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RESEARCH REPORT

Changes in telepractice use and perspectives among speech and language therapists in Singapore through the COVID-19 pandemic

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Abstract

Background: Much has been written about the changes in use and perspectives of telepractice among speech and language therapists (SLTs) during the global COVID-19 pandemic. However, no long-term study has been done to examine whether there is a permanent shift in attitudes towards telepractice as the world adjusts to new norms and endemic COVID-19.

Aims: To compare the speech telepractice use and perspectives of SLTs at two time points of the pandemic: during and after the height of the pandemic.

Methods & Procedures: Two online surveys were distributed a year apart among SLTs in Singapore. The first survey was disseminated during an initial lockdown period in 2020 and the second survey was done in 2021 when Singapore was starting to reduce strict quarantine and safe-distancing regulations. These surveys were distributed via communication channels of the local speech therapy association. A total of 115 and 71 responses to the survey were collected in 2020 and 2021, respectively. Responses were captured and analysed using descriptive statistics and statistical analysis while qualitative content analysis was used to derive key themes from open-ended questions.

Outcomes & Results: Telepractice use across all age groups and client types peaked at the height of the pandemic. Even as lockdown measures were eased, telepractice utilization was still higher than what it was before the pandemic. Dysphagia management was the only area where SLTs reduced their use of telepractice during the stabilization phase. After more experience with telepractice during the height of the pandemic, SLTs acknowledged the benefit of being able to use a wide range of media through telepractice and were less worried about not having the resources or knowledge to set up telepractice. SLTs also reported increased confidence in providing telepractice, which was reflected in their willingness to continue to provide telepractice even after the pandemic ends.

Conclusions & Implications: The increase in use of telepractice during this pandemic is likely to be sustained as a majority of respondents believed they would continue to provide this mode of service delivery even after the pandemic

ends. However, clinicians will still have to assess for client suitability, as clients with more complex medical or behavioural issues may still require in-person therapy. Additionally, dysphagia management via telepractice will still be limited given that swallow presentations may be more variable. Lastly, although generic resources are helpful for clinicians, the long-term sustainability of telepractice can be boosted by the sharing of resources that are suitable for the local context.

KEYWORDS

benefits, challenges, COVID-19 pandemic, perspectives, speech therapy, telepractice

WHAT THIS PAPER ADDS

What is already known on this subject

Current studies have examined telepractice use and perspectives of SLTs before and during the COVID-19 pandemic. Despite the evidence for the efficacy of telepractice, uptake was low due to perceived lack of training and resources. Although more clinicians provided telepractice during the pandemic, many still doubted its efficacy over in-person therapy and most studies concluded that longer term studies are required to ascertain if SLTs will continuing providing telepractice after the pandemic.

What this paper adds to existing knowledge

This study shows that there is a definitive shift in perspectives in favour of telepractice after the pandemic, as clinicians continued to provide telepractice across most service areas even without lockdown restrictions. The previous challenges of insufficient resources, knowledge and privacy concerns were reduced with more experience in providing telepractice. Although client suitability remained a major barrier, more clinicians saw benefits of easy access to therapy and range of resources used as benefits that they could harness from telepractice.

What are the potential or actual clinical implications of this work?

A majority of respondents stated that they are more confident in providing telepractice and would want to continue providing this service delivery mode after the pandemic, so more training and resources suitable for the local contexts can be provided by national associations to sustain this. More research and resources can be gathered to make telepractice more efficacious for dysphagia management and clients who may be deemed unsuitable for telepractice.

INTRODUCTION

The COVID-19 pandemic has introduced many new norms in society, with quarantine, lockdown, social distancing, working and learning from home part of everyday life for many worldwide. Not only have daily routines been disrupted by the pandemic, but there has been a significant impact on the delivery of healthcare services. Mueller (2020) described how regulatory and financing barriers to telemedicine have been relaxed in Europe and America to meet the increase in demand for virtual services across various medical specialties. Similarly, speech and language therapists (SLTs) have had to provide services remotely to ensure continuity of service while safeguarding clinician and client safety (Aggarwal et al., 2020).

Telepractice has been accepted by the American Speech–Language–Hearing Association (ASHA) as an appropriate service delivery model since 2005 (ASHA, n.d.). Its feasibility and efficacy across the spectrum of disorders within the SLT's scope of practice have been

well-researched, including paediatric and adult speech, language, voice and fluency disorders, as well as dysphagia services (Brignell et al., 2021; Burns et al., 2019; Weidner & Lowman, 2020). A systematic review by Molini-Avejonas et al. (2015) found that many studies acknowledged the advantage of telepractice over in-person sessions in areas such as cost-effectiveness, ease of access, and efficiency. Nonetheless, telepractice was not widely offered before the COVID-19 pandemic as many SLTs felt that they lack the training, appropriate technology, resources and environment to offer this service (Tucker, 2012). In addition, clients and caregivers were sceptical about the effectiveness of telepractice and felt that certain clients, like children with behaviour management issues, may not be suitable for virtual therapy sessions (Tucker, 2012).

Even in countries where there is widespread adoption of advanced technology, such as Singapore where 76% of the population used the Internet in 2020 (Bank, 2020), the use of telepractice among SLTs was not prevalent. Singapore has a population density 27 times that of the UK and has a well-developed health and social care system. This makes medical and rehabilitation services very accessible geographically. Fong et al. (2021) found that small and densely populated countries, such as Singapore and Hong Kong, did not favour the uptake of telepractice as medical and rehabilitation services are easily accessible.

During the COVID-19 pandemic, SLTs globally had to consider alternative service delivery models, particularly at the peak of infection waves when strict mobility restrictions were implemented across countries, and rehabilitation services deemed non-essential were put on hold. National speech therapy associations such as ASHA, the Royal College of Speech and Language Therapists (RCSLT) and Speech and Language Therapy Singapore (SALTS) provided guidelines to support implementation of telepractice in this period. These guidelines included governance considerations, prevailing privacy and consent policies, and logistical guides to setting up telepractice (including software and hardware requirements). The ASHA COVID-19 Tracker Survey distributed in 2020 (ASHA, 2020) showed a 14-fold increase in SLTs who routinely provided services via telepractice during the pandemic (from 4.4% to 62%).

Across the world, SLTs shared similar sentiments regarding the use of telepractice in the pandemic. They expressed increased stress in adapting to a new service delivery mode (Sylvan et al., 2020), and were still uncertain of the efficacy of telepractice compared with in-person services. Many SLTs believed that more training in the use of telepractice and having appropriate resources were required (Aggarwal et al., 2020; ASHA, 2020; Fong et al., 2021). Therapists working with the paediatric population felt that client engagement and selection greatly limited the effectiveness of telepractice provision (Tambyraja et al., 2021).

Despite these reservations, SLTs worldwide acknowledged the benefits of telepractice. This was shown in how 49% of therapists in India felt they would want to continue with telepractice even after the lockdown (Aggarwal et al., 2020) and 73% of SLTs providing telepractice in Croatia felt competent in providing this model of service and were satisfied with its results (Kuva Kraljevi et al., 2020). Similarly, in a brief survey of SLTs in New Jersey, America, more than 50% of respondents expressed their willingness to continue with telepractice after the pandemic as it provides flexibility and broader access to services (Kollia & Tsiamtsiouris, 2021).

Most available surveys of SLT sentiments towards telepractice in the COVID-19 pandemic concluded that longer term investigation into SLTs' attitudes towards telepractice even after lockdown periods was necessary. This is to identify if SLTs merely see telepractice as a stopgap measure during a crisis or if there is a definitive shift in perspectives towards the use of telepractice. Hence, we aim to survey SLTs' use of telepractice and perspectives towards telepractice at different stages in the COVID-19 pandemic: (1) *during* the height of the pandemic (i.e., when lockdowns were imposed or non-essential services were restricted) and (2) *after* the height of the pandemic (i.e., stabilization phase, when most services have resumed).

METHODS

Development of the survey

A survey was developed by the study team at the beginning of the COVID-19 pandemic (see Appendix A in the additional supporting information). A total of 32 questions were formed to survey service patterns, telepractice experience and perception of efficacy, benefits, and challenges in implementing telepractice. There are no prior surveys in Singapore on SLTs' perspectives of telepractice before the pandemic; as such, this survey was crafted to also retrospectively capture SLTs' use and opinions on telepractice before the COVID-19 pandemic to identify any changes brought about by the pandemic. Cognitive interviews were conducted with two practicing SLTs and minor amendments were made to improve clarity of the questions (Peterson et al., 2017).

Before the administration of the second survey a year later, survey questions were amended to solicit changes in perception (see Appendix B in the additional supporting information). While the original survey focused on whether participants felt additional guidelines and certification were required for telepractice, the later survey

TABLE 1 Key sections and comparison of surveys in 2020 and 2021

Sections of survey	2020 survey	2021 survey
Practice patterns	Practice setting	
	Areas of service	
Telepractice experience	Age groups of clients served	
	Types and areas of services	
	Screening process	
	Types of telepractice platforms used	
	Client feedback	
Views about efficacy of telepractice	Efficacy of telepractice compared with in-person services	
Views about benefits of telepractice	Potential benefits	Benefits experienced when providing telepractice
Views about barriers of telepractice	Potential barriers	Challenges faced when providing telepractice
Resources for telepractice	Adequacy of resources	
	Not asked	Change in amount of available resources
		Where resources are assessed
		Type of resources and support required to sustain telepractice
Confidence in providing telepractice	Not asked	Confidence in providing telepractice
		Likelihood of providing telepractice after pandemic

asked about the adequacy of resources and participants' confidence in providing telepractice (Table 1). Cognitive interviews were again conducted with three practicing SLTs and minor amendments were made to improve clarity of the questions.

The study was reviewed by the SingHealth Centralised Institutional Review Board (ref. no. 2020/2561) and deemed to require no further ethical deliberations.

Recruitment of participants

SLTs in Singapore were surveyed anonymously through an electronic Google form in two time periods. The first survey was conducted during a nationwide lockdown imposed from April to June 2020. During this lockdown from 7 April to 1 June 2020 (also known as Circuit Breaker period), Singaporeans were only allowed to leave the house for essential services, and SLT services were considered non-essential. The second survey was conducted a year later, between April 2021 and June 2021, during a stabilization phase as the country adjusted to living with endemic COVID-19. SLTs were contacted through convenience sampling by use of mailing lists and communication channels of Speech and Language Therapy Singapore, the national association of SLTs. An initial screening question 'Are you a speech therapist practising in Singapore?' was posed, where a negative response directed potential participants away from the survey. Consent was implied by completion of the survey.

Statistical analysis

Survey results were electronically captured and analysed using descriptive statistics and statistical analysis. The Pearson chi-square test was used to determine whether unrelated variables are independent of each other, while the related-samples McNemar change test was used to compare and analyse the significance of changes at various time points measured (i.e., during and after the height of the pandemic). Independent samples proportions *Z*-tests were applied when comparing changes in perspectives of SLTs from 2020 to 2021. For all tests, statistical significance

TABLE 2 Respondents' profile of work settings and areas of services

		2020 ($n = 105$)	2021 ($n = 65$)
Work setting[a]			
Public restructured hospital		41 (39.05%)	19 (29.23%)
Social Service Agency		34 (32.38%)	18 (27.69%)
Private clinic		23 (21.90%)	15 (23.08%)
Educational institution		9 (8.57%)	10 (15.38%)
Community hospital		6 (5.71%)	4 (6.15%)
Clients' homes		5 (4.76%)	9 (13.85%)
Other long-term care institutions		1 (0.95%)	0 (0%)
Private tertiary hospital		0 (0%)	1 (1.54%)
Others		1 (0.95%)	2 (3.08%)
	Areas of service[a]		
Paediatric	Language and communication	54 (51.43%)	17 (26.15%)
	Speech and articulation	42 (40.00%)	12 (18.46%)
	Cognitive and social communication	37 (35.24%)	11 (16.92%)
	Swallowing/feeding	12 (11.43%)	4 (6.15%)
	Fluency	7 (6.67%)	6 (9.23%)
	Voice	2 (1.90%)	0 (0%)
Adult	Language and communication	14 (13.33%)	10 (15.38%)
	Speech and articulation	14 (13.33%)	9 (13.85%)
	Cognitive and social communication	13 (12.38%)	6 (9.23%)
	Swallowing/feeding	6 (5.71%)	3 (4.62%)
	Fluency	4 (3.81%)	2 (3.08%)
	Voice	5 (4.76%)	6 (9.23%)

Note: [a]Percentages add up to more than 100% as some therapists provide services across different settings and for multiple areas.

level was set at 0.05. Responses to open-ended questions were analysed using qualitative content analysis to identify key patterns and categories in these responses.

RESULTS

Work settings and service areas

There were a total of 115 survey responses in 2020 and 71 responses in 2021. After eliminating duplicates and entries that failed the screening question, a total of 105 and 65 responses from SLTs working in Singapore were considered in 2020 and 2021, respectively.

A majority of respondents worked in public restructured hospitals (39.05% in 2020, 29.23% in 2021) and social service agencies (32.38% in 2020 and 27.69% in 2021) (Table 2). This corresponds proportionately with the profile of SLTs in Singapore, where 33.84% work in the public healthcare sector and 22.97% in social service agencies (AHP Council, 2020). Overall, most respondents worked with paediatric clients (73.30% in 2020 and 69.20% in 2021). A small group of participants worked with both paediatric and adult clients (18.10% in 2020 and 13.80% in 2021). In both years, about two-thirds of respondents were providing telepractice during the period when the surveys were conducted (67.62% in 2020 and 66.15% in 2021). Zoom was the platform of choice among therapists, with 56.92% of them using it for their sessions. Skype (10.77%), Microsoft Teams (10.77%) and Google Meet (9.23%) were other more commonly used platforms.

Speech therapists' use of telepractice

The percentage of SLTs providing telepractice increased significantly from 13.85% before the pandemic to 73.85% at the height of the pandemic ($p < 0.001$*). In the stabilization

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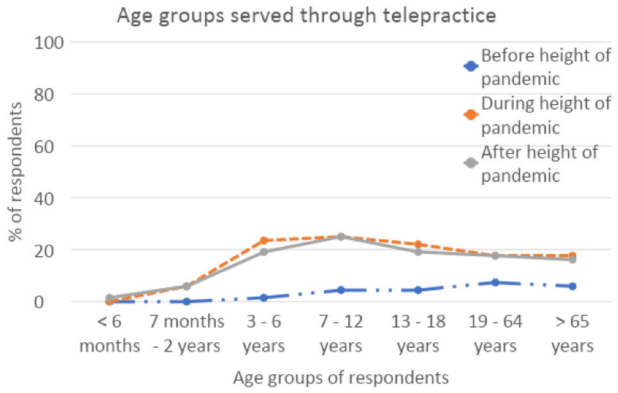

FIGURE 1 Age groups served through telepractice
Notes: The blue dashed line shows the trend in the age groups served via telehealth initially before the pandemic. The orange dotted line shows the trend during the height of the pandemic, with an increase in service provision across all age groups. The grey continuous line shows that after the height of the pandemic, telepractice still maintained higher usage rates across all age groups when compared with the initial provision before the height of the pandemic
[Colour figure can be viewed at wileyonlinelibrary.com]

phase, 66.15% of SLTs provided telepractice. This proportion was not significantly lower than at the height of the pandemic ($p = 0.405$).

Provision of telepractice across client age groups

There was an increase in telepractice provided for all age groups during the height of the pandemic (Figure 1). The largest statistically significant increase was for children aged between 3 and 6 years o (16-fold increase, $p < 0.001$*) and those between 7 and 12 years old (5.67-fold increase, $p < 0.001$*). After the height of the pandemic, there was a decrease in telepractice use for three age groups: 3–6 years, 13–18 years and patients older than 65 years (Figure 1). However, the decrease across all age groups was not statistically significant.

Provision of telepractice across service areas

There was an increase in the use of telepractice for all service areas during the height of the pandemic (Figure 2), with paediatric speech (14-fold increase, $p < 0.001$*) and paediatric language (11-fold increase, $p < 0.001$*) showing the greatest statistically significant increase. Among adult services, adult speech (3-fold increase, $p = 0.008$*), language (4.33-fold increase, $p = 0.002$*) and cognitive and social communication (10-fold increase, $p = 0.004$*) all showed statistically significant increases in the use of telepractice as well.

While the utilization of telepractice showed an overall downward trend after the height of the pandemic, it was still used more often than before the pandemic. Adult dysphagia services was the only area that showed a decrease in use of telepractice back to pre-pandemic numbers; on the other hand, adult voice therapy showed an increase in telepractice use even after the height of the pandemic.

Views of telepractice

Relationship between amount of resources, clinician confidence and sustainability of telepractice

During the height of the pandemic, only 31.43% of respondents felt that they had adequate resources for telepractice, and 49.52% believed that telepractice guidelines in Singapore were insufficient. To facilitate telepractice, respondents found additional resources through websites and social media sites, resources provided by their workplace, and created therapy materials themselves.

When surveyed after the height of the pandemic, 56.92% of respondents now felt that they had sufficient resources for telepractice. A total of 73.85% of SLTs reported increased confidence in delivering telepractice services while 4.62% reported feeling less confident. At the same time, 72.31% of respondents expressed that they were likely to continue telepractice (rating 4–6 points on a six-point Likert scale) after pandemic-related restrictions are lifted. Conversely, 3.08% of respondents said they were very unlikely to continue (1 point).

A chi-square test of independence was performed to examine the relation between confidence levels of respondents in providing telepractice and their likelihood of providing this service after the pandemic. The relation between these variables was significant, χ^2 (15, $N = 65$) = 25.67, $p = 0.042$*, demonstrating that respondents who reported being confident in providing telepractice were more likely to provide telepractice in future, even without COVID-19 restrictions. Conversely, there was no significant association between the perception of adequacy of resources and likelihood of continuing telepractice after the pandemic, χ^2 (10, $N = 65$) = 15.853, $p = 0.104$.

Efficacy of telepractice

SLTs perceived that the overall quality of in-person therapy is better than telepractice both during and after the height of the pandemic (76.19% and 70.77%, respectively). Across

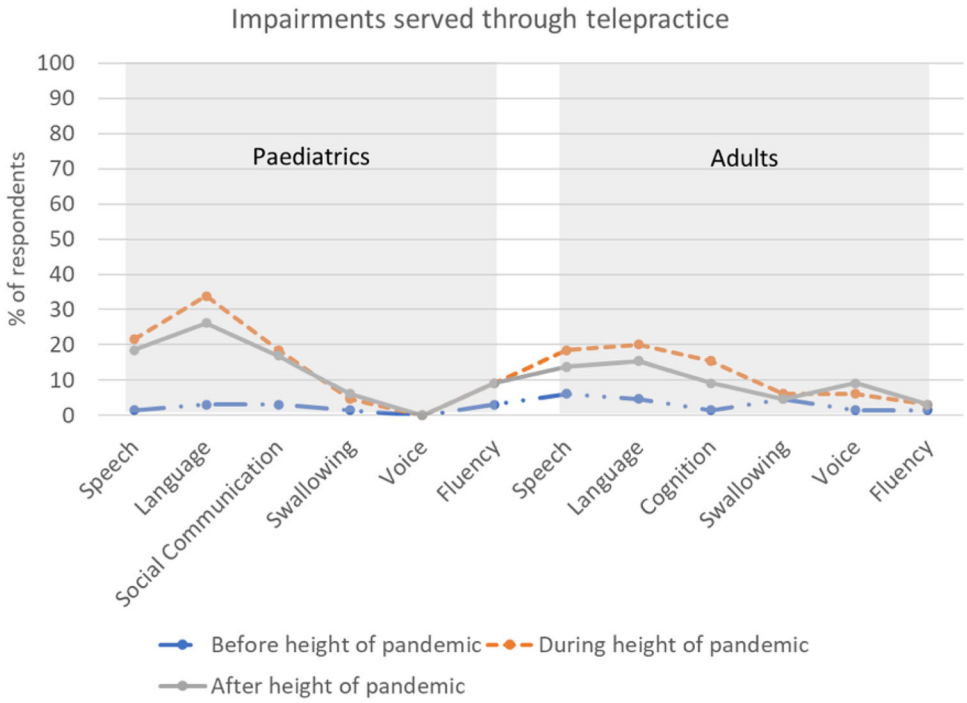

FIGURE 2 Impairments served through telepractice.
Notes: The orange dotted line shows an increase in telepractice offered across all service areas during the height of the pandemic, compared with the blue dashed line demonstrating telepractice use before the pandemic. The grey continuous line shows that telepractice use maintained an increase over pre-pandemic numbers, with only adult dysphagia services returning back to pre-pandemic numbers.
[Colour figure can be viewed at wileyonlinelibrary.com]

both surveys, in-person therapy was seen to be better for building rapport (70.48% and 73.85%, respectively) and was more appropriate for the clients served (80.95% and 76.92%, respectively).

At the height of the pandemic, 42.86% of therapists viewed in-person therapy to be more productive than telepractice. After the height of the pandemic, 27.69% of therapists believed that in-person therapy was more productive compared with telepractice. Telepractice appointments were perceived to be easier to schedule compared with in-person therapy. Therapists also consistently felt that conducting telepractice was more time efficient than in-person therapy (41.90% during, 58.46% after, $z = 2.099$, $p = 0.036$*).

Compared with during the height of the pandemic, fewer respondents found value in telepractice helping to increase the frequency and intensity of therapy after the height of the pandemic (decreased from 69.52% to 42.86%, $p = 0.003$*).

Other benefits derived from respondents' qualitative responses included easier inclusion and greater participation of caregivers, ability to see and carry out sessions in clients' own home environment, logistical benefits (e.g., reduced travelling time and costs, reduced time to prepare and sanitize materials), and less defaulting of appointments. Therapists also felt they were more creative and could use digital tools to supplement their therapy when doing telepractice.

Benefits of telepractice

Throughout the pandemic, 'easy access to therapy' (94.29% during and 85.71% after) and 'timely continuity of care' (80.95% during and 71.43% after) were identified as the main benefits of telepractice (Table 3). Significantly more therapists also saw the benefit in the range of media used for therapy after the height of the pandemic (increased from 45.71% to 64.29%, $p = 0.042$*).

Challenges of telepractice

Table 3 shows that during the height of the pandemic, the suitability of the client for telepractice was perceived to be the greatest potential barrier to telepractice (96.19%). A total of 69.52% of respondents also felt they did not have the knowledge to set up telepractice services.

While suitability of the client for telepractice remained the biggest challenge to telepractice provision (88.10%)

TABLE 3 Benefits and challenges of telepractice (2020: Perceived benefits/challenges; 2021: Benefits/challenges experienced)

	During the height of the pandemic (2020) ($n = 105$)	After the height of the pandemic (2021) ($n = 42$[a])
Benefits	**Potential benefits**	**Benefits experienced**
Easy access to speech therapy services	99 (94.29%)	36 (85.71%)
Timely continuity of care for clients	85 (80.95%)	30 (71.43%)
Increased frequency/intensity of therapy for clients	73 (69.52%)	18 (42.86%)[b]
Clients are in more natural and familiar environments	73 (69.52%)	26 (61.90%)
Wide range of interactive media can be used in session	48 (45.71%)	27 (64.29%)[b]
Outcomes achieved via telepractice are the same as or better	32 (30.48%)	16 (38.10%)
Challenges	**Potential challenges**	**Challenges experienced**
Therapist/client not suitable for telepractice	101 (96.19%)	37 (88.10%)
Lack of knowledge to set up telepractice	73 (69.52%)	6 (14.29%)[b]
Telepractice is not as effective as in-person therapy	61 (58.10%)	19 (45.24%)
Insufficient resources/funds for telepractice	61 (58.10%)	15 (35.71%)[b]
Therapist/client concerns about data privacy and security	57 (54.29%)	8 (19.05%)[b]
Patients not keen for telepractice (only asked in 2021)	n.a.	31 (73.81%)

Notes: [a]Only therapists who had provided telepractice before responded to these questions.
[b]Statistically significant change from 2020 to 2021 ($p < 0.05$).

after the height of the pandemic, there were changes in SLT perspectives with regard to the other challenges of telepractice. There was a decrease in the percentage of SLTs who saw lack of knowledge (decrease from 69.52% to 14.29%, $z = -6.068$, $p < 0.001$*), insufficient funding or resources (decrease from 58.10% to 35.71%, $z = -2.453$, $p = 0.014$*), and concerns about data privacy and security (decrease from 54.29% to 19.05%, $z = -3.886$, $p < 0.001$*) as significant challenges to taking on telepractice.

After the height of the pandemic, when SLTs have had more experience in providing telepractice, 73.81% of SLTs concurred that clients' unwillingness was a significant barrier to the uptake of telepractice. This was the second ranked challenge experienced by SLTs in providing telepractice.

Respondents also raised other challenges to telepractice, including the stability and quality of Internet connection, extra time taken to prepare and convert resources for digital use, difficulty maintaining clients' attention and managing behaviour, as well as telepractice being mentally exhausting for the clinician.

DISCUSSION

During this pandemic, numerous surveys were conducted to understand perspectives about the use of telepractice by SLTs and other medical professionals in various countries. However, most of these surveys were done at the height of the pandemic and may only represent a change in attitude towards telepractice necessitated by sudden lockdown situations. Few studies have surveyed perspectives at different timepoints in the evolving pandemic and whether its increased use has made SLTs and medical professionals more confident and willing to continue this mode of service delivery after the crisis. To our knowledge, this is the first study tracing SLTs' perspectives from the peak of the pandemic to the stabilizing phase, helping us to understand the role that this pandemic has played in changing SLTs' attitudes towards telepractice and whether these attitudes will continue after the pandemic.

Our results show that telepractice use among SLTs increased during the COVID-19 pandemic and this increase was sustained even after the pandemic stabilized into an endemic stage. This increase was most significant among the paediatric population and used most frequently for paediatric speech and language therapy. On the other hand, the use of telepractice in dysphagia management did not increase significantly even amongst constraints imposed during the height of the pandemic.

The largest increase in telepractice use was among paediatric clients. Home-based learning was enforced in schools during the lockdown period and parents were fearful of exposing children to the virus if they went out. One SLT posited that 'students and parents weren't previously familiar with the idea of Zoom sessions, but now with home-based learning and working from home everyone is more comfortable with the idea, and may even see the

benefits of it'. This may have contributed to the keen adoption of telepractice for speech and language therapy in school-aged children.

Despite this, client suitability remained the main challenge to the use of telepractice even among the paediatric population, especially for children with more profound disability or attention deficits. Client selection remains an important consideration in offering telepractice and perhaps current guidelines do not yet provide clarity. A number of SLTs commented that after having some experience with telepractice, they have more 'tips and tricks in the pocket' and are aware of suitable resources to supplement therapy with clients previously thought unsuitable. Emerging research has also shown that even challenging populations such as those on the autism spectrum have responded positively to both assessments and treatment via telepractice, indicating the potential for telepractice with a wider spectrum of clients (Ellison et al., 2021). While not explored in depth in this study, training, familiarity, and experience in telepractice may impact on the perceived suitability of certain client populations to this mode of therapy delivery. Further research and the development of guidelines, policy and training of care providers can further increase access to telepractice to clients with complex conditions.

It has been previously found (Fong et al., 2021) that telepractice is not favoured in densely populated states where medical and rehabilitation services are easily accessible. Our findings that telepractice use across most client populations remained high after the height of the pandemic, despite the resumption of in-person therapy option, challenges this notion. The pressures of the pandemic allowed more therapists and clients to explore this mode of therapy delivery. The relative ease of geographical access to in-person services may only be one factor among many that affect the choice of therapy delivery.

Provision of telepractice for dysphagia management remained low in Singapore. This trend is also noted in many other countries before the pandemic (Hill & Miller, 2012; Regina Molini-Avejonas et al., 2015). In our study, dysphagia is the only condition where the use of telepractice returned to lower pre-pandemic numbers after the lockdown, suggesting that when national policy does not require remote therapy, SLTs revert to in-person sessions. Caution towards using telepractice as a service model for dysphagia is supported by Malandraki et al. (2021) systematic review, especially given that swallowing presentations are more unpredictable and often require instrumental or tactile assessments.

Apart from changes in service provision, there has also been some changes to the perspectives of SLTs towards telepractice since the start of the pandemic. Throughout the pandemic, SLTs perceive that telepractice provides easy access to therapy and allows for timely continuity of care. Concerns that appeared to be daunting at the height of the pandemic and wide adoption of telepractice, including the lack of knowledge and resources for telepractice, and worries about security and privacy, lessened after the height of the pandemic. SLTs also came to appreciate the range of media that can be used in therapy with telepractice. Nevertheless, suitability of clients for telepractice remained the biggest challenge in telepractice provision, concurring with the findings of other studies that found telepractice to be unsuitable for clients with complex needs or behavioural issues (Hao et al., 2021; Kollia & Tsiamtsiouris, 2021). Many SLTs still perceive in-person therapy to be of better overall quality and allows for better rapport building even after more experience with this mode of service delivery.

Given that most SLTs were given no choice but to offer telepractice to ensure service continuity during strict lockdown conditions, many were sceptical that this service delivery mode will continue after the pandemic ends. In one recent study of paediatric SLTs, half of the respondents said they were unlikely or very unlikely to use telepractice after the pandemic ends (Hao et al., 2021). Interestingly, among our surveyed population, 72.31% of SLTs responded positively to providing telepractice even after the pandemic is over. Many clinicians stated the time, cost savings and convenience for the patients as reasons for continuing this service, with a few also acknowledging that this will be the inevitable trend in future: 'Telepractice is something the industry will have to embrace at some point as we progress towards a digital age.'

Despite this positive response towards telepractice, the concern that telepractice can be 'exhausting' was also highlighted as one key challenge after the height of the pandemic. Various studies (Aggarwal et al., 2020; Hao et al., 2021; Hines et al., 2015) had brought up concerns about the mental well-being of therapists when providing telepractice. Our survey respondents commented that this exhaustion arose from having to engage actively with clients over the digital platform as well as the extra effort in scheduling and modifying resources for online use. Hence, this alludes to the fact that despite the convenience and logistical benefits of telepractice for the clients, more must be done to streamline and simplify scheduling and processes so that clinicians will not feel extra burdened in their use of telepractice. Training can also be given to help clinicians engage their clients and sharing of best practices on how to streamline and improve administrative processes for telepractice may also help to reduce the hassle and inefficiencies associated with telepractice. Even ergonomics can be considered to ensure that clinicians do not suffer from unnecessary fatigue from constant computer use for telepractice.

Despite there being no statistically significant relationship between SLTs' opinion of the adequacy of resources and their willingness to provide telepractice after the pandemic, the amount and type of resources was highlighted as something that would make telepractice a viable long-term service. In their qualitative responses, SLTs continued to request for a 'pool', 'bank' and 'library' of resources, as well as having locally relevant resources. This suggests that while having access to a variety of telepractice resources is important, it is more crucial to have resources that are relevant to the local context and consolidated within a local speech therapy community.

LIMITATIONS AND FUTURE DIRECTIONS

For this study, only SLTs in Singapore were surveyed due to the limitations of time and resources. Given the similar struggles of a lockdown situation and resumption of non-essential medical services in many other countries during this worldwide pandemic, there is value in doing a comparison study with other SLTs in other countries to identify similarities and differences in perspectives. This will help us to see if the different levels of support, or facilities put in place in different countries affect SLTs' views and use of telepractice.

Furthermore, this study was only done with a small number of SLTs. Although the respondents were representative of the distribution of SLTs across various work settings in Singapore, the perspectives of a larger sample size would give a more accurate picture of SLTs' perspectives towards this service delivery model.

In this study, we made a comparison of SLTs' use and sentiments towards telepractice before, during, and after the height of the COVID-19 pandemic. As there were no existing data on telepractice in speech and language therapy in Singapore before the pandemic, we structured our first survey to retrospectively capture this information from SLTs. While every effort was made to structure survey questions objectively, there is a chance of recall bias on responses relating to telepractice use before the pandemic.

Some of the perceived advantages and challenges to telepractice found in this study, such as time efficiency and costs, are measurable. While it is beyond the scope of this study to investigate the actual time and cost efficiency of telepractice, future research should look into quantitative measures of value of telepractice in speech and language therapy. Additionally, this study focused primarily on SLTs' perspectives of telepractice. Given that the views of clients are equally important to assess the potential of telepractice in the long-run, future research can focus on quantitative and qualitative opinions of clients towards this service delivery mode and compare their perspectives with those of the SLTs.

CONCLUSIONS

The unique circumstances of the COVID-19 pandemic has accelerated the use and acceptance of working and learning remotely, with working from home and home-based learning part of a new normal. Consequently, clients have been more open to trying out telepractice in healthcare and rehabilitