



Evaluating paediatric dermatology telephone clinics during COVID-19 from a dual clinician and patient perspective: a prospective study

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Summary

Background. The landscape of dermatology services, already rapidly evolving into an increasingly digital one, has been irretrievably altered by the COVID-19 (SARS-CoV-2) pandemic. Data are needed to assess how best to deliver virtual dermatology services in specific patient subgroups in an era of ongoing social distancing and beyond. Initial studies of teledermatology in paediatric populations suggest that many of the problems experienced in adult telemedicine are more apparent when treating children and come with additional challenges.

Aim. To evaluate the efficacy of a virtual paediatric dermatology telephone clinic in comparison to traditional face-to-face (FTF) clinics, both from the clinician and patient/parental perspective.

Methods. We carried out a prospective service evaluation examining a single centre cohort of paediatric dermatology patients managed during the COVID-19 pandemic via a telephone clinic supported by images. The study period covered June–September 2020. Data on outcomes were collected from clinicians and a qualitative patient/parental telephone survey was undertaken separately. A five-point Likert scale was used to assess both satisfaction and levels of agreement regarding whether a telephone clinic was more convenient than an FTF clinic.

Results. Of 116 patients included, 24% were new and 76% were follow-up patients, with a mixture of inflammatory dermatoses (75%) and lesions (25%). From the clinician's perspective, most consultations (91%) were successfully completed over the telephone. However, qualitative patient and parent feedback paradoxically illustrated that although nearly all (98%) respondents had no outstanding concerns, 52% felt highly unsatisfied and only 22% agreed that telephone clinics were more convenient. Most (65%) preferred FTF follow-up in the future. Statistical analysis using χ^2 test showed that among those with established follow-ups, the preference for future consultation type was independent of specific reasons for follow-up.

Conclusions. Our study demonstrates a clear discrepancy between the practical successes of a virtual service from the clinician's perspective compared with the patient/parental perspective. Parental anxiety appears to be less effectively allayed virtually than with FTF. This raises the question of whether there is a role for virtual paediatric telephone clinics in the postpandemic future, which may be better left to patients/parents to decide on an individual basis.

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Introduction

The COVID (SARS-CoV-2) pandemic has forced clinicians to adapt to unusual ways of working. The landscape of dermatology service provision, already rapidly evolving into an increasingly digital one, has been irretrievably altered by recent circumstances. As we emerge from the pandemic into a period of service recovery, data are needed to assess how to best deliver virtual healthcare services in specific dermatology patient subgroups in an era of ongoing social distancing and beyond. The results from a recent systematic review of teledermatology during COVID-19¹ indicated that the limitations of care of patients with skin disease during the pandemic can potentially be partially compensated by an extension of teledermatology, with findings from intrapandemic teledermatology employed to improve the use and acceptance of teledermatology by both patients and dermatologists.

From the onset of the pandemic, restriction of face-to-face (FTF) clinic numbers due to social distancing translated into FTF consultations being given to only the most urgent groups of patients in most dermatology departments across the UK. Most of the other patient groups were predominantly managed virtually via telephone clinics, accompanied where needed by images either emailed securely by the patient or taken by medical photography departments. This has also been true of the paediatric dermatology patient cohort in our hospital, the majority of whom have been managed virtually since March 2020.

Initial studies of teledermatology in paediatric populations suggest that many of the problems experienced in adult virtual visits are all the more apparent when treating children, with additional challenges in evaluation including difficulty in obtaining medical history and participation of paediatric patients.^{2,3} Questions therefore remained unanswered as to how effective and acceptable such a radically altered intrapandemic virtual service is in our paediatric cohort, and this study was performed to investigate this. Our aim was to evaluate the efficacy of a virtual paediatric dermatology telephone clinic, both from the perspective of the clinician and of the patient/parent, using a survey to investigate satisfaction levels.

Methods

As this was a service evaluation, ethical approval was not needed.

