Supporting early childhood development during COVID-19 using telehealth:
stakeholders' perspectives

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Telehealth, as part of a proposed hybrid approach to service delivery, appears to be a medium to deliver functional, person-centred developmental care to reduce the cumulative effect of risks to ECD.

Timely assessment and intervention for developmental delays is a high priority in child healthcare, yet obtaining access to early developmental care services remains a challenge in low-and middle-income countries, such as South Africa, which has a shortage of healthcare professionals. The outbreak of COVID-19 in 2020 exacerbated these barriers, and alternative solutions for service delivery are needed. Telehealth holds potential as an innovative approach for the provision of early childhood developmental care services during the COVID-19 pandemic.

The chapter aims to explore the feasibility of early developmental telehealth through stakeholders' perspectives. To explore perspectives of tele-assessment, 30 caregivers of children (birth to 36 months) completed an online developmental assessment followed by an online questionnaire probing their perspectives thereof. Nineteen final-year student healthcare clinicians completed a survey on their initial experiences of tele-intervention, which was initiated mid-year during lockdown level 4. The perspectives of four caregivers and 10 student-clinicians were probed at the end of 2020 through synchronous online interviews.

Almost all caregivers (96.7%, n=29) rated their overall tele-assessment experience as positive. The majority (66.7%, n=20) identified tele-assessment as a viable assessment mode; however, 53.8% (n=14) indicated that they would want face-to-face assessments to supplement tele-assessments. This suggests that families may prefer a hybrid approach to developmental assessment. Although they were initially apprehensive, caregivers and student-clinicians found tele-intervention to be a viable and positive approach to service delivery during the COVID-19 pandemic.

Caregivers and student-clinicians faced similar technological challenges, but all experienced benefits from the telehealth services, including continued access to services during the pandemic. The tele-intervention framework successfully provided structure to online interventions. Telehealth, as part of the proposed hybrid service delivery model, provides caregivers access to developmental care, despite COVID-19 restrictions.

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Introduction

Early childhood experiences influence early child development (ECD).[1] The first few years of life shape children's brain structure and functioning,[1] which are influenced by environmental factors such as poverty and maternal exposure to malnutrition.[2] This in turn influences children's behaviour, functioning and, ultimately, their developmental trajectory.[1] In low- and middle-income countries (LMICs), such as South Africa, approximately 250 million children are not reaching their developmental potential due to biological and environmental risks and their cumulative effect on development.[3] It is estimated that at least 35% of children in LMICs present with developmental delays.[2] Recent studies have indicated similar prevalence rates of developmental delays among South African children younger than five years.[2,3] The Coronavirus disease 2019 (COVID-19) pandemic compounded risks experienced by vulnerable populations in low-resource settings due to increased socio-economic challenges, including reduced household income and lack of access to basic services. Timely identification of developmental delays and early childhood intervention should therefore be a priority in child healthcare, especially during COVID-19.

In response to these high prevalence rates and the long-term benefit of adequate ECD, the South African government, and the South African National Department of Health (NDoH) in particular, have made great strides in prioritising ECD for children from birth to two years of age.[4,5] South Africa's National Development Plan (NDP) for 2030[5] proposes improving early developmental outcomes through the application of the Nurturing Care Framework (NCF).[6] The NCF comprises five interrelated and indivisible components of nurturing care for early development: good health; adequate nutrition; safety and security; responsive caregiving; and opportunities for learning. These components are addressed at various levels through enabling environments, namely enabling policies, supportive services, empowered communities and, at the core, caregiver capabilities.[4] Caregivers are therefore key stakeholders who are best positioned to facilitate and support developmental care of their children. This was especially true during the national COVID-19 'Stay Home, Save South Africa' campaign, when caregivers were typically the only people with whom young children interacted.

