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# Teledermatology application use in the COVID-19 era

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## Abstract

Owing to the COVID-19 outbreak, the use of telemedicine applications has increased throughout the United States. Using an algorithm to analyze mobile application rankings, we were able to examine how applications with telemedicine services have increased in prevalence and rank pre- and post-COVID-19. Telemedicine apps saw an increase of 210.92 ranked positions on average. Within US telehealth, skin conditions have become the fifth most common diagnosis. Widespread use of teledermatology has been well-accepted. Dermatologists and patients report high satisfaction using teledermatology during COVID-19 and intend to continue using these services in the future. COVID-19 has assisted in reducing physician concerns previously preventing some dermatologists from utilizing teledermatology in their services. Additionally, the geographical and socioeconomic barriers preventing some patients from receiving dermatologic care have been minimized through the use of teledermatology. Addressing these obstacles for dermatologic care improves healthcare equity.

*Keywords: COVID-19, teledermatology, telemedicine, applications*

## Introduction

At the onset of the COVID-19 pandemic, teledermatology was identified as an efficient means to reduce exposure risk between dermatologists and

patients. A questionnaire completed by teledermatology patients amidst the COVID-19 pandemic indicated over 90% of patients would use telehealth services again and 91.5% were satisfied with their telemedicine experience [1]. In a survey completed by 1734 telemedicine patients, over 94% reported being “very satisfied” with telehealth and one third indicated they preferred telehealth over an in-person visit [2]. In addition, over 80% of teledermatology patients would recommend the services to others [3]. We aim to evaluate United States (US) telemedicine mobile application (app) ratings pre- and post-COVID-19 and their potential impact upon how dermatologic care is delivered in the future.

## Discussion

Using Sensor Tower, software that analyzes app rankings over time, a search was performed on the Apple App Store to determine rankings of medical apps. The algorithm used by the Apple App Store to determine app ranking is not publicly available. However, it is generally accepted that download counts, app usage statistics, growth trends, and reviews are factors [4]. The criteria used to access our data was: free, US, Apple, iPhone, and Medical. Data was accessed July 21, 2020. The top 50 apps within this category were evaluated to determine telehealth capabilities via reading app description. Telemedicine apps without direct patient to physician chat features were excluded. Our analysis

was limited to data from the Apple App Store and did not analyze data from the Google Play Store. Upon selecting apps with these telehealth capabilities, their current category ranking was recorded. Weekly app ranking prior to COVID-19 pandemic was also recorded with data beginning January 1, 2020.

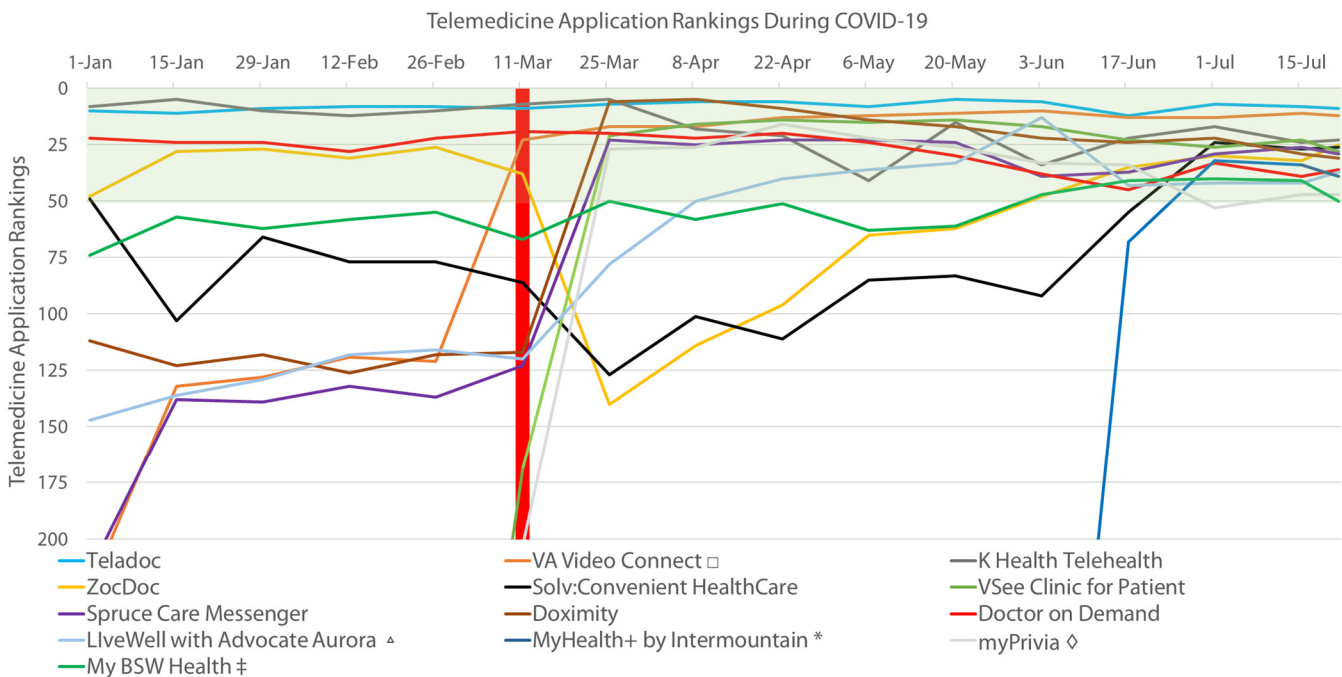
The data on app rankings can be found in **Figure 1**; an app ranked one is the top ranked app. As of July 21, 2020, 13 of the 50 top ranked medical apps in the US have telemedicine features. Over 50% (7/13) of the apps with telemedicine features did not have a top 50 ranking in their category prior to COVID-19. Over the period of January 1, 2020 to July 21, 2020, 84.6% of the 13 apps within the top 50 saw an increase in their overall ranking. Of these 13 apps, ranking increased by a mean of 210.92 ranked positions.

