

Comparison of Pediatric Dermatology Conditions Across Telehealth and In-Person Visits During the COVID-19 Pandemic

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ABSTRACT

Understanding the utility of virtual visits in pediatric dermatology practice has become increasingly important in the telehealth era. We compared the conditions diagnosed in pediatric dermatology between traditional in-person visits and virtual telehealth visits during the initial 8-month phase of the COVID-19 pandemic at an urban medical institution. When given the option, pediatric dermatology patients and their families were more likely to choose telehealth visits for the diagnosis and/or management of acne, hemangiomas, and contact dermatitis; however, they were more likely to choose in-person visits for atopic dermatitis, viral warts, and alopecia areata. These differences may be attributed to clinical features of pediatric skin conditions, treatment options, and other factors which may influence patient preference for telehealth or in-person care for their condition.

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INTRODUCTION

Telehealth became widely implemented in pediatric dermatology practices as a result of the COVID-19 pandemic. However, patient preferences for using telehealth for specific skin conditions remain in question. Here, we sought to evaluate the patterns of telehealth use among patients and their families at a pediatric dermatology clinic by comparing the skin conditions seen between telehealth and in-person visits.

This single-center study aimed to compare the frequency of pediatric skin conditions seen via synchronous telehealth video visits versus in-person office visits during 8 months of the pandemic: June 1, 2020, to January 22, 2021. Data was obtained from an institutional database, and patients less than age 18 years who completed a telehealth or in-person visit with a pediatric dermatologist during the study period were included. Pediatric skin conditions were compared between the visit types using two-sided Fisher's exact tests with alpha set to 0.05 with Stata 16/MP 16.1; conditions were also compared for subgroups by age. Telehealth and in-person visits employed analogous protocols, except patients were asked to submit pictures of their skin condition prior to telehealth visits. During the study period, patients could freely schedule telehealth appointments without approval or special requirements.

Across 205 telehealth and 1,283 office visits, the ten most common conditions seen were acne vulgaris (24%), atopic dermatitis (17%), melanocytic nevi (11%), viral warts (10%), unspecified dermatitis (10%), seborrheic dermatitis (5%), hemangiomas (5%), molluscum contagiosum (4%), scars (4%), and postinflammatory pigmentation (3%). Table 1 shows the results of univariate comparisons of conditions seen via telehealth versus in-person visits. Acne vulgaris (odds ratio [OR]: 1.58), hemangiomas (OR: 5.02), and contact dermatitis (OR: 3.84) were significantly more likely to be seen via telehealth, while atopic dermatitis (OR: 0.57), viral warts (OR: 0.28), and alopecia areata (OR: 0.16) were significantly less likely to be seen via telehealth.

Table 2 shows the results of the subgroup analyses by age. Infants (ages 0-2 years) were less likely to be seen for atopic dermatitis (OR: 0.24) and more likely to be seen for hemangioma (OR: 5.19) at a telehealth visit (n=239) compared to in-person visit (n=59). No differences were found for children ages 3-12 years. Among adolescents (ages 13-17 years), acne vulgaris (OR: 1.85) was more likely to be seen via telehealth (n=88) versus in-person (n=502) while viral warts (OR: 0.20) and scars (OR: 0.02) were less likely.

TABLE 1.

Comparison of Pediatric Skin Conditions Seen During Visits Conducted Via Telehealth Versus In-Person During June 1, 2020, to January 22, 2021

