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## Assessing Patient Satisfaction with Teledermatology Implementation During the COVID-19 Pandemic

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### Abstract

The aim of this study was to assess the patient experience with teledermatology among new versus existing clinic patients in the context of the rapid practice shift to teledermatology during the COVID-19 pandemic. We analyzed survey responses from 184 teledermatology patients seen during COVID-19 at a major Southeastern medical center from May 13th to June 5th 2020. Overall patient-reported satisfaction with teledermatology was high with the majority of respondents rating their overall satisfaction as excellent (68%) or very good (18%). As teledermatology experiences wider adoption with the COVID-19 pandemic, it is essential to examine patient experience and satisfaction with teledermatology.

### Keywords:

Telemedicine, Dermatology, Patient, Satisfaction

### Introduction

The novel coronavirus disease-19 (COVID-19) pandemic has created an urgent need to provide services while minimizing exposure to patients and providers. With the rapid shift to emergent in-person encounters, many institutions had to remodel their office-based dermatology practices into virtual clinics in a matter of weeks.<sup>1,2</sup> Consequently, the field of teledermatology has received an explosion of attention and utilization. Teledermatology, or the remote delivery of dermatological services using telecommunication technologies, was first described as a mechanism for providing services to rural populations.<sup>3</sup> The field has been slowly growing since it proved a valuable medium for such a visually focused specialty.<sup>4</sup> Previous studies have found that teledermatology platforms provide shorter wait times, improve ability to reach underserved populations, and are more cost-effective.<sup>5-7</sup>

The exchange of information through video, audio, and imagery has made it possible for dermatologists to visualize, diagnose, and communicate with patients throughout the pandemic. This rapid evolution has also allowed for recognition of virtual services by most health insurance organizations, and implementation of such encounters in electronic healthy records (EHR). These changes have paved the way for teledermatology to remain a prominent communication method in the future of the field. Of international dermatologists surveyed throughout the pandemic, 71% stated that they planned to continue using teledermatology in the future.<sup>8</sup> Other studies from the past decade have shown similar satisfaction with teledermatology amongst providers.<sup>9,10</sup> However, prior to telehealth implementation, it is

essential to consider patient experience and ability to navigate this novel form of health care.

Limited knowledge is available regarding patient satisfaction and willingness to use teledermatology. Patient experience likely differs based on patient-provider relationships and the visit type, particularly if the patient is presenting for a new condition or for follow-up. Previous studies show high patient satisfaction when using teledermatology for skin referrals or new consults.<sup>11-14</sup> To our knowledge, there are no studies aimed at examining patient satisfaction with teledermatology based on visit type amid Covid-19. The goal of this study was to further assess patient experiences with teledermatology, specifically how experiences differ between new and follow-up patients.

### Methods

We conducted a cross-sectional study of teledermatology patient satisfaction levels during COVID-19 at a major Southeastern medical center. The aim of this quality improvement project was to measure patient satisfaction in the context of the COVID-19 pandemic and rapid practice shift to teledermatology. We report this project in accordance with SQUIRE 2.0 guidelines (Standards for Quality Improvement Report Excellence).<sup>15</sup> This project was exempted from Institutional Review Board approval.

Participants were dermatology outpatients treated at a large tertiary academic hospital. Patients attended telemedicine visits for a variety of acute and chronic dermatologic conditions and included both new and follow-up patients. At the conclusion of telemedicine visits, patients were invited to complete a voluntary online quality improvement survey. The survey was adapted from validated telehealth satisfaction surveys work and refined by group consensus (CITE). The survey was recorded using the online survey tool Qualtrics (Provo, UT). American-Well (video) and Doximity (video and telephone) HIPAA-compliant platforms were used to conduct telehealth visits. We piloted the survey for two days among a group of 22 patients; the survey underwent iterative changes based on patient and provider feedback. The survey was administered from May 13<sup>th</sup> to June 5<sup>th</sup> 2020 to the patients of eight dermatologists participating in teledermatology visits. At the time of survey implementation, in-person visits were largely limited to urgent conditions. Of the 288 teledermatology patients seen during the study period, 184 (64%) completed the survey.

The primary outcomes of this study were patient satisfaction levels for new and follow-up patients. The secondary outcome

was the reachability of teledermatology across the state of North Carolina.

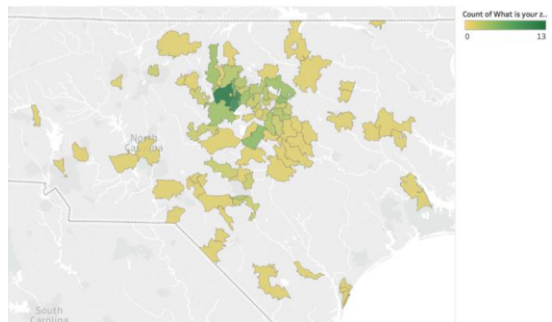
The primary exposures were patient type (new versus follow-up) and prior patient telehealth experience (yes/no). The data were evaluated with an *a priori* plan using descriptive statistics. Continuous measures were reported as means with standard deviations (SD). Categorical variables were reported as counts and percentages. Age was converted from continuous scale to categorical (<18, 19-34, 35-50, 51-64, and >65) for analysis, based on prior telehealth studies. Fischer’s exact tests were used for categorical variables given some analysis cell sizes of less than 20. T-tests and one-way analysis of covariance (ANOVA) were performed to determine differences in mean between continuous variables. Geospatial maps were obtained using Tableau Software (Seattle, WA). Stata SE 16.0 was used to perform statistical analyses. A p-value <0.05 was considered statistically significant.

