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Parent/caregiver views of the effectiveness of Speech-Language Pathology for children born with cleft palate delivered via telemedicine during COVID-19.

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Abstract

Purpose: To describe and examine parent views of speech-language pathology (SLP) for children born with cleft palate delivered via telemedicine during the COVID-19 pandemic in the United Kingdom (UK).

Method: Parents were asked whether they found this method of delivery: 'very effective', 'somewhat effective' or 'not at all effective'. Free text was then invited. There were 212 responses. Ordinal chi-square, Kruskal Wallis or Fisher's exact tests examined associations between parent views of effectiveness and biological variables and socio-economic status. Free text responses were analyzed using qualitative content analysis.

Results: One hundred and forty (66.0%) respondents reported that SLP delivered via telemedicine was 'somewhat effective', 56 (26.4%) 'very effective' and 16 (7.6%) 'not at all effective'. There was no evidence of an association between parent reported effectiveness and any of the explanatory variables. Parent reported challenges impacting on effectiveness included: technology issues and keeping their children engaged with sessions. Importantly telemedicine was viewed as 'better than nothing'.

Conclusion: Most parents reported that they felt SLP delivered via telemedicine during the first few months of the COVID-19 pandemic in the UK was at least 'somewhat effective'. It is important to interpret this in the context of there being no other method of service delivery during this time and that this study only represents families who were able to access SLP delivered via telemedicine. Further work is needed to identify which children with cleft palate might benefit from SLP delivered via telemedicine to inform post-pandemic service provision.

Key words: cleft palate, speech, telemedicine, Cleft Collective

Introduction

Telemedicine has been used by Speech-Language Pathology (SLP) services in some parts of the world (e.g. the United States and Australia) for years to address barriers preventing individuals from accessing care, such as living in remote areas, with its use gradually increasing (Cochrane, Siyambalapitiya & Cornwell., 2018; Molini-Avejonas et al., 2015). However, prior to the COVID-19 pandemic, telemedicine was not widely used in pediatric SLP services in the United Kingdom (UK) (Kuschmann et al., 2020).

Telemedicine is defined as the delivery of services where a *“health care provider and a patient are separated by distance...(it) can contribute to achieving universal health coverage by improving access for patients to quality, cost-effective, health services wherever they may be”* (World Health Organization, 2016).

Effectiveness of SLP delivered via telemedicine

Reviews of the literature regarding the effectiveness of SLP delivered via telemedicine has largely found it to be positive. Law et al., (2021) took a broad approach in their examination of existing systematic and narrative reviews of interventions delivered via telemedicine for children aged 0-18 with a range of speech, language and communication needs. Despite identifying common limitations across the included reviews, Law et al., (2021) reported that, in most cases, the current evidence across different types of speech, language and communication impairment suggests that telemedicine approaches are at least as effective as face-to-face routine care. This finding reflects those from studies specifically involving children with speech sound disorder (SSD), which compared telemedicine to in-person intervention (Grogan-Johnson et al., 2011; Grogan-Johnson et al., 2013; Molini-Avejonas et al., 2015; Thomas et al., 2018).

Parent/caregiver views of the effectiveness of SLP delivered via telemedicine

Studies have explored parent views and satisfaction of SLP delivered to different communication impaired populations of children via telemedicine through questionnaires, satisfaction rating scales and semi-structured interviews (Chen & Liu, 2017; Crutchley & Campbell, 2010; Fairweather, Lincoln & Ramsden, 2016, Grogan-Johnson et al., 2010). In their systematic review, Molini-Avejonas et al., (2015) stated that overall families were satisfied with telemedicine. Studies have also reported that while parents supported the use of telemedicine, there were some difficulties in relation to internet connectivity and technology (Chen & Liu, 2017; Crutchley & Campbell, 2010; Grogan-Johnson et al., 2010; Fairweather, Lincoln and Ramsden, 2016) although this did not necessarily put parents off telemedicine (Thomas et al., 2018).