| Condition, n (%) | In-Person Visit [†] | Telehealth Visit [†] | OR | 95% CI | | P Value |
|------------------------------------|------------------------------|-------------------------------|------|--------|-------|------------|
| | n = 1,283 | n = 205 | | Lower | Upper | |
| Acne vulgaris | 322 (25.1) | 71 (35) | 1.58 | 1.14 | 2.19 | 0.0049** |
| Atopic dermatitis | 252 (19.6) | 25 (12) | 0.57 | 0.35 | 0.89 | 0.0117* |
| Melanocytic nevus | 156 (12.2) | 19 (9) | 0.74 | 0.42 | 1.23 | 0.2926 |
| Viral warts | 163 (12.7) | 8 (4) | 0.28 | 0.12 | 0.58 | <0.0005*** |
| Unspecified dermatitis | 149 (11.6) | 18 (9) | 0.73 | 0.41 | 1.23 | 0.2831 |
| Seborrheic dermatitis | 81 (6) | 7 (3) | 0.52 | 0.20 | 1.15 | 0.1118 |
| Hemangioma | 44 (3) | 31 (15) | 5.02 | 2.97 | 8.36 | <0.0005*** |
| Molluscum contagiosum | 61 (5) | 8 (4) | 0.81 | 0.33 | 1.74 | 0.7213 |
| Scar | 56 (4) | 3 (1) | 0.23 | 0.01 | 1.40 | 0.1631 |
| Postinflammatory hyperpigmentation | 45 (4) | 6 (3) | 0.83 | 0.29 | 1.98 | 0.8368 |
| Neoplasm of uncertain behavior | 40 (3) | 2 (1) | 0.31 | 0.04 | 1.20 | 0.1092 |
| Alopecia areata | 39 (3) | 1 (0) | 0.16 | <0.01 | 0.94 | 0.0340* |
| Epidermal thickening | 31 (2) | 6 (3) | 1.22 | 0.41 | 3.01 | 0.6294 |
| Tinea | 32 (2) | 4 (2) | 0.78 | 0.20 | 2.23 | 0.8087 |
| Acanthosis nigricans | 25 (2) | 1 (0) | 0.25 | 0.01 | 1.53 | 0.2437 |
| Café au lait spots | 20 (2) | 2 (1) | 0.62 | 0.07 | 2.59 | 0.7573 |
| Vitiligo | 19 (1) | 1 (0) | 0.33 | 0.01 | 2.08 | 0.5073 |
| Xerosis cutis | 18 (1) | 1 (0) | 0.34 | 0.01 | 2.21 | 0.4997 |
| Benign neoplasm | 17 (1) | 1 (0) | 0.37 | 0.01 | 2.36 | 0.4954 |
| Congenital malformations of skin | 17 (1) | 0 (0) | 0 | 0 | 1.40 | 0.1517 |
| Contact dermatitis | 10 (1) | 6 (3) | 3.84 | 1.13 | 11.79 | 0.0153* |
| Epidermal cyst | 14 (1) | 1 (0) | 0.44 | 0.01 | 2.95 | 0.7084 |
| Pityriasis versicolor | 14 (1) | 0 (0) | 0 | 0 | 1.70 | 0.2390 |
| Psoriasis | 11 (1) | 3 (1) | 1.72 | 0.30 | 6.57 | 0.4261 |
| Urticaria | 9 (1) | 4 (2) | 2.82 | 0.63 | 10.20 | 0.0914 |
| Nonscarring hair loss | 12 (1) | 1 (0) | 0.52 | 0.01 | 3.55 | 1.0000 |
| Hyperhidrosis | 11 (1) | 1 (0) | 0.57 | 0.01 | 3.94 | 1.0000 |

P Value: <0.05 *, <0.01 **, <0.001 ***

[†] Includes only visits completed during June 1, 2020 to January 22, 2021.

Abbreviation: OR, odds ratio; CI, confidence interval.

The ease of virtual diagnosis or management of certain pediatric skin conditions may contribute to the differences in telehealth use found in this analysis. Specifically, acne and hemangiomas may be amenable to telehealth as they often affect localized areas and can be easily visualized using patient-submitted photographs.^{1,2} Contact dermatitis may be diagnosed virtually given it is often geometric and localized especially in combination with a carefully-obtained confirmatory history of localized cutaneous exposure to an allergen or irritant.³ In contrast, atopic dermatitis may require in-person evaluation, as it may present diffusely on the body and exhibit texture changes that are difficult to appreciate without direct examination.⁴ In-person visits may also be preferable for conditions such as

viral warts which are often treated with office procedures like cryotherapy or excision.⁵ Finally, challenges associated with telehealth for alopecia areata may include difficulty visualizing the scalp using patient photos and the need for in-person treatment for some patients.¹

Our report is consistent with existing literature on the effectiveness of tele dermatology for management of pediatric vascular tumors^{6,7} and acne.⁸ However, some studies suggest that atopic dermatitis and viral warts are also commonly managed using telemedicine,^{9,10} contrary to our findings. Since we examined patient preferences for telehealth rather than the clinical usefulness of telehealth, we hypothesize that patients

TABLE 2.