Study procedure

We carried out a prospective service evaluation examining a UK single-centre cohort of paediatric dermatology

patients managed during the COVID-19 pandemic via a telephone clinic, covering the period June–September 2020. Data were collected prospectively from clinicians, assessing the outcomes of a total of 116 patients who had been managed in the weekly telephone clinic during this period. Both new and follow-up patients were included, as well as both skin lesions and inflammatory dermatoses. Clinicians were asked to prospectively record whether the consultation had been successfully completed on the telephone that day. For the purpose of this study, a 'successfully completed' consultation was defined as a consultation during which the clinician was able to arrive at a new diagnosis where relevant, and to commence or continue appropriate treatment or monitoring, as well as address any issues arising or voiced by the parent/patient during the consultation without needing to rebook the patient for an FTF assessment or another telephone consultation. Such a rebooking for a new appointment following a virtual consultation that failed was differentiated in this scenario from a normal follow-up appointment, which, by definition, is one that takes place following a period of treatment initiation or active monitoring.

A qualitative survey was used to collect patient and parental feedback regarding the virtual service. This was undertaken via telephone, with patients or their parents contacted separately from the clinical consultation in order to minimize bias. Interviews with patients/parents were conducted within 0–14 days following their virtual consultations. The collected feedback included whether all concerns had been addressed during the consultation. A five-point Likert scale (with 1 meaning highly unsatisfied and 5 meaning highly satisfied) was used to assess levels of overall satisfaction with the telephone clinic, and to assess levels of agreement as to whether the telephone clinic was more convenient than the FTF clinic.

Results

Patients

In total, 116 patients were included; 24% (28 of 116) of these were new patients, while the majority (76%; 88 of 116) were follow-up patients. Most cases (75%; 87 of 116) were inflammatory dermatoses, and lesions made up the remainder (25%; 29 of 116), with a wide range of diagnoses seen (Table 1). Patient ages ranged from 1 month to 17 years (mean 8.47 years, median 9 years).

Use of images

Additional images to support the telephone consultation were needed and had been requested in 47%

Table 1 Range of diagnoses across patients seen in the virtual paediatric dermatology clinic between June and September 2020.

Diagnosis	Patients seen, <i>n</i>		
	Total (<i>n</i> = 116)	New patients (<i>n</i> = 28)	Follow-up patients (<i>n</i> = 88)
Acne	8	1	7
Acrodermatitis enteropathica	1	0	1
Benign naevus	5	2	3
Contact dermatitis	3	1	2
Congenital naevus	4	3	1
Congenital ichthyosis	1	0	1
Congenital vascular lesion	2	1	1
COVID chilblains	2	2	0
Cutaneous mastocytosis	1	0	1
Eczema	27	4	23
Erythema multiforme	2	0	2
Epidermolysis bullosa acquisita	2	0	2
Epidermolytic hyperkeratosis	1	0	1
Hidradenitis suppurativa	4	1	3
Haemangioma	10	0	10
Incontinentia pigmentii	1	0	1
Keratosis pilaris	1	1	0
Lymphangioma	1	0	1
Linear morphoea	2	0	2
Morphoea	1	0	1
Neurofibromatosis type 1	1	0	1
Onychomycosis	2	1	1
Perioral dermatitis	1	0	1
Psoriasis	7	2	5
Pilomatrixoma	3	1	2
Pyogenic granuloma	2	1	1
Recurrent herpes simplex virus	2	0	2
Recurrent varicella zoster virus	1	0	1
Tinea capitis	2	0	2
Terra firma forme dermatitis	1	1	0
PVL staphylococcal infection	1	0	1
Tuberous sclerosis	1	1	0
Scleroderma	2	0	2
Sebaceous cyst	1	0	1
Spitz naevus	1	1	0
Urticaria	7	3	4
Unknown	2	1	1

(55 of 116) of cases. Where required, these were available at the time of consultation in 84% (46 of 55).

Management of patients who could not be contacted

Patients who failed to answer the telephone (25%; 29 of 116) were either rebooked or discharged, depending on clinician judgement.

Success of telephone consultations

From the clinician perspective, most of the consultations for those patients who could be contacted were successful (Fig. 1a). The majority of consultations (91%: 80 of 87) were successfully completed over the telephone, while 4% (3 of 87) were rebooked for a telephone consultation due to IT failure or unavailability of blood results. Only 5% (4 of 87) needed rebooking for a FTF appointment; half of these were attributable to parental anxiety, while for the remainder, it was difficult to complete the assessment over the phone because of poor picture quality or high patient complexity. A comparison using Mann–Whitney *U*-test of the outcomes from the FTF paediatric dermatology clinic undertaken during a similar period in the previous year (June–September 2019) showed no difference in outcomes ($P = 0.70$) (Fig. 1b).