There is a growing evidence base for the use of telemedicine but there continues to be limited evidence on parent and caregiver experiences, preferences or perspectives of telemedicine, especially for children with SSD and CP+/-L (Lincoln et al., 2014; Molini-Avejonas et al., 2015). In many studies, parent perspectives are represented by small numbers with just five parents each in Chen and Liu (2017) and Fairweather, Lincoln and Ramsden (2016), eight in Crutchley and Campbell (2010) and 10 in Thomas et al., (2018). Lam, Lee and Tong (2021) sought the perspectives of 85 parents of children receiving telemedicine for a range of speech and/or language disorders in China during the COVID-19 social restrictions. Although parents rated the effectiveness of this method of intervention positively, they reported that telemedicine was less effective than on-site therapy and that they believed their children preferred on-site therapy.

Effectiveness of SLP delivered via telemedicine for children with CP+/-L

Children born with cleft palate with or without cleft lip (CP+/-L) are at high risk of developing disordered speech. In the UK and Ireland, 68% of pre-school children with CP+/-L require speech therapy but there is often a lack of accessible, adequate and timely therapy and therefore alternative

speech delivery models are needed (Sweeney et al., 2020). Features of speech disorder in children born with CP+/-L include hypernasal resonance, passive and/or active nasal airflow errors (emission and/or turbulence) and cleft speech characteristics (CSCs) (Harding & Grunwell, 1996, 1998). Hypernasal resonance and passive airflow errors are indicators of poor velopharyngeal function. Active CSCs generally involve unusual places of articulation including backing to velar or uvular and palatal, lateral, glottal, pharyngeal and double articulation (John et al., 2006; Sell et al., 1999). Passive CSCs represent the direct impact of velopharyngeal dysfunction on consonant production and include weak oral pressure consonants and nasal realizations of plosives (e.g. /b/ -> /m/) (John et al., 2006; Sell et al., 1999). Due to the nature of the features commonly seen in children born with CP+/-L, it is not necessarily appropriate to generalize findings related to non-cleft SSD to this population.

Prior to the COVID-19 pandemic a small amount of work had been done to examine the use of telemedicine with this population with findings varying depending on whether the focus was assessment or intervention (Pamplona & Ysunza, 2020; Sweeney et al., 2020; Whitehead et al., 2012). A study by Whitehead et al., (2012) was the only study involving children with CP+/-L included in the systematic review by Molini-Avejonas et al., (2015). This study investigated speech assessment of single word production in Spanish, simultaneously both in-person and via telemedicine, in a clinic setting, with a small sample of nine children born with CP+/-L in Mexico aged 5 – 14 years. Results showed 100% agreement between ratings made in person and via telemedicine for oral muscle tone and resonance. Cohen's Kappa coefficients showed fair to moderate agreement between ratings for lingual lateralization ($k=0.471$), breath support ($k=0.609$), dentition ($k=0.455$) and oral pressure ($k=0.426$). However, importantly for assessment of speech in children born with CP+/-L, agreement for ratings of articulation and nasal air emission were only fair to moderate with percentage agreements of 44.44% and 55.56% respectively. This indicates that telemedicine may not be a reliable method of assessing these features in children born with CP+/-L.

In the UK, Sweeney et al., (2020) completed a randomized controlled trial comparing parent-led, SLP supervised (via telemedicine) intervention and SLP led face-to-face intervention for children with speech disorders associated with CP+/-L. They found evidence for improvements in intelligibility, participation and percent consonants correct in both groups over time, with no evidence for differences between groups indicating that the approaches were comparable in their effectiveness. Lowe, (2019) found no difference in speech production between small groups of children with CP+/L following randomization to either a home speech program or a home speech program with weekly support from an SLP via telemedicine.

During the COVID-19 pandemic, Pamplona & Ysunza (2020) delivered SLP via telemedicine in Mexico to 43 children aged 4 – 12 years with CP+/-L presenting with velopharyngeal dysfunction and compensatory articulations. Their aim was to examine whether telemedicine was an effective method of SLP group intervention delivery. All children progressed, providing evidence for improvement in level of severity of compensatory articulations after intervention delivered via telemedicine (Pamplona & Ysunza, 2020).