Developmental care encompasses sharing knowledge for the prevention of developmental delays and developmental monitoring and assessment for early identification, all of which promote early intervention services.[3] Although strides have been made to prioritise ECD, various constraints still limit access to early and continuous developmental care. Disparities in socio-economic barriers influence service delivery due to low availability of resources, primary health care staff capacity and access to developmental services. Thus, many young children do not receive adequate and consistent developmental care services.[1–3]

Access to developmental care services has been further reduced during the COVID-19 outbreak. Globally, health authorities largely focused on the prevention of transmission of the virus by implementing strict regulations to enforce physical distancing.[7] Lockdown Regulations further limited access to developmental healthcare services such as routine child wellness visits.[8] Immunisation appointments, which form part of child wellness visits, are generally deemed to constitute a useful platform for other important services, such as developmental care services.[9] Yet, most children who would have received developmental care services during child wellness visits missed appointments due to lockdown restrictions and/or caregivers' concerns about exposing their children to COVID-19.[8] Consequently, access to developmental care has been further reduced for at-risk children during COVID-19.

Alternative solutions for continued developmental care service delivery are required during COVID-19 and beyond. Telehealth may provide a solution to improve access to timely developmental care, regardless of where families live. Recent studies have shown that telehealth offers a successful platform for delivering healthcare services.[10] Telehealth involves the delivery of assessment and intervention services to individuals and families at a distance, using technology such as video-conferencing and social media platforms.[11,12] The NDoH has recognised telehealth as a resource for delivering healthcare services when physical distancing must be observed, including to South African communities in under-served areas.[13]

Telehealth is not a new concept, as it has been used for over three decades. However, its implementation has increased during the last 10 years due to advancing technology and a higher demand for assessment and therapeutic services.[10] Despite growing evidence that supports the use of telehealth, many countries still question the applicability of this service-delivery model, especially in low-income settings.[14] Stakeholders, including caregivers and clinicians, must be consulted when adapting service-delivery approaches, as they are the key receivers and providers of services. Determining their perspectives may provide valuable input regarding the applicability of this mode of service delivery, implemented in South Africa during COVID-19. The aim of this chapter is therefore to explore the feasibility of telehealth-based early developmental care, implemented in 2020 during the COVID-19 pandemic, drawn from stakeholders' perspectives.

Methodology

Institutional Review Board clearance was obtained to investigate the use of tele-assessments during and beyond COVID-19. Tele-intervention sessions were provided as part of the early intervention services offered to the public by the Department of Speech-Language Pathology and Audiology at the University of Pretoria, when lockdown restrictions prevented in-person sessions. All participants provided written consent to participate in tele-assessment or tele-intervention, and to use their feedback for research purposes. A mixed-method survey design, using online

interviews and surveys, was applied to collect various stakeholders' perspectives of telehealth.

The tele-developmental assessments were completed based on reports from 30 caregivers of young children (aged from birth to 36 months) using the Vineland-3 Adaptive Behavior Scales Caregiver Interview.[15] This tool is a standardised, norm-referenced assessment that evaluates the adaptive behaviour of individuals from birth to age 90. Assessment outcomes from the Vineland-3 are used to diagnose developmental delays and disorders.[15] Vineland-3 is used widely in a variety of settings including South Africa.[3,16]

Once the outcomes from the developmental assessments were scored, caregivers were provided with feedback via e-mail. This process included referrals for intervention when developmental concerns were identified.

Caregivers' developmental concerns regarding communication are particularly important to consider, as communication delays are more prevalent than are other early childhood developmental delays.[16] In parallel to the tele-assessments, a tele-intervention framework for early communication tele-intervention purposes, based on existing literature and telehealth ethical guidelines[11,12,17], was developed to continue services during COVID-19. All final-year student-clinicians received training before the commencement of tele-intervention.

Each week, student-clinicians evaluated the functional application of the strategies covered in the previous tele-intervention session in relation to daily life, using reflection and feedback questions. A new strategy was then introduced to build on the previous strategy. The strategy's relevance to the client's identified goals was discussed and examples and descriptions were presented. The client also practised the strategy with the student-clinicians in the session to refine its use and maximise the potential for success. The student-clinician and the client then jointly planned how to incorporate the strategy meaningfully into the client's specific daily routines, thereby grading the support provided before clients were expected to utilise the strategy more independently.