Feedback

Qualitative patient and parental feedback of the service was conducted via telephone interviews, with a response rate of 75% (42 of 56). Most respondents (74%; 31 of 42) had previously been seen FTF in the paediatric dermatology clinic, while the remainder (26%) had only ever had a virtual consultation as a result of the pandemic. Nearly all (98%, 41 of 42) respondents interviewed felt that their concerns had been addressed during the consultation. However, the majority (65%) preferred to be followed up FTF in the future where possible, both during and after the pandemic, while only 23% preferred a telephone follow-up in the future, and 12% stated they would be happy with a combination of the two. Nearly half (45%; 19 of 42) of those surveyed were on long-term systemic medication needing follow-up, and only 32% of this cohort opted for telephone follow-ups in the future.

Satisfaction with service

Although nearly all those surveyed had no outstanding concerns from the consultation, 52% stated they were very unsatisfied with the telephone clinic, and only 19% declared they were very satisfied with the service (Fig. 2a).

Levels of agreement regarding whether telephone clinic was more convenient than the FTF clinic were also assessed; 43% of respondents neither agreed nor disagreed with this premise, while 26% strongly disagreed and 17% strongly agreed that telephone was more convenient than FTF (Fig. 2b), for reasons such as elimination of travel, time off school/work and difficulty in finding parking.