| Subgroup Analysis of the Ten Most Common Pediatric Skin Conditions by Age Group | | | | | | |
|---|------------------------------|-------------------------------|------|--------|-------|------------|
| Condition, n (%) | In-Person Visit [†] | Telehealth Visit [†] | OR | 95% CI | | P Value |
| | | | | Lower | Upper | |
| Age Group 0 to 2 Years | | | | | | |
| n = 239 n = 59 | | | | | | |
| Atopic dermatitis | 87 (36) | 7 (12) | 0.24 | 0.09 | 0.55 | <0.0005*** |
| Hemangioma | 42 (18) | 31 (53) | 5.19 | 2.69 | 9.99 | <0.0005*** |
| Melanocytic nevus | 37 (15) | 11 (19) | 1.25 | 0.54 | 2.73 | 0.5558 |
| Unspecified dermatitis | 33 (14) | 4 (7) | 0.45 | 0.11 | 1.36 | 0.1866 |
| Seborrheic dermatitis | 25 (10) | 2 (3) | 0.30 | 0.03 | 1.27 | 0.1265 |
| Congenital malformations of skin | 11 (5) | 0 (0) | 0 | 0 | 1.37 | 0.1295 |
| Diaper dermatitis | 10 (4) | 1 (2) | 0.39 | 0.01 | 2.88 | 0.6989 |
| Café au lait spots | 8 (3) | 0 (0) | 0 | 0 | 1.91 | 0.3635 |
| Epidermal cyst | 6 (3) | 0 (0) | 0 | 0 | 2.58 | 0.6024 |
| Molluscum contagiosum | 5 (2) | 1 (2) | 0.81 | 0.02 | 7.42 | 1.0000 |
| Age Group 3 to 12 Years | | | | | | |
| n = 542 n = 58 | | | | | | |
| Atopic dermatitis | 104 (19.2) | 11 (19) | 0.99 | 0.45 | 2.01 | 1.0000 |
| Viral warts | 109 (20.1) | 6 (10) | 0.46 | 0.16 | 1.11 | 0.0798 |
| Unspecified dermatitis | 78 (14) | 9 (16) | 1.09 | 0.45 | 2.37 | 0.8443 |
| Melanocytic nevus | 59 (11) | 4 (7) | 0.61 | 0.15 | 1.74 | 0.4980 |
| Molluscum contagiosum | 53 (10) | 7 (12) | 1.27 | 0.46 | 3.00 | 0.6433 |
| Acne vulgaris | 46 (9) | 10 (17) | 2.25 | 0.95 | 4.88 | 0.0523 |
| Seborrheic dermatitis | 28 (5) | 1 (2) | 0.32 | 0.01 | 2.03 | 0.3458 |
| Alopecia areata | 27 (5) | 1 (2) | 0.33 | 0.01 | 2.11 | 0.5064 |
| Tinea | 21 (4) | 4 (7) | 1.84 | 0.44 | 5.72 | 0.2895 |
| Postinflammatory pigmentation | 1 (2) | 15 (3) | 0.62 | 0.01 | 4.16 | 0.6392 |
| Age Group 13 to 17 Years | | | | | | |
| n = 502 n = 88 | | | | | | |
| Acne vulgaris | 276 (55.0) | 61 (69) | 1.85 | 1.11 | 3.13 | 0.0140* |
| Atopic dermatitis | 61 (12) | 7 (8) | 0.62 | 0.23 | 1.43 | 0.3641 |
| Melanocytic nevus | 60 (12) | 4 (5) | 0.35 | 0.09 | 0.99 | 0.0403* |
| Viral warts | 52 (10) | 2 (2) | 0.20 | 0.02 | 0.79 | 0.0144* |
| Unspecified dermatitis | 38 (8) | 5 (6) | 0.74 | 0.22 | 1.95 | 0.6597 |
| Scar | 36 (7) | 1 (1) | 0.15 | <0.01 | 0.91 | 0.0298* |
| Postinflammatory pigmentation | 27 (5) | 5 (6) | 1.06 | 0.31 | 2.90 | 0.8028 |
| Seborrheic dermatitis | 28 (6) | 4 (5) | 0.81 | 0.20 | 2.39 | 1.0000 |
| Follicular disorder | 20 (4) | 2 (2) | 0.56 | 0.06 | 2.38 | 0.7585 |
| Neoplasm of uncertain behavior | 19 (4) | 0 (0) | 0 | 0 | 1.12 | 0.0936 |

P Value: <0.05 *, <0.01 **, <0.001 ***

[†] Includes only visits completed during June 1, 2020 to January 22, 2021.

Abbreviation: OR, odds ratio; CI, confidence interval.

may have additional considerations that influence their decision to choose between telehealth or in-person visits for treating their dermatological condition. For example, pruritic or visually bothersome lesions may motivate patients and their families to seek face-to-face care in hopes of receiving more hands-on treatment or reassurance from their pediatric dermatologist.¹¹ Further work is needed to understand the social and emotional factors influencing a patient's decision to elect for telehealth over in-person visits.

DISCLOSURES

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