Clients and their families were encouraged to send feedback regarding the implementation of the strategy before the next tele-intervention session. This was done via various means, such as formal reports from home documents, e-mails, WhatsApp messages and voice notes, shared Google documents, or videos of the implementation. Student-clinicians then used this information to plan the next session, based on the success or challenges that clients and their families experienced. Tele-intervention sessions made use of the Microsoft Teams platform, as it provided end-to-end encryption and was available to students using a data-free student platform provided by the University of Pretoria.

At the time, clients were not charged for the tele-intervention sessions, as this service-delivery approach had been recently implemented. This made the sessions more feasible for all clients. Clients were, however, required to have access to either a laptop, tablet or smartphone device, and were expected to cover their data costs incurred during the sessions. Smartphone accessibility is growing in LMICs, resulting in increased evidence for the use of telehealth services.[3] A video-call of 40 minutes via Microsoft Teams requires approximately 200MB in total at the lowest resolution; therefore, if a 1GB data bundle costs R100, the session would cost the family R20.

At the end of July 2020, 19 student-clinicians involved in tele-intervention volunteered to complete an online survey of close- and open-ended questions regarding their initial experiences. A follow-up survey was conducted in October 2020 with four caregivers as well as five audiology and five speech-language pathology student-clinicians, via synchronous online interviews. Four open-ended questions probed participants' perspectives of tele-intervention with regard to initial expectations, challenges experienced, what they liked about the format, and the intervention format they would prefer going forward. Student-clinicians were additionally asked if they thought that their tele-intervention experience would affect their approach to face-to-face intervention. All data were stored on secured Google Drives to uphold confidentiality.

Data analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics, including frequency distributions and percentages, were used to summarise the quantitative data obtained. Deductive thematic analysis[18] was used to analyse the qualitative data to identify common themes that arose across participants' responses. This method involved the management of data by meaningfully organising the responses according to the feedback received, which was then coded. Feedback was interpreted according to the open-ended questions asked and categorised into salient themes.[18]

Five themes identified from the tele-assessment were: practicality of the tele-assessment; convenience and resource-saving; safety amid a pandemic; the tele-assessment format used; and caregiver knowledge. Themes that arose from the tele-intervention analysis included initial uncertainty of the format; viability of tele-intervention; training needs; technological challenges; stakeholder roles; and the need for a hybrid approach.

Key findings

Caregivers' perspectives of tele-assessment

Almost all the caregivers (96.7%, n=29) rated their overall experience of tele-assessment as positive. Tele-assessment was considered as a format that the majority of caregivers would use again in future (90.0%; n=27). When asked to elaborate on future use of tele-assessments, the following

themes arose: They found it to be practical, convenient and resource-saving, safe in the context of the COVID-19 pandemic, a viable format to use, and contributory to caregivers' developmental knowledge. The majority (66.7%, n=20) identified tele-assessment as a viable assessment mode; however, 53.8% (n=14) indicated that they would want face-to-face assessments to supplement tele-assessments. Responses (Table 1) indicated that, even during COVID-19 restrictions, some families would prefer a hybrid approach to developmental assessment.[9] Therefore, caregivers can be interviewed online or telephonically before face-to-face clinician-administered assessments. Conducting the online interview before direct assessment would provide insight and contextual information to the clinician, as well as ensure appropriate planning before the assessments, including adhering to COVID-19 safety protocols .

Table 1: Caregiver responses on tele-assessment

Themes	Caregiver responses
Practicality	*"There were a few background distractions on my side which wouldn't have happened in person."*
	"It was viable since the child didn't need to be involved."
	"Could see the interviewer and communicate clearly."
Convenient and resource-saving	*"It was convenient and the format for a one-on-one interview worked well."*
	"Can do it from the ease of your home."
	"Saves time and money."
Safety	*"...no need to travel or bring my child along, no risks of infection with COVID-19."*
	"It's efficient, safe (with regard to COVID-19)"
Tele-assessment format	*"It works very well, although actually assessing a child's behaviour would be difficult."*
	"It's the way of the future."
	"Was surprisingly comfortable and effortless."
Caregiver knowledge	*"Gives me an opportunity to learn more about my child abilities."*
	"Got some exercise tips for my baby."
	"Reminding me and making me aware of things to work on with my child."
	"The caregiver is the one who spends the most time with the child and is best equipped to answer questions about their development."