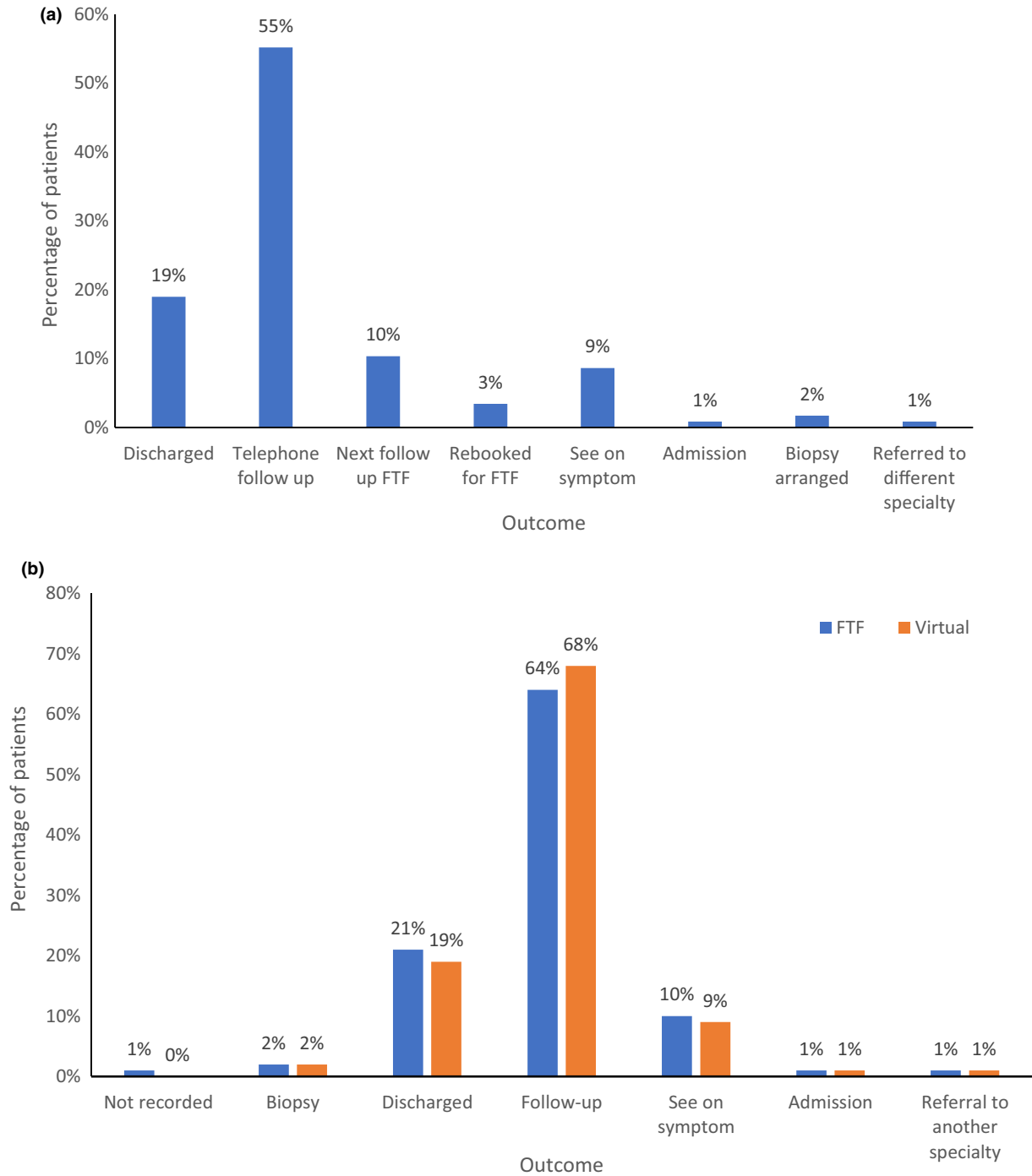


Figure 1 (a) Final patient outcomes from the virtual paediatric dermatology clinic (June–September 2020) including detail of type of follow-up planned; (b) comparison of final patient outcomes from the virtual clinic in 2020 ($n = 116$) vs. face-to-face (FTF) paediatric dermatology clinic from the same period (June–September) in 2019 ($n = 525$).

Future preference

Using the proportions of all responses combined as expected values for preference of FTF, telephone

consultation or a combination of both, χ^2 tests showed that preference for a specific consultation type was independent of whether the patient was being followed up due to being on long-term systemic medication or