It is difficult to estimate how many patients utilize telemedicine applications for dermatologic concerns; however, a market analysis of telemedicine in 2016 indicated that teledermatology had a 32% market share of the North American telemedicine industry [5]. Prior to the World Health

Organization’s COVID-19 pandemic declaration on March 11, 2020, skin ailments were not listed in the most common diagnosis via telehealth in the US in 2020 [6]. In the following month, April 2020, skin conditions became the 5<sup>th</sup> most common diagnosis issued via telehealth in the US [6].

COVID-19 has forced dermatologists to alter patient care delivery and many are utilizing teledermatology as a potential solution. For example, the Yale University Department of Dermatology saw a 191% increase in teledermatology visits after reopening services during COVID-19 [7]. In an online survey completed by 184 dermatologists amidst COVID-19, 88.5% indicated they were currently using teledermatology. Among these dermatologists, teledermatology appeared to be well accepted, as 71% of the dermatologists stated intent to continue using the services in the future [8]. These positive experiences among colleagues should encourage dermatologists to consider adopting this technology as a new form of patient centered care.

The most common concern regarding teledermatology noted among dermatologists is



**Figure 1.** Telemedicine Application Ratings During COVID-19, where an application ranked one is the top ranked application. On March 11, 2020, the World Health Organization declared COVID-19 a global pandemic (red bar). The following symbols indicate affiliations with certain healthcare systems: \* Intermountain Healthcare; □ US Veterans Health Administration; ◇ Privia Health; ‡ Baylor Scott White Health; ^ Aurora Health Care. All applications without a symbol indicate an application with no major healthcare system affiliation.

that not all skin conditions are appropriately suited for a teledermatology visit [8]. The increase in teledermatology visits in the US related to COVID-19 has provided dermatologists with additional information to alleviate this concern. Acne, psoriasis, eczema, rosacea, alopecia, and viral and fungal rashes have been identified as skin conditions well suited for teledermatology visits. Visits which require whole body skin examinations are challenging to complete via teledermatology [7,8]. Teledermatology clinics should target patients with the previously mentioned conditions to maximize benefits and reduce risk. Visits focused on these conditions may increase efficiency and productivity of teledermatology clinics across the US.

Physician reimbursement and patient privacy concerns have been identified as hurdles in advancing the field of teledermatology [8]. COVID-19 has temporarily minimized these hurdles. It is likely that dermatologists who consider teledermatology to be improperly reimbursed would prefer in-person visits. To promote increased teledermatology utilization during COVID-19, the US government and other major private insurance companies have temporarily expanded coverage for teledermatology services. In accordance with the Health Insurance Portability and Accountability Act (HIPAA), patient privacy is strictly safeguarded within hospitals and clinics by many regulations. As dermatologists utilize third party apps or other platforms for teledermatology visits, many of these safeguards are lost. This could potentially lead to unintended HIPAA violations. As a response to the COVID-19 emergency, HIPAA violations that occur while attempting to provide teledermatology services in good faith have been waived [9]. Temporary changes such as these should allow more dermatologists to comfortably implement teledermatology into their practices. Future decisions regarding regulations and reimbursement will be a key factor in determining the continued use of teledermatology post COVID-19.

For many years, patients throughout the US have not been receiving necessary dermatologic care related to various geographic and socioeconomic barriers.

United States patients in rural areas have historically lacked adequate dermatologic care [10]. During COVID-19, the rapid increase in teledermatology services available throughout the US has minimized these barriers. In particular, Americans in rural areas now have access to dermatology services through this virtual format. Socioeconomic barriers that have also been alleviated include transportation barriers, mental health concerns (e.g. social anxiety), access to childcare, and navigation of time away from work schedules. The COVID-19 era has shown that teledermatology is a viable option to provide dermatologic care to patients who are unable to visit a dermatology clinic. Dermatologists must consider these patients when considering the current and future use of teledermatology in the care they provide.

## Conclusion

The accelerated use of teledermatology in the COVID-19 era has provided substantial information on how teledermatology can be utilized in the future. Dermatologists across the US must use COVID-19 obligated practice adjustments as an opportunity to examine how utilization of teledermatology services may be a feasible addition to daily practice. Both geographic and physical limitations may obstruct patients from in-person clinic visits. With the increased accessibility provided by teledermatology across the US, patients in areas previously underserved by dermatologists no longer need to endure their dermatologic conditions without proper evaluation and care. Through a simple video call, teledermatology can provide patients with untreated acne, psoriasis, rosacea, eczema, infectious rashes, and other conditions the medical attention they need. This increase in health equity to previously underserved communities is a crucial role which teledermatology can serve in the post COVID-19 era.

## Potential conflicts of interest

The authors declare no conflicts of interests.

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