Stakeholders' perspectives of tele-intervention

Nineteen student-clinicians provided feedback on their prior expectations of tele-intervention and their experiences thereof, carried out during the global pandemic in 2020. A total of 17 clients had received tele-intervention services across the four departmental clinics by the end of July 2020. The following themes were identified from the student-clinicians' and caregivers' experiences of tele-intervention from June to October 2020: initial uncertainty regarding the format; viability of tele-intervention; training needs; technological challenges; stakeholder roles; and the need for a hybrid approach.

The majority (68%, n=13) of student-clinicians found tele-intervention to be a viable and positive approach to service delivery, although they were initially apprehensive of the format (as expressed in the following verbatim responses).

Prior to tele-intervention, I was uncertain of exactly how to navigate the online platform while maintaining a therapeutic relationship and to keep therapy interactive instead of only information-giving. - Student-clinician

At the end of the year, caregivers also pointed out that they had been concerned about implementing interventions alone without in-person contact with the student-clinicians. Almost half of the student-clinicians (47%; n=9) expected tele-intervention to be more challenging than face-to-face intervention.

My expectations were that tele-intervention was going to challenge me and be very different to what I am used to. I was very unsure of what to do and what to expect, as you can't physically interact with the client or see the parents implement the strategies at home. I was unsure of how goals would work for these sessions and how progress will be measured. – Student-clinician

A third of student-clinicians (32%; n=6) perceived their prior training in tele-intervention services to be insufficient, and reported that they would have benefitted from observing tele-intervention before using it as a method of service delivery. Some (37%; n=7) student-clinicians also felt that additional written guidelines would have improved their confidence for delivering tele-intervention services.

I had little expectations beforehand seeing as I have never seen what tele-intervention would entail or how it would work. – Student-clinician

Student-clinicians' and caregivers' perspectives of tele-intervention were probed again at the end of the year. The challenges experienced included technology issues, the novelty of the online medium, slow Internet speed and connectivity difficulties, often due to load shedding.

Tele-intervention is definitely a wonderful way to provide services; however, it is also something that is challenging to use in the SA context .... a lot of tele-intervention clients also do not have access to the relevant infrastructure for effective tele-intervention to take place. Connection issues are also extremely frustrating, especially with load shedding. – Student-clinician

I think it's connectivity, sometimes – especially when lockdown started, we had a lot of instability. But I don't remember a day where we didn't actually have a meeting because of network – we always had meetings even if it was not stable. – Caregiver

All stakeholders expanded their views regarding their respective roles in the service-delivery process. However, the need for face-to-face sessions to supplement tele-intervention was identified by student-clinicians and caregivers.

I have learnt how to read clients' cues virtually in order to then adapt what I am saying in order for it to make sense for the client. – Student-clinician

"In the end, you know you have a small little human and to do the sessions with her won't be as conducive as when we do it, because she knows us, she trusts us, we know her better – we know how to work with her better – her signs, her signals, when she's tired." – Caregiver

My ideal would be three tele-interventions a month and then one face-to-face because I think just seeing someone once a month to perhaps see if you can notice a difference every month as it goes past, and I think having medium-term goal of one month from now, I think that to me would have worked quite nicely. – Caregiver

Additionally, the interactive tele-intervention framework fostered a stronger therapeutic alliance between caregivers and student-clinicians due to the increased communication that took place throughout the week. This was facilitated while maintaining physical distancing amid the COVID-19 pandemic.