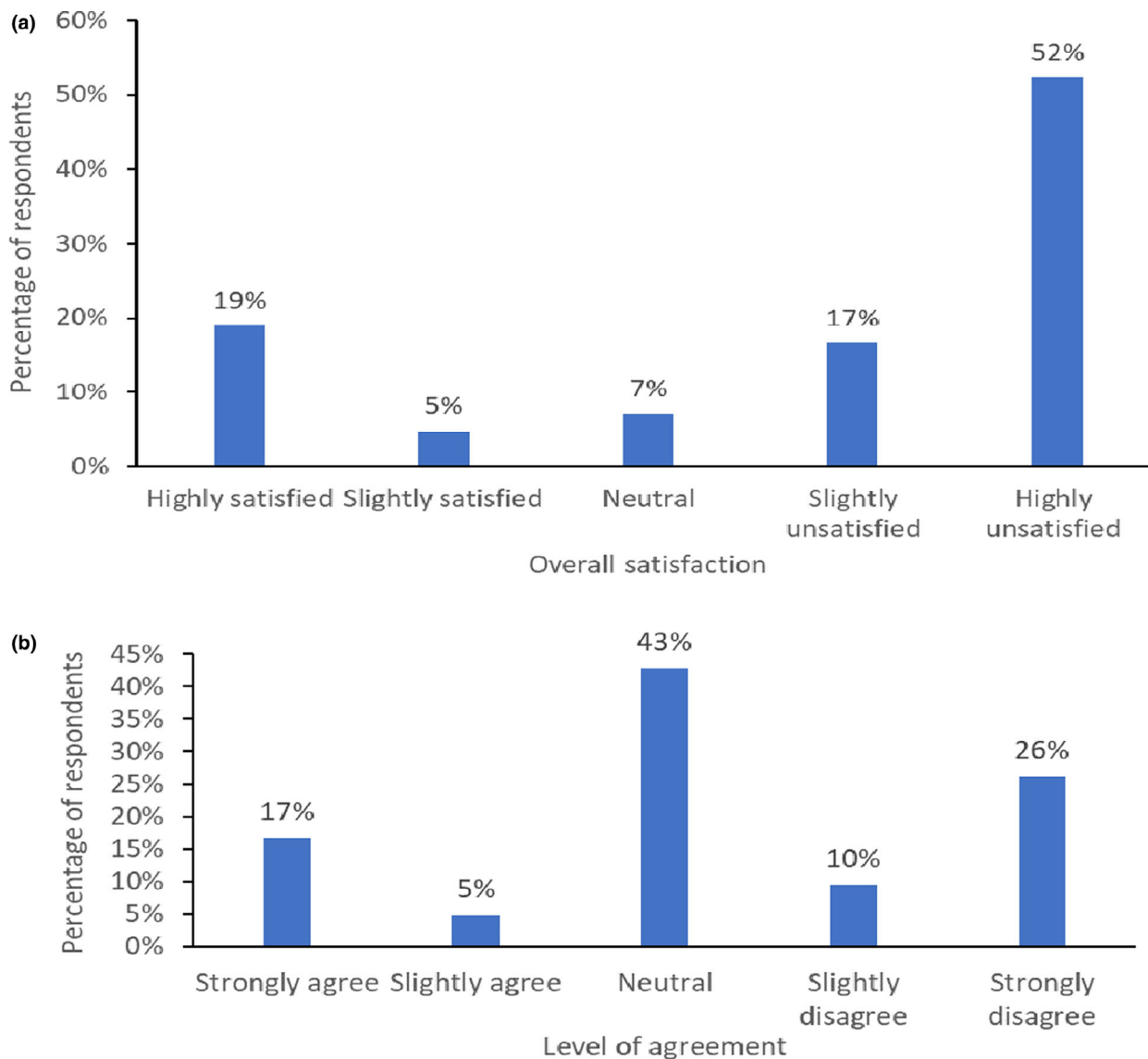


Figure 2 (a) Overall levels of parental/patient satisfaction with virtual telephone consultations. (b) Levels of patient/parental agreement when surveyed as to whether virtual telephone clinics are more convenient than face-to-face consultations.

not, and also whether the patient had been seen FTF previously in clinic or not (Table 2). Parents and patients also expressed their opinion using the free-text option, summarized using selected quotations in Table 3.

Discussion

Our study demonstrates that from the clinician's perspective most consultations appeared to have been managed successfully virtually, with no outstanding issues that necessitated rebooking the patient FTF in

the immediate future. This is supported by there being no statistically significant difference in final patient outcomes between the virtual clinics compared with FTF clinics undertaken the previous year. Nevertheless, a clear discrepancy exists between the practical successes of a virtual service compared with the subjective aspect, as demonstrated by qualitative patient and parental feedback, with the majority stating a preference for FTF appointments in the future. This is further reinforced by a rather striking paradox within patient and/or parental opinion, whereby almost all respondents agreed that their concerns

Table 2 Patient/parental preference for future consultations for the whole group and for subgroups.

Consultation type	Total		On long-term medication?				Previously seen FTF?			
			Yes		No		Yes		No	
	n	%	n	%	n	%	n	%	n	%
FTF	27	64	11	61	15	63	19	61	7	64
Telephone	5	12	5	28	5	21	8	26	2	18
Both	10	24	2	11	4	17	4	13	2	18
Total	42		18		24		31		11	

FTF, face-to-face.

had been addressed appropriately by the virtual consultation and yet the majority were unsatisfied with the consultation, with more than half highly unsatisfied. It is also interesting to note that less than a quarter of respondents agreed that a virtual service was more convenient in terms of elimination of time spent travelling, parking issues and time off school/work.

McGee *et al.* demonstrated that telephone consultations are more likely to be of longer duration compared with video consultations, raising a possibility that visual cues may be an important consideration in tele dermatology.⁴ Free-text parental and patient

Table 3 Selected themes from patients and parents highlighting positive and negative attributes of the virtual paediatric dermatology service.