**Results**

Most teledermatology visits were for follow-up patients (67%) and telehealth-naïve patients (58%). Table 1 outlines the demographic characteristics of the respondents. The mean age of respondents was 37.8 years, with 50 (27%) males and 134 (73%) females. Most respondents were White (62%), with Black (24%) and Hispanic/Latino (7%) the next most common. Fifty percent of respondents had a bachelor’s or higher-level education degrees. The majority of respondents were privately insured (59%), while a large subset had public insurance (38%), such as Medicare and Medicaid.

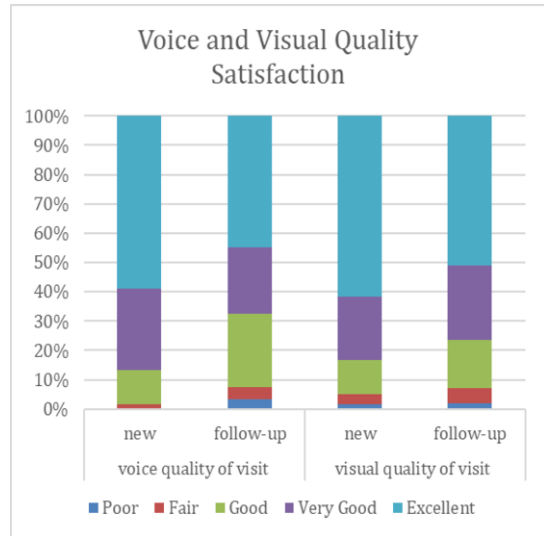
The majority of patients reported living in suburban areas (47%), while rural (27%) and urban (26%) were less common. Geospatial analysis based on zip code showed that the highest density of patients hailed from counties in the central portion of the state (Figure 1). These regions correspond to counties immediately surrounding the study’s tertiary hospital. Visit density decreased moving towards the outer, rural regions of the state.

For all satisfaction measures, new patients reported higher satisfaction compared to follow-up patients (Figure 2). Participants rated satisfaction with the voice quality of visits lower, with follow-up patient satisfaction lower (45%=excellent, 23%=very good, 25%=good, 4%=fair, 3%=poor) than new patient satisfaction (59%=excellent, 28%=very good, 11%=good, 2%=fair and 0% poor) (Figure 2).

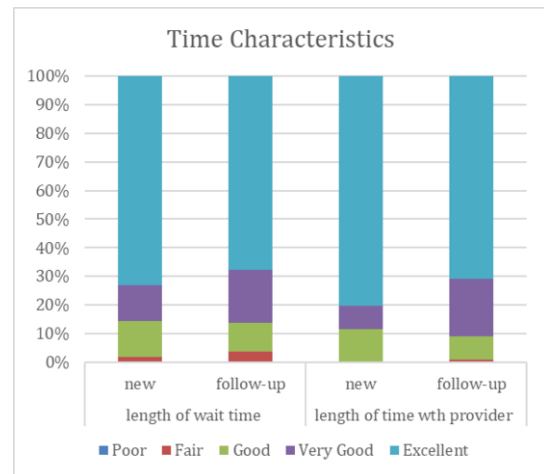


**Figure 1.** Geospatial analysis showing density of visits across North Carolina by patient zip code.

and 2%=poor) and new (62%=excellent, 22%=very good, 12%=good, 3%=fair and 2%=poor) patients (Figure 2). Length of wait time and length of time with provider were highly rated among participants (Figure 3). Provider-related satisfaction ratings were similarly high among the entire cohort (Figure 4)



**Figure 2.** Patient rating of voice and visual quality of telemedicine visit.



**Figure 3 – Patient rating of telemedicine visit duration**

Satisfaction with visual quality was slightly higher, in both follow-up (59%=excellent, 25%=very good, 16%=good, 5%=fair

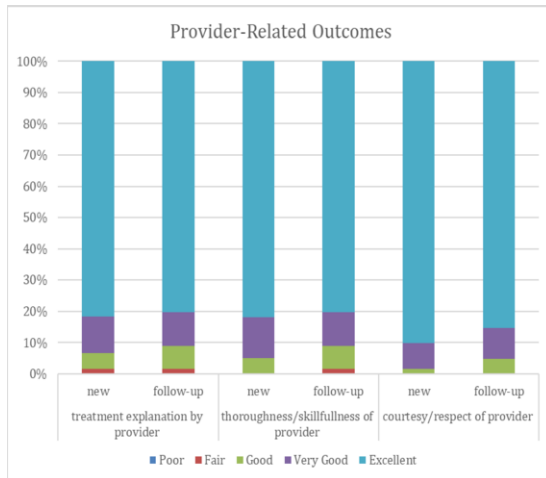


Figure 4 - Patient satisfaction of Provider Interaction by new versus follow-up patients