It almost came naturally because it's mostly the things that we were already doing and some of the things I introduced he understood easily, while some of them were very difficult but then because I had your guys' help and the feedback – things were quite easier. – Caregiver

The fact that we don't have to expose our child to anything, that's been great. – Caregiver

Discussion

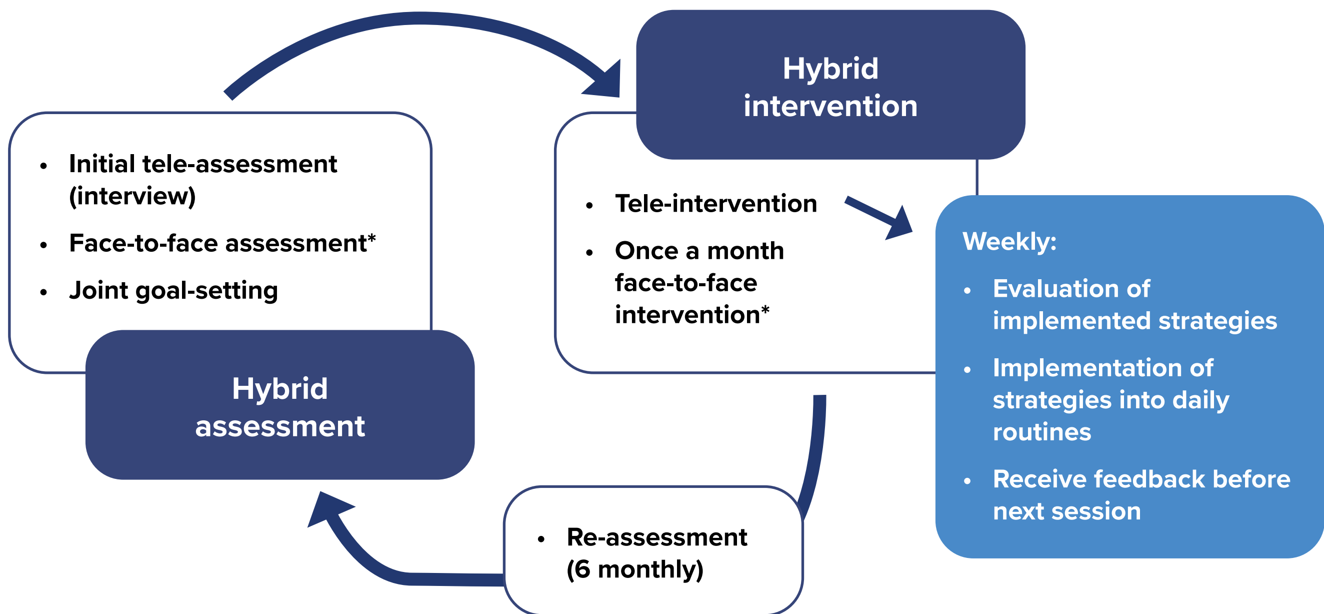
Caregivers are the key stakeholders in their children's development and play an essential role in the delivery of early telehealth services for young children, especially during national calls to stay home due to the pandemic. Successful implementation of the NCF[6] is facilitated by optimising caregiver capabilities, which lie at the core of the enabling environments.[4] These capabilities must, in turn, be nurtured by the healthcare professionals, including student-clinicians, who engage with caregivers during telehealth sessions.

When probing caregivers' perspectives of the tele-assessment and tele-intervention formats, the need for a hybrid approach was identified, although they identified the telehealth format as viable due to its practicality, convenience and resource-saving, especially amid the COVID-19 pandemic. The convenience of telehealth was a strong theme, as caregivers could participate in the comfort of their own home, without having to drive to sites during working hours, and could limit their exposure to COVID-19. In assessments, caregivers want healthcare professionals' insights on their children's behaviour to supplement their judgements – and in tele-intervention, caregivers were concerned about how progress would be measured in the absence of face-to-face engagement due to physical distancing regulations. The measuring of progress during intervention was also an initial concern of student-clinicians. In response to study findings, face-to-face sessions should continue as part of a proposed hybrid approach to service delivery (Figure 1), subject to enacted lockdown levels.