Attributes	Selected themes	Comments
Positive	Convenience	'More convenient as no need to travel to hospital.' 'Telephone consultation is more convenient and easier. Excellent service, happy with telephone consultations.'
	Reduced travel to hospital	'Telephone better – no travel, more convenient.' 'Useful – not necessary to come in as sent photos. Even post-COVID-19.'
	Less time-consuming	'Pleased with outcome as did not need to physically attend.'
	Effective	'Telephone is good, saves time and no issues with parking.'
		'Impressed with the way the consult was conducted, all issues dealt with. Pleased as did not need to physically attend.'
		'I am happy with my telephone consultation; doctor was very vigilant and detailed and answered all of my questions.'
Negative	Reduced intrapandemic infection risk	'Works well with sending photos.'
	Works well if patient stable or has no flares	'Same as FTF.'
		'Telephone better in this case as condition is stable and very convenient with less infection risk.'
		'Good because my son's condition is stable. I suppose if there is any drastic change then I would prefer FTF.'
		'It's OK if there is no acute flare-up of the condition'
		'Fine if well-controlled'
Negative	Lack of opportunity for complete examination	'Well, I felt that I was not able to let the doctor see the rash properly, I don't think photographs capture everything and the extent of the rash. I do understand that we are in a pandemic. The dermatology department here have been very brilliant but there is only so much you can do over the telephone.'
		'If not COVID I would prefer FTF as it is easier to show how bad the skin is.'
	Patient/parent-clinician communication, e.g. visual cues	'Very difficult to explain things on telephone. Prefer FTF, body language 90% of communication.'
		'I found it OK, but my daughter hated it as she prefers to talk to doctor face-to-face where she can see him.'
		'FTF easier to explain things and you can see body language and the doctor can see how bad the condition is affecting the patient.'
		'FTF better as body language is more demonstrated and addressed.'
	'Prefer FTF as it is easier to communicate and express myself.'	
	Digital literacy	'I think telephone consultations should not be a standard way of consulting because if you are not good with technology then you can be at a great disadvantage. Everyone should be seen FTF initially then telephone consultation for follow-up.'
	Lack of personal element	'I am not big fan of telephone consultation as can't show doctors. Not very personal. Video is better.'
	Inability to visually assess impact on patient	'FTF better as seeing a child and the impact it has on him is very important and also the rash could be seen more clearly.'

opinions in our study (Table 3) also suggest that FTF consultations allow for irreplaceable elements of human communication such as nonverbal cues in the form of body language and expression, some elements of which could potentially be replicated in video consultations.

Our study demonstrates that parental anxiety about the care of their children appears to be less effectively allayed virtually than with FTF, where parents can feel more reassured that the clinician has seen the whole picture. Concerns include how easy it is to be seen to be kind over the phone; whether this is what is valued by patients/parents or whether they just need reassurance that somebody else (the clinician) is taking on some of the responsibility through examining the patient; and whether teledermatology addresses the 'unspoken anxiety' that probably hovers over every parent until they have been seen by a clinician.

Although some patients and parents did feel that virtual consultations were more convenient and would opt for this postpandemic as well, it was difficult to identify specific subgroups for whom this was more acceptable. The limitations of our study include a relatively small sample size and data from a single centre. However, older teenagers on isotretinoin that we surveyed did express a preference for telephone follow-up, although the sample size was relatively small. This correlates well with a recent questionnaire study by Ruggiero *et al.* that demonstrated high patient satisfaction with virtual acne clinics during the pandemic.⁵ Additionally, the responses from our patients with acne came directly from the patient themselves rather than from their parents as in the case of the younger children, again reinforcing the suggestion that FTF consultations play a crucial part in addressing parental anxiety.

A recent review of the available paediatric dermatology literature by Cartron *et al.*⁶ suggested that in general, paediatric dermatologists appear optimistic about the utility of telemedicine for their practices^{7,8} and that teledermatology has applications in both outpatient and inpatient paediatric medicine to increase efficiency and reduce costs.⁶ Recommended considerations prior to a paediatric teledermatology encounter^{6,9} included determining the appropriateness of a virtual consultation on a case-by-case basis and the subsequent need to be seen FTF; establishment of a doctor-patient relationship (either in person or via video conferencing), and obtaining informed consent from patients and/or parents, as appropriate.

Conclusion

Our study demonstrates a clear discrepancy between the practical successes of a paediatric dermatology virtual service from the clinician's perspective compared to that of patients/parents. Visual cues may be an important consideration in this cohort, with free-text opinions suggesting that FTF consultations allow for often overlooked aspects of communication, such as body language and facial expression, which are potentially replicable in video consultations. Parental anxiety appears to be less effectively addressed virtually. The question remains as to whether there is a role for virtual paediatric telephone clinics in a postpandemic future, and this may be best left to individual patients and parents to decide for themselves.

What's already known about this topic?

- Studies on telemedicine in paediatric populations suggest that many of the problems experienced in adult telemedicine are more apparent when treating children and come with additional challenges.
- However, there are limited data on teledermatology in paediatric populations.

What does this study add?

- This study is unique in assessing and comparing both clinician and patient/parental perspectives on virtual dermatology clinics in a paediatric cohort, with lessons for future service development.

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