Overall patient-reported satisfaction with teledermatology was high with the majority of respondents rating their overall satisfaction as excellent (68%) or very good (18%). Mean Likert score for overall satisfaction with telehealth did not significantly differ by age, race/ethnicity, education level, residence, or insurance status ( $p > 0.05$ ). New patients had a statistically significant higher overall satisfaction with teledermatology than follow-up patients (mean Likert 4.70 for new, 4.43 for follow-up;  $p = 0.0275$ ). There was no significant difference in overall satisfaction by prior telehealth experience, video versus telephone visit type, or platform type (Table 1).

Table 1. Overall Satisfaction by Patient and Visit Characteristics.

Characteristic	Mean Likert Score (SD)*	p-value
Patient type		0.0275
New	4.70 (0.08)	
Follow-up	4.43 (0.08)	
Prior telehealth experience		0.5266
Yes	4.48 (0.10)	
None	4.55 (0.07)	
Visit type		0.1722
Video	4.54 (0.06)	
Telephone	4.23 (0.257)	
Platform		0.2186
Doximity	4.47 (0.09)	
AmericanWell	4.60 (0.08)	
Other	4.00 (1.15)	

\*Mean Likert Score calculated as average of satisfaction scores (1=Poor to 5=Excellent)

## Discussion

With limited prior teledermatology studies evaluating patient satisfaction, this study found high patient satisfaction across numerous key measures.

We found that overall patient satisfaction was high, with 68% of patients rating their experience as excellent. These findings of high overall patient satisfaction with telehealth are consistent with prior teledermatology studies in the literature. (12-15) Additionally, we found that overall satisfaction with telehealth did not vary significantly based on patient demographics, locations of residence, patient education or insurance status.

Our study specifically aimed to analyze the difference in patient satisfaction based on patient type (new versus follow-up), with the majority of patients surveyed were follow-up (67%), while only 33% of surveyed patients were being seen by the dermatologist for the first time as a new consult. While our study did not assess diagnosis or treatment types in our surveyed patients, our primary goal was to analyze patient satisfaction by patient type (new versus follow-up). Our results indicated that, compared to follow-up patients, new patients had a statistically significant higher overall satisfaction with teledermatology ( $p = 0.0275$ ). Furthermore, new patients reported statistically significant higher satisfaction on all satisfaction metrics in the post-visit survey. We postulate that these findings may be due to the fact that new patients did not have a prior experience with the dermatologist they were seeing to be able to compare their telehealth visit experience with an in-person experience.

Meanwhile, follow-up patients may have been more apt to compare their telehealth visit experience to those they had experienced in person with the provider. Follow-up patients may have desired to continue those in-person visits in order to maintain rapport and their relationship with the physician. Additionally, because of comparing these prior in-person visits to teledermatology, patients may have considered an in-person visit to be more thorough as compared to video. However, overall satisfaction of both new and follow-up patients was extremely positive, and the expansion of this service seemed to be well-received by patients.

Undoubtedly, the impacts of a national health crisis influenced patients' perception of care and likely influenced how willing and engaged patients were in telehealth in a way that is unprecedented in prior studies. On March 17 2020, major roadblocks to telemedicine were lifted including the Centers for Medicare and Medicaid expanding access to telehealth by authorizing video visit reimbursements and relaxing state licensure requirements for patients with Medicare. Further, the Office for Civil Rights loosened HIPAA (Health Insurance Portability and Accountability Act) restrictions on telehealth vendors and covered telehealth providers. For these reasons, amplifying the role of telehealth has been regarded as a silver lining of the pandemic. We suspect that at least a portion of the highly positive response to teledermatology visits we found in our surveyed patients is due to the ability for patients to avoid higher risk settings and to continue social distancing at their homes. In addition, many patients travel long distances to be seen by specialists at the clinic and were pleased to save time, money, and energy by not having to physically appear at the clinic. Although CMS assured payment parity for telehealth visits—and providers could bill for telehealth visits at the same rate as in-person visits—patients likely saved money overall by taking less time off of work and not having to factor in gas for the trip to the clinic.

This study has several limitations. First, this study reports findings from a convenience sample of patients treated by eight participating dermatologists. Although patients were recruited consecutively at the end of telehealth visits, some patients did not stay on the phone or video call. Patients who were contacted after their appointment were not as successfully reached and thus less likely to consent to the study. Also, this study took place at a single dermatology center at an academic institution.

therefore, study findings may be generalized to the larger dermatology patient population.

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