Parent views of the effectiveness of SLP delivered via telemedicine for children with CP+/-L

In the limited available literature, parents of children born with CP+/-L seem to perceive telemedicine positively and are generally accepting of it although much of the feedback relates their views regarding usability rather than effectiveness (Lowe, 2019; Sweeney et al., 2020; Whitehead et al., 2012). Lowe, (2019) found that parents in groups who did and did not receive telemedicine support for a home speech program, both reported 'some' improvement in speech. Parents of children in Whitehead et al.'s (2012) study also reported their children had 'benefitted' from the assessment of their speech via telemedicine. In Sweeney et al.'s (2020) trial, parents reported improvements in speech for both the

parent-led intervention with SLP support via telemedicine and for the comparison face-to-face intervention group.

It is important to note that in some studies, face-to-face therapy may not have been an option before and therefore satisfaction is likely to be high as a service is being provided, regardless of the method of delivery (Whitehead et al., 2012). Indeed, Whitehead et al. (2012) hypothesized that the acceptance of telemedicine was, in part, due to improvement in service and increased frequency. It is also important to note that the majority of studies investigating the effectiveness of telemedicine and corresponding parent views have done so in the form of an 'opt-in' research study with associated scientific inclusion criteria. There is therefore a risk of bias in the views of parents who actively chose to take part, which may not be representative of the general population of parents of children requiring SLP services.

While there is some evidence to suggest that approaches using telemedicine for SLP intervention delivery with children born with CP+/-L can be effective, the evidence is limited. More studies are required with larger sample sizes to examine the effectiveness of telemedicine for assessment and intervention for speech in children born with CP+/-L. It is also important to understand effectiveness across a range of domains including physical and psychological capability of the individual and family, opportunities and motivation (Law et al., 2021). Parent/caregiver perspectives of the effectiveness of telemedicine are particularly important to explore as telemedicine relies heavily on parent engagement, with parents playing a key role in the therapy and potentially influencing the outcomes for the child (Lowe, 2019, Law et al., 2021). Understanding parental perspectives and motivation in relation to telemedicine could enable services to adapt provision and engage families in more dynamic ways.

Telemedicine for SLP during the COVID-19 pandemic in the UK

The COVID-19 pandemic seriously disrupted the provision of face-to-face SLP services, leading to a rapid increase in the use of telemedicine (Law et al., 2021). In March 2020, the UK Government announced measures to reduce the spread of COVID-19 across the country, including the suspension of non-urgent face-to-face health care (NHS England, 2020). Many SLP services had to quickly adapt to new ways of working, in order to continue offering support to their patients, including the use of telemedicine in SLP (Royal College of Speech and Language Therapists (RCSLT), 2020).

Despite the very limited evidence for the use of telemedicine for SLP delivery with children born with CP+/-L, the COVID-19 pandemic restrictions forced sudden and largescale changes to SLP service delivery for children born with CP+/-L, with telemedicine in the majority of cases being the only option. In order to inform future service delivery, a need was therefore identified to increase our understanding of parent/caregiver views of the effectiveness of SLP delivered via telemedicine for children born with CP+/-L. The aim of this study was therefore to describe and examine parent views of the effectiveness of SLP delivered via telemedicine for children born with CP+/-L.

Method

A wide-ranging questionnaire was distributed online to 4340 parent participants in The Cleft Collective, a large national cohort study of children born with cleft lip and/or palate and their families (Stock et al., 2016; Wren et al., 2018). The Cleft Collective was set up as a resource to investigate causes of cleft, the best treatments and the impact of cleft. The resource comprises biological samples, speech audio recordings, medical and educational records and parent and child completed questionnaires. Data is available for clinical and academic communities to access and use to address a range of cleft related research questions. More information on the study and how to access the dataset is available at <http://www.bristol.ac.uk/cleft-collective/professionals/access/>.

The survey asked parents/caregivers about their experiences of the first COVID-19 lockdown in the UK which started on the 23rd March 2020. It was developed quickly in response to the unique and rapidly changing circumstances at the start of the COVID-19 pandemic. Face validity was established through consultation with and feedback from researchers, the Cleft Collective's Patient and Public Involvement committee, the Cleft Lip and Palate Association and multi-disciplinary clinicians working in the field of cleft lip and palate. A total of 1527 responses were received. The questionnaire was dynamic and only relevant questions were presented to participants therefore not all respondents answered all questions.