Modes of service delivery should accommodate caregivers' needs but, based on caregiver feedback, preference should be given to face-to-face assessment and intervention as the foremost tier of service delivery. During higher lockdown levels, services can be supplemented with synchronous online or telephonic intervention as the second tier of service delivery, to improve regular accessibility. The use of telephonic conversations and the WhatsApp platform for tele-intervention, especially when data bundles are limited, should not be overlooked as practical and convenient solutions to improve caregiver knowledge and access to

care. Lastly, asynchronous services can be utilised as the third tier to limit costs and improve regular contact when online and physical accessibility is a challenge. During stringent COVID-19 lockdown restrictions, the first tier of face-to-face contact is often impossible and, therefore, the second and third tiers of synchronous and asynchronous online service delivery can be utilised as alternatives to ensure the families' safety and convenience. This may also be relevant in other instances where access to and financial resources for services are limited, for instance in rural settings where communities are situated far from service providers.[13] Based on the recommendations by the Health Professions Council of South Africa (HPCSA), a hybrid approach of combining face-to-face contact and telehealth appears to be the most viable way of rendering sustainable and accountable early assessment and intervention services during a state of disaster[12], and aligns well with the NCF as it fosters responsive caregiving and supported learning through enabling environments. The application of the suggested hybrid approach to clinical settings should be explored in future research.

Figure 1: Proposed hybrid approach to service delivery



* Subject to access and availability of services – if physical access is limited tele-assessment and intervention can be utilised in isolation

Themes identified across stakeholders showed that their perspectives overlapped regarding the viability of telehealth, their knowledge and the roles they each played in assessments and interventions, regardless of format. These findings substantiate that telehealth-based early developmental care is a feasible approach for continued access to services during COVID-19.

Despite feasibility, a lack of detailed guidelines for tele-assessment and tele-intervention exist in South Africa[9], a fact that student-clinicians also highlighted. The findings indicate potential for the use of telehealth for South African populations, especially during service delivery disruptions such as COVID-19 related restrictions. Future research should expand clinical practice guidelines for South Africa.

Conclusions

This chapter considers stakeholder's perspectives of telehealth from both sides of the service-delivery framework: the receiver and the provider. Key stakeholders' perspectives are vital to the continued evolution of service delivery. This has never been more relevant than during the global COVID-19 pandemic, which has placed vulnerable families in South Africa under even greater social and economic strain. Student healthcare clinicians' resilience was also challenged, considering the impact of the lockdown restrictions on their clinical learning. Forced changes to service-delivery formats occurred, giving rise to the increased use of telehealth supporting ECD in South Africa. What was once the norm can never be again,

and telehealth has now been established as part of standard developmental care. In future, stakeholders' perspectives must continue to be gathered to inform future policy and clinical decision-making regarding telehealth.[19]

Telehealth, as part of a proposed hybrid approach to service delivery, appears to be a medium to deliver functional, person-centred developmental care to reduce the cumulative effect of risks to ECD. This approach allows for student-clinicians to provide services in clients' real-life environments and to overcome COVID-19-related physical distancing boundaries.

Recommendations

Telehealth is a growing service-delivery approach in South Africa and will be increasingly used in the future, especially with the roll-out of free public WiFi networks offered by municipalities, such as TshWi-Fi from the city of Tshwane. With this expansion, evidence is needed to support the use of telehealth in LMICs such as South Africa. Based on the findings of this study, research should be conducted on larger and more diverse samples to compare the developmental outcomes obtained through tele-assessment with outcomes obtained using a face-to-face assessment approach.[9] It should be acknowledged that this study considers only stakeholders' perspectives on telehealth. While using the caregiver-led tele-intervention approach to deliver early communication intervention during the global pandemic, caregivers reported improvements in their children's communication abilities. Children's progress during tele-intervention should, however, also be monitored objectively by conducting re-assessments after a period of caregiver coaching delivered through tele-intervention.

Future research should be conducted to compare outcomes of children's abilities among those who attend the face-to-face intervention with those receiving tele-intervention only, be it on the second or third tier of the proposed hybrid approach. This will provide a strong justification for the future direction of a caregiver-led early communication intervention approach. Future research should also determine the efficacy of the proposed hybrid approach to service delivery for developmental delays to improve access to developmental care during the COVID-19 pandemic, including the fields of speech-language pathology, occupational therapy and behavioural play therapy. The application of the proposed hybrid approach to service delivery for older children with developmental delays or disorders should also be explored.

References

1. Black MM, Walker SP, Fernald LCH, Andersen CT, DiGirolamo AM, Lu C, et al. Early childhood development coming of age: science through the life course. Lancet, 2017; 389:77–90.

2. Abdoola S, Swanepoel D, Van der Linde J, Glascoe FP. Detecting developmental delays in infants from a low-income South African community: comparing the BSID-III and PEDS tools. Early Child Dev Care, 2021; 191(4):545–554.

3. du Toit MN, Van der Linde J, Swanepoel D. mHealth developmental screening for preschool children in low-income communities. J Child Health Care; 2020.

4. Black MM, Behrman JR, Daelmans B, Prado EL, Richter L, Tomlinson M, et al. The principles of Nurturing Care promote human capital and mitigate adversities from preconception through adolescence. BMJ Glob Health, 2021; 6:e004436.

5. South African National Planning Commission. Our future – Make it work: National Development Plan. Pretoria: The Presidency; 2014.

6. World Health Organization [WHO], United Nations Children's Fund, World Bank Group. Nurturing care for early childhood development: a framework for helping children survive and thrive to transform health and human potential. Geneva: WHO; 2018.

7. Salawu A, Green A, Crooks M, Brixey N, Ross D, Sivan M. Proposal for multidisciplinary tele-rehabilitation in the assessment and rehabilitation of COVID-19 survivors. Int J Environ Res Public Health, 2020; 17(13):4890.

8. Santoli JM. Effects of the COVID-19 pandemic on routine pediatric vaccine ordering and administration – United States, 2020. Morb Mortal Wkly Rep, 2020; 69.

9. Westwood K. Interview-based early development tele-assessment: Caregivers' perspectives. Unpublished masters dissertation. Pretoria: University of Pretoria; 2021.

10. Krikheli, L., Carey, L.B., McDonald, C.E. Malik, N. Telehealth use in Speech-Language Pathology: An exploratory scoping review (prepared for Cabrini Health, Victoria). Melbourne: La Trobe University, Participatory Field Placement Report, 2017; 1–52.

11. Health Professions Council of South Africa (HPCSA). Speech, Language and Hearing – professional board guidance on the application of regulations, rules and guidelines during the COVID-19 pandemic. Pretoria: HPCSA; 2020.

12. South African Speech-Language-Hearing Association. Memorandum: What to do in level 4 under the state of disaster (version 2). Pretoria: SASLHA; 2020.

13. South African National Department of Health. eHealth Strategy South Africa 2012–2016. Pretoria: NDoH; 2012.

14. Lowman J, Kleinert H. Adoption of telepractice for speech-language services. Rural Spec Educ Q, 2017; 36(2):92–100.

15. Sparrow SS, Cicchetti DV, Saulnier CA. Vineland Adaptive Behavior Scales, Third Edition. San Antonio, TX: Pearson South Africa; 2016.

16. de Beer CC, Krüger E, van der Linde J, Eccles R, Graham M. Developmental outcomes of HIV-exposed infants in a low-income South African context. Afr Health Sci, 2020; 20(4):1734–1741.

17. Wattanawongwan S, Ganz JB, Pierson L, Yllades V, Liao CY, Ura SK. Communication intervention implementation via telepractice parent coaching: Parent implementation outcomes. J Spec Educ Technol, 2020; 0162643420950026.

18. Braun V, Clarke V. One size fits all? What counts as quality practice in (reflexive) thematic analysis? Qual Res Psychol, 2021; 18(3): 328–352.

19. Clark M, Adams D. Listening to parents to understand their priorities for autism research. PloS One, 2020; 15(8): e0237376.