total absence of basic personal protective equipment across various countries. A dermatology clinic in East Africa did not have access to hand washing facilities, masks, or examination gloves in local hospitals for several months. Health care facilities in tropical climates have worked to maximize benefits from existing safety measures that have long been used to decrease transmission of diseases, such as tuberculosis. Examples include single-story facilities on large campuses with many outdoor spaces for patient waiting and triage, and open windows and doors to improve ventilation.

### IMPACT ON NEGLECTED TROPICAL DISEASES

NTDs describe a group of mainly communicable diseases that affect individuals living in poverty, predominantly in LMIC.<sup>11</sup> Many NTDs involve the skin, either as the primary manifestation or as an associated clinical feature. Examples of skin NTDs include Buruli ulcer, cutaneous leishmaniasis, scabies, leprosy, deep mycoses, yaws, and lymphatic filariasis.<sup>11</sup> Although these diseases have historically been neglected in terms of funding, advocacy, research, and drug development, there has been growing public awareness of their considerable morbidity, social stigma, and economic effects. This has resulted in an enhanced global effort to prevent and eradicate them.<sup>12</sup> To efficiently and effectively target NTDs of the skin, global health dermatologists advocate for the use of integrated intervention strategies, which use a common pathway to simultaneously diagnose, treat, and prevent a group of two or more diseases.<sup>11</sup> The World Health Organization has recognized the benefits of integration around skin NTDs, and these strategies have been successfully used in some settings.<sup>13</sup> However, the potential of this approach has not been fully realized and many countries are still in the early stages

of developing and implementing integrated programs.

Dermatologists interviewed for this article expressed concern regarding the consequences of NTD program interruptions during the pandemic. COVID-19 has overwhelmed health systems worldwide, particularly in low-income countries that struggled to meet the demands of their population even before the pandemic. Research, funding, facilities, equipment, and personnel have been focused on preventing and treating the virus, which has diverted attention and resources from NTDs. In Ethiopia, community-based disease prevention and health promotion services have been stopped since the beginning of the pandemic.<sup>14</sup> At the national level, monitoring and supervision of key NTD programs were suspended. Mass drug administration programs were also affected, with planned community and school-based interventions for helminthiasis, trachoma, and onchocerciasis canceled because of COVID-19.<sup>14</sup> A colleague in Guatemala reported similar experiences, including suspension of government funding for the National Leprosy Program. Laudably, the program was able to continue its operations for 4 months without government financial support, and after multiple meetings and negotiations, a grant was secured.

The care of persons living with HIV has also been significantly impacted during the pandemic. There is a high degree of coinfection with HIV and NTDs, and certain NTDs may enhance the progression of HIV.<sup>15</sup> Given the close association between these diseases, disruptions in public health programs targeting HIV could affect the incidence and severity of NTDs, and vice versa. In many sub-Saharan African countries, government-supported HIV services were limited or closed during the pandemic, and access to antiretroviral therapy declined because of several factors, such as disruptions to the supply chain, personnel shortages, and patients' inability to or fear of traveling to central hospitals to pick up medications.<sup>16</sup> These same factors have likely contributed to a decline in HIV testing.<sup>16,17</sup> The long-standing implications of this period of decreased diagnosis, treatment, and prevention of NTDs, HIV, and other chronic diseases is unknown, but will likely be significant.

## **IMPACT ON COLLABORATIONS AND RELATIONSHIPS**

Worldwide travel restrictions imposed since the beginning of the pandemic have resulted in the suspension of many in-person global health projects. The inability to be physically present with

collaborators presented a variety of challenges to the global health community. Collaborations in the early stages of planning and implementation were perhaps most impacted by travel restrictions. To create sustainable, productive, mutually beneficial collaborations in another country, it is necessary to build relationships with local stakeholders and work together to identify priorities and set agendas. Face-to-face interactions and regular, in-person contact are invaluable for building the trust and respect needed to achieve these goals.

Some dermatologists were working to establish new collaborations on site when the pandemic began and were required to return home. Others were forced to cancel their first planned trips to a country. Although most attempted to continue building relationships remotely, many ultimately struggled to establish human connection and advance projects because of poor Internet connectivity, language barriers, and time zone differences. Additionally, most were simultaneously addressing pandemic-related challenges in their own clinical settings, which left limited time to dedicate to global health projects. For these reasons, tasks that would have been completed in a single face-to-face interaction have taken months to accomplish over email and telephone calls. Several of the interviewed physicians expressed concern and uncertainty about the chances of rebuilding relationships and restarting projects once global travel resumes.

In contrast, some well-established collaborations fared well during the pandemic. Several dermatologists voiced the perception that the global crisis fostered camaraderie between collaborators in different countries and resulted in increased dialogue to share information and resources. Others found that the pandemic exposed an underlying dependency on an in-person presence, resulting in stalled progress or complete dissolution of even long-standing projects. Although these setbacks were described as unexpected and disheartening, they ultimately allowed collaborators to identify weaknesses in project infrastructure that might have otherwise gone unrecognized. One colleague pointed out that an increasing number of US-based global health physicians are spending only weeks to months of the year physically present at a given project site, so the insights gained during the pandemic regarding productive virtual communication and project sustainability are helping to prepare for a future where this practice model is the norm.

## **IMPACT ON EDUCATION**

Interviewees emphasized the pandemic's impact on education and mentorship. Because of

international travel restrictions, there have been fewer clinical and research opportunities to foster trainee interest and expertise in global health dermatology. One of the biggest impacts has been the cancellation of international electives and exchanges, such as the American Academy of Dermatology Resident International Grant.<sup>18</sup> For more than 10 years, this grant has provided funding for multiple American and Canadian dermatology trainees to complete 4- to 6-week rotations in Botswana. In 2020, the program planned to expand to include three additional partner institutions from different regions of the world, and to support trainees from these institutions to rotate in the United States. These rotations have been on hold since the start of COVID-19. The US-based nonprofit organization PASHA,<sup>19</sup> which aims to increase access to skin care by strengthening health systems in Tajikistan and Nepal, was also required to cancel planned educational exchanges. One cancellation involved a recently received grant to send two dermatologists from Tajikistan to Nepal for an observational rotation to learn up-to-date evidence-based diagnostics, treatments, and alternative models of skin care delivery. Similarly, plans for a Tajik dermatologist to travel to the United States for a 1-year fellowship in dermatopathology were postponed because of COVID-19. PASHA instead had to focus its efforts on devising novel approaches to training; virtual case conferences were initiated and efforts to develop and fund remote pathology training are in progress.

These opportunities for cultural exchange, learning, and collaboration that occur during rotations often influence the course of participants' careers. It is uncertain when exchanges, such as these will resume, and when they do, there are multiple factors that may be altered long-term or permanently including trainee interest, funding availability, and institutional policies on hosting rotators. Additionally, many health systems in low-resource settings depend on the consistent presence of international rotators to assist with care delivery and to bring vital medical supplies. Many clinics are now short-staffed and unable to meet demands of patient care, which highlights long-standing concerns about the sustainability of global health projects that rely on foreign physicians, volunteers, or supplies.<sup>20,21</sup>

In addition to the cancellation of global health electives, there have been pandemic-induced setbacks in plans to establish dermatology training centers abroad. For example, in a long-standing collaborative project to create a Masters of Medicine in Dermatology program at Moi University School of Medicine in Kenya, the final approval process has been on hold because of the delays

in the regulatory committee approval. The newly established Pacific Dermatology Training Center in Suva, Fiji has also faced multiple obstacles in the last year.<sup>22</sup> Starting in 2019, a Postgraduate Diploma of Dermatology program was initiated in partnership with Fiji National University to allow physicians from Fiji and surrounding Pacific island countries to specialize in dermatology, with a focus on skin conditions seen in the Pacific region. The curriculum was largely delivered by visiting dermatologists from Australia and New Zealand in collaboration with a local dermatology faculty member. At the start of the pandemic, just 1 year after opening, the program was temporarily suspended and trainees from other Pacific islands were requested to return home. The program pivoted to virtual teaching but has faced issues with poor Internet connectivity, large time differences between trainees and lecturers, and local government restrictions on educational activities for medical trainees.

The Regional Dermatology Training Center in Moshi, Tanzania was also required to send students back to their home countries. However, the Regional Dermatology Training Center, which has been graduating dermatovenerology officers for the past 30 years, was able to leverage well-established relationships and infrastructure to successfully transition to a virtual learning platform, maintain daily contact with collaborators, and deliver dermatology teaching throughout the initial surge of the pandemic. Through this platform, they were also able to deliver a virtual continuing medical education conference in January 2021, with 250 registered participants and 51 speakers from 12 different countries.

Adapting curricula to virtual formats was a common challenge identified by dermatologists around the world. One physician commented that becoming effective virtual teachers and learners has been a more difficult process than expected. Successful virtual education is contingent on teachers delivering engaging and interactive lessons, and students maintaining motivation and focus despite increased distractions and a more casual learning environment. Additionally, successful virtual teaching formats require equipment, software, and human resources. Project leaders have had to ensure that programs would have the computer literacy skills to ensure sustainability. Ultimately, the pandemic highlighted the potential for improving virtual education and research development between countries.

Lastly, the physical, psychological, and financial impacts of COVID-19 on educators and learners have been significant. Clinic closures, low patient volumes, and decreased educational activities

were demoralizing for many of the interviewed physicians and trainees, and they struggled to reconcile their role during a global pandemic. Several dermatologists endorsed job insecurity and large pay reductions for several months during the peak of the pandemic. In some countries, the start of new residency cohorts was delayed by 5 months. Additionally, many of the physicians we interviewed lamented severe illness and death of beloved colleagues and teachers because of COVID-19.

### IMPACT ON TELEMEDICINE

Telehealth refers to the delivery of health care by medical professionals using information and communication technologies, typically in situations where physical distance is a limiting factor. Because of its visual nature, dermatology is particularly well suited for telemedicine, and global health dermatologists have long been advocates for the use of telemedicine to increase access to quality skin care. In the United States, the full potential of telemedicine has not been realized and historically there has been little incentive to accelerate this process. Now, because of travel restrictions and stay-at-home mandates, there has been a tremendous rise in the use of telemedicine.<sup>23,24</sup> Health systems across the world have a renewed motivation to enhance their telehealth capacity and a surge of resources are being directed to improving technology and efficiency.<sup>24</sup> Additionally, public and private payer regulations surrounding reimbursement and telemedicine have significantly relaxed, further incentivizing the uptake of telemedicine in daily practice.<sup>25</sup>

Some global health dermatologists were able to use their prior experience in teledermatology to better adapt to the increased use of telehealth services in their country during the pandemic. However, those practicing in low-resource settings were often unable to transition to teledermatology because of a variety of factors, including poor Internet connectivity and inadequate information technology infrastructure.<sup>26</sup> Additionally, direct patient-to-provider telemedicine is often not feasible for patients in low-income settings because of costly cell phone data plans and weak home Internet connection. In areas lacking access to a local dermatologist, store-and-forward telemedicine platforms allow dermatologists in distant locations to serve as consultants. Store-and-forward systems rely on local health care providers to obtain digital pictures and pertinent medical history, then transmit the information electronically to consultants who assist with diagnosis and treatment.<sup>27</sup> During the pandemic, many

of the dermatologists we interviewed reported a significant reduction in the volume of telemedicine consultations from primary care providers in developing countries, likely because of a combination of fewer patients seeking care and decreased availability of local providers to facilitate consultations. By serving as an intermediary between the patient and consultant, local primary care providers are critical for implementing effective and sustainable store-and-forward teledermatology systems. In the last year, many of these physicians were redeployed to other roles or required to stay at home, making it challenging for many teledermatology consulting systems to continue during the pandemic.

### SUMMARY AND FUTURE DIRECTIONS

In this article, we discussed ways the COVID-19 pandemic has impacted patient care, NTD programs, professional collaborations, educational partnerships, and telemedicine delivery for global health dermatologists across the world. Many of the setbacks and hardships experienced by the global health community in the last year highlight long-standing global interdependencies and systems that perpetuate ethnic, economic, and social inequalities on local and global scales. The pandemic has brought discussions on global health colonialism to the forefront, a concept that acknowledges that the common power dynamic within collaborations of high-income countries pursuing their agendas to impose changes on LMICs reflects deeply engrained dynamics from former colonial relationships.<sup>28</sup> Most modern global health physicians recognize this approach is not effective, respectful, nor sustainable, and are working to identify tangible actions to increase equality and create mutually beneficial relationships.

Domestic health inequality has also been brought into sharp relief by the pandemic. In the United States, COVID-19 has caused disproportionately high morbidity and mortality in vulnerable and minority populations.<sup>6,7</sup> This has underscored and exacerbated the socio-politico-economic obstacles faced by these groups and increased levels of food, job, and housing insecurity. With the cancellation of international travel, many global health dermatologists valued the opportunity to explore health inequities present in their own communities and identify ways to deliver care to vulnerable populations.

Lastly, the participants in this study highlighted the potential benefits of improved telemedicine and virtual learning technology for supporting health care delivery, particularly in LMICs. The



renewed focus on telemedicine has already resulted in creating more efficient, financially viable, and self-sustaining systems that will enhance the ability to provide quality patient care and education remotely.

These complex issues and their relationship to human health are at the core of global health work. Despite the many challenges, all global health dermatologists interviewed expressed hope that the COVID-19 pandemic will prompt critical reflection, discussion, and innovation that will lead to meaningful, lasting improvements to dermatology.

### CLINICS CARE POINTS

- Based on interviews with dermatologists around the world, the COVID-19 pandemic has affected global health dermatology in many areas including patient care, education, research, and international collaborations.
- Generally, systems with fewer resources are suffering more severe negative impacts.
- Long-term effects of the pandemic on the field of global health dermatology, such as the effect of decreased services for neglected tropical diseases, remain to be seen.
- The pandemic highlighted existing structural inequalities within global dermatology and medicine and prompted ongoing discussion about systemic change.

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