As part of the larger questionnaire, respondents who indicated that their child was receiving SLP intervention before lockdown or due to start SLP intervention after the beginning of lockdown, were asked, 'Is your child still having speech and language therapy intervention?' with the response options being: 'yes, in person', 'yes, via an online video conferencing software', 'no, delayed due to Covid-19', 'no, treatment had finished' or 'other, please specify'. If the response to this question was 'Yes, via an online video conferencing software', respondents were then asked, *'How effective do you think this method is?' with the response options being: 'Not at all effective', 'somewhat effective' or 'very effective'. They were also asked, 'Please provide any additional feedback as to how well you feel the intervention went (free text response). The responses to these questions were analyzed for the purposes of this study.*

Ethics

Ethical approval for the Cleft Collective cohort studies was obtained from the Southwest Central Bristol Ethics (REC approval 13/SW/0064) in 2013. A substantial amendment was submitted in 2020 to obtain approvals for the COVID-19 questionnaire and analysis of the data.

Statistical Analysis

The quantitative data were examined using Stata version 15.1 to examine associations between parent views of the effectiveness of SLP delivered via telemedicine and age. Ordinal chi square, Fisher's exact or Kruskal Wallis tests were used to examine associations between parent reported effectiveness of SLP delivered via telemedicine and co-variables (questionnaire respondent, biological sex of child, cleft type, socio-economic status (SES), child with additional developmental diagnosis (autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), other neurodevelopmental diagnosis). SES was derived using the Index of Multiple Deprivation (IMD). The IMD is a 10-point scale, applied to small geographical areas of England, from 1 (most deprived area) to 10 (least deprived area). Information from seven domains (income deprivation; employment deprivation, education, skills and training deprivation, health deprivation and disability, crime, barriers to housing and services; living environment deprivation) is combined to calculate an overall deprivation index level for an area (Ministry of Housing, Communities and Local Govt., 2019). For the purposes of this study, area IMD ranks for participants were grouped into tertiles; 1) IMD ranks 1-3, 2) IMD ranks 4-7 and 3) IMD ranks 8-10. This served as the SES variable.

Qualitative analysis

A free text question asking respondents to 'provide any additional feedback as to how well they felt SLP went was included after the question introduced in the previous paragraph. Free text responses were imported into NVivo 12. Conventional qualitative content analysis (Hsieh & Shannon, 2005; Mayring, 2004) was undertaken by authors SH and LS. SH is a health psychologist, and researcher with a PhD, with significant qualitative experience. LS is a researcher and a specialist SLP in a regional cleft service. Free text data was anonymized and SH and LS were not able to identify specific individuals, or relate specific free text responses with individual quantitative data. Coding was undertaken independently and then discussed between SH and LS to agree the codes identified from the data.

Participants

There were 212 responses to the question asking about the effectiveness of SLP intervention via telemedicine from parents/caregivers of children born with CP+/-L, with 117 free text responses providing additional comment. The majority of respondents were the child's biological mother (72.2%) and the majority of respondents were reporting on male children (61.4%).

[Insert Table 1]

Results

Of the 212 parent responses to the effectiveness question, the majority 140 (66.0%) reported that SLP via telemedicine was 'somewhat effective' with 56 (26.4%) reporting it as being very effective and 16 (7.6%) finding it 'not at all' effective (see figure 1).

[Insert Figure 1]

The overall age range of the children for the 212 responses to the 'effectiveness of SLP delivered via telemedicine' question was 5.7 months – 12.4 years. However, age ranges were wide within all effectiveness categories (table 2). The distribution of age was tested for normality using a Shapiro-Wilks test. The data was found to take the form of a non-normal distribution ($p < 0.001$). A Kruskal Wallis test showed no evidence of an association between the age of the child and the effectiveness of SLP delivered ($p = 0.448$).

[Insert Table 2]

When examining associations between covariates and parent reported effectiveness of SLP delivered via telemedicine, two of the analyses were conducted using Fisher's exact test. This was because the sample numbers for some of the combinations were smaller than the ethically approved reporting guidelines for the study, which was considered more important than taking into account the

ordinal nature of the effectiveness variable. Fisher's exact tests revealed no evidence of an association between parent reported effectiveness of SLP delivered via telemedicine and cleft type ($p=0.493$) or developmental diagnosis ($p=0.243$).

The ordinal effectiveness variable was taken into account using ordinal chi square analysis for the 'questionnaire respondent', 'biological sex of the child' and SES variables with no evidence for linear associations with parent reported effectiveness of SLP delivered via telemedicine.

[Insert Table 3]

The free text qualitatively analyzed data could be formed into a number of codes. Although from the quantitative data presented above, we can suggest that parents thought teleconferencing was an effective treatment methodology, they did report issues related to the technology having a negative impact.

'Happy to have the online sessions but don't feel (the SLP) could accurately hear her/his speech issues over the screen.' (Pt ref - 597735)

'the screen tends to freeze making things difficult.' (Pt ref - 939219)

'With an active child, it's hard to juggle phone/iPad whilst trying to keep them in one place for (SLP) to hear and see clearly' (Pt ref - 219511)

Technology was not the only challenge, parents reported that their child's age made it difficult to have effective online sessions with their Speech-Language Pathologist (SLPs).

'has a somewhat limited attention span, due to her/his age so struggles to consistently engage with the sessions' (Pt ref - 183061)

Sometimes, age was not stated explicitly as the problem, but the child's behaviors were commented upon, as being barriers to engaging.

'My child finds more difficult to concentrate during the online speech therapy sessions. He's less interested than before.' (Pt Ref - 939219)

As shown, the majority of parents (92.4%) said teleconferencing was at least somewhat effective, but a code derived through the conventional qualitative content analysis, found that parents thought that telemedicine was 'better than nothing', which suggests that although parents appreciated and valued SLP telemedicine provision during the pandemic restrictions, face to face provision was still preferred, and looked forward to.

'it is harder to do the speech and language therapy effectively as it is face to face as the sound quality isn't the best and at times having to ask if the sounds was how it should be however we are very thankful for the continuation of the therapy as it keeps the relationship going' (Pt ref - 648884)

'In the current situation this did add value and maintain the focus on our child's speech and language development.' (Pt ref - 515858)

'She has continued to make gains during home-administered therapy so we are pleased. Back to face to face soon, hopefully.' (Pt ref - 125360)

Discussion

The aim of this study was to describe and examine parent views of SLP delivery via telemedicine during the COVID-19 pandemic for children born with CP+/-L. It was an exploratory study using data from a wider ranging questionnaire sent to participants of a large national cohort study after the first wave of the COVID-19 pandemic in the UK.

The results indicate that the majority of parents felt that SLP delivered via telemedicine was at least 'somewhat effective'. This reflects the findings of the systematic review by Molini-Avejonas et al., (2015) and those of an Australian survey also completed during the pandemic which found that 42% of

respondents found SLP delivered via telemedicine as being 'somewhat effective' (Filbay et al., 2021). A UK-wide survey found that while there was some satisfaction with SLP (across a range of speech, language and communication needs) delivered via telemedicine, there was no clear consensus with regard to perceived effectiveness of SLP delivered in this way (Clegg, O'Flynn & Just, 2021).

It is also important to interpret these findings in the context in which the questionnaire was completed; i.e., at a time when, for the most part, there was no alternative to SLP being delivered in this way with Whitehead et al., (2012) stating that satisfaction is likely to be high regardless of method of service delivery where there is no other option. Indeed, qualitative comments indicated that parents generally thought SLP delivered via telemedicine was 'better than nothing' but that face-to-face provision was preferred. This reflects the findings from other studies which reported that parents/respondents found SLP delivered via telemedicine during the pandemic useful (Clegg, O'Flynn & Just, 2021) or rated its effectiveness positively (Lam, Lee & Tong, 2021) but that it was not as effective as, or a replacement for, face-to-face delivery. An Australia-wide survey of people with speech, language and communication needs and/or their parents/caregivers during the COVID-19 pandemic reported that 28% of respondents preferred SLP delivery via telemedicine while 76% preferred face-to-face delivery and 38% of respondents would be somewhat or very likely to choose SLP delivered via telemedicine after the pandemic (Filbay et al., 2021).

The preference for face-to-face provision requires further investigation to establish the reasons for this. It is important to understand whether any of the negative aspects perceived by parents could be mitigated by service providers and/or clinicians or whether parents' views might have been influenced by the context of knowing usual service had been stopped. Telemedicine in the UK was not generally part of routine practice prior to the pandemic.

It is important not to ignore the fact that 7.6% of parents felt SLP delivered via telemedicine was 'not at all effective', particularly in relation to consideration of routine use of telemedicine. Filbay et al. (2021) also reported that 1% of respondents to their survey found SLP (for a range of speech, language and communication needs) delivered via telemedicine during the pandemic to be 'very ineffective' and 7% 'somewhat ineffective'. We need to understand the reasons behind these views to avoid a proportion of children and families being disadvantaged by a move to routine use of telemedicine. It is also important to note that this paper reflects findings for people who were able to access telemedicine. It does not account for families who were not able to try SLP delivered via telemedicine either due to services not providing therapy using this method, or due to lack of access to appropriate devices or adequate internet connection.

The finding that none of the potential explanatory factors explored showed any association with parent views of effectiveness is interesting in relation to the age of the children. It would have been reasonable to hypothesize that parents of younger children may be more likely to find that SLP delivered via telemedicine less effective due to younger children's less well-developed attention and listening skills. Indeed, Filbay et al. (2021) found that difficulties maintaining their child's attention to telemedicine was a common concern of parents. However, it is possible that some SLP intervention for these age groups may focus on information and advice for the parents. Alternatively, it may reflect that some children and young people across ages enjoy interaction via video and others find it uncomfortable. Interestingly, Filbay et al. (2021) reported that 12% of respondents to their survey reported feeling somewhat or very uncomfortable communicating with SLPs via telehealth. This aspect requires further investigation in future studies.

The presence of an additional developmental diagnosis also did not appear to be a factor in whether or not parents felt that SLP intervention was effective for their children. These findings highlight the need to understand and identify factors that enable children and their families to benefit

from SLP intervention delivered via telemedicine in order to offer this method of service provision to children who are most likely to benefit.

As identified in other work (Chen & Liu, 2017; Crutchley & Campbell, 2010; Grogan-Johnson et al., 2010; Fairweather, Lincoln & Ramsden, 2016; Filbay et al., 2021), issues regarding technological aspects of telemedicine were highlighted in the responses to the free text questions. This included connection problems and a perception that the SLP at the other end of the call was not able to see or hear features of children's speech difficulties. This latter issue is a crucial aspect of the use of telemedicine with this population to explore further. Information about the technology and devices used by families was not collected as part of this study. However, it is imperative for SLPs to be able to accurately assess, diagnose and monitor complex speech patterns, resonance and nasal airflow in these children for effective management in relation to velopharyngeal function and SLP intervention for CSCs. This has also been identified as an area of concern by clinicians (Britton, 2021). Studies examining this aspect as well as optimum technological equipment and set-ups are going to be vital to inform the use of telemedicine in future SLP service provision for this population.

This study is limited by its exploratory nature, meaning that findings are less likely to have immediate applicability to clinical practice. In addition, despite the relatively large overall sample size in comparison to previous parent perspective data, once the data were grouped into categories, proportions included in some analyses were small, impacting on the statistical power. However, the findings identify important uncertainties in relation to the use of telemedicine for SLP delivery for this population, which require further investigation and careful consideration during post-pandemic service provision planning.

Clinical Implications

_____The evidence for parent and caregiver experiences, preferences or perspectives of telemedicine for children with CP+/-L and overall evidence for the effectiveness of its use for assessment and intervention in this population is currently limited. Caution in its use for assessment of velopharyngeal function and complex speech presentations is certainly indicated given some parent reports that they did not think the SLP could accurately perceive speech patterns together with reported clinician concerns about the same issue (Britton, 2021).

Post pandemic, it is important for SLPs and SLP service providers to carefully consider their rationale for the use of this method of service delivery for intervention with this population. Clegg, O'Flynn and Just (2021) state that "telehealth is not the solution in every situation" (p14). This indicates the need for a 'needs-led', collaborative approach where SLPs consider the clinical needs of the child and their specific clinical aims together with the wider context of the child and family, including parent's/caregiver's views and situation in order to decide whether telemedicine is likely to be the most effective method of delivering SLP. Hybrid approaches to the use of telemedicine for intervention combined with some face-to-face sessions, along with enhanced parent training, similar to the approach described by Sweeney et al. (2020) could be an option to explore with some families.

It is important for SLPs to seek the views and feedback of parents/caregivers given their importance to the delivery of SLP intervention via telemedicine in order to identify areas of concern which could be a barrier to successful and effective implementation (Law et al., 2021). Potential barriers could include lack of access to, or confidence in use of technology, internet connection status and device access, confidence in providing feedback to their child and supporting their engagement with and attention during telemedicine sessions and preference for face-to-face intervention. It may be possible to mitigate or address some of these barriers prior to starting intervention, hence the importance of a collaborative approach.

Conclusion

Telemedicine is likely to be an important and positive addition to SLP practice where it was not used routinely prior to the COVID-19 pandemic. It is therefore vital that sufficient work is carried out to identify where and how its use can be truly effective across assessment, intervention and the domains identified by Law et al., (2021) for children with CP+/-L.. Specifically, as parents play such an integral part of therapy delivery, it is critical to ensure that parents find SLP delivered via telemedicine effective, acceptable and accessible.

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Table 1: Demographics of total sample

Variable	Total n		n	%
Questionnaire respondent	212	Biological Mother	153	72.2
		Biological Father/other caregiver	59	27.8
Biological sex of child	210	Male	129	61.4
		Female	81	38.6
Child's cleft diagnosis	212	Cleft palate only (inc. SMCP*)	75	35.4
		Unilateral cleft lip and palate	89	42.0
		Bilateral cleft lip and palate	48	22.6
Socio-economic status of respondent – Index of Multiple Deprivation (IMD) - Tertiles	185	IMD 1-3 (Most deprived)	60	32.4
		IMD 4-7	59	31.9
		IMD 8-10 (Least deprived)	66	35.7
Developmental diagnosis	210	Yes	9	4.3
		No	201	95.7

*Submucous cleft palate

Figure 1

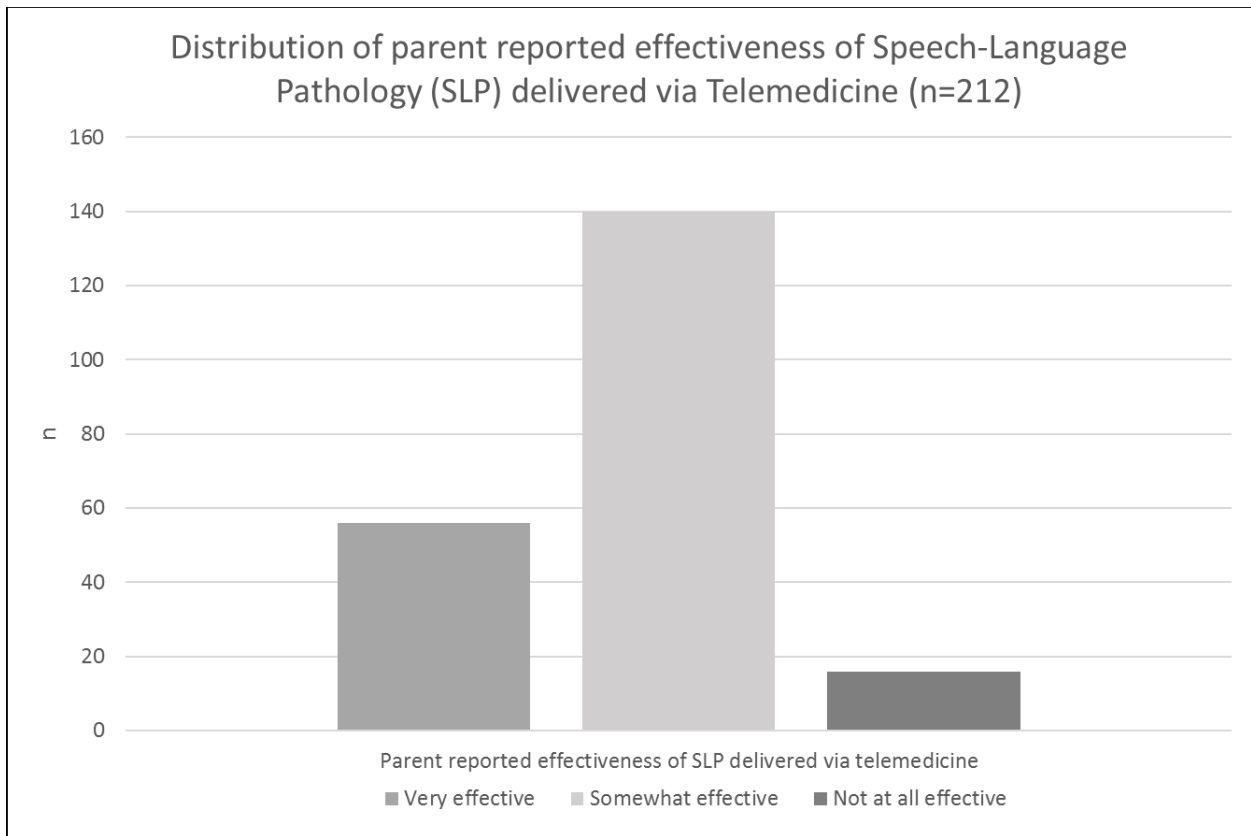


Table 2: Child age by respondents view of effectiveness of SLP* intervention via telemedicine (n=212)

Parent perspective of effectiveness of SLP delivered via telemedicine	Total n	Age of child in months		χ^2	df	p
		Median (Inter Quartile Range)	Range			
Not at all effective	16	42.5 (26.4 - 65.0)	16.8 – 77.2	1.61	2	0.448
Somewhat effective	140	41.2 (32.0 - 58.6)	5.7 – 130.9			
Very effective	56	47.9 (34.3 - 71.0)	11.5 – 148.5			

*Speech-Language Pathology

Table 3: Associations between parent/caregiver reported effectiveness of SLP* delivered via telemedicine and questionnaire respondent, biological sex of child, socio-economic status

Covariate		Total n	Not at all effective n (%)	Somewhat effective n (%)	Very effective n (%)	χ^2	df	p
Questionnaire Respondent	Biological Mother	165	9 (5.5)	109 (66.0)	47 (28.5)	5.084	2	0.079
	Biological Father/other caregiver	63	8 (12.7)	43 (68.3)	12 (19.0)			
Biological sex of child	Male	139	11 (7.8)	94 (68.2)	34 (24.0)	1.168	2	0.558
	Female	87	5 (6.2)	57 (63.0)	25 (30.9)			
Socio-economic status of respondent – Index of Multiple Deprivation (IMD) - Tertiles	IMD 1-3 (Most deprived)	60	5 (8.3)	43 (71.7)	12 (20.0)	0.889	4	0.926
	IMD 4-7	59	6 (10.2)	36 (61.0)	17 (28.8)			
	IMD 8-10 (Least deprived)	66	5 (7.6)	42 (63.6)	19 (28.8)			

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Learning Outcomes

As a result of reading this paper, readers will be able to describe parent/caregiver perspectives on the use of telemedicine for SLP for children born with CP+/-L during the pandemic. This will enable them to reflect on the use of telemedicine for SLP delivery for children born with CP+/-L including the importance of understanding parent's views. Specifically, they~~They~~ ~~will also~~ be able to identify areas in their own practice or service which might benefit from considering the issues discussed in this paper. They will also be able to identify gaps in the evidence which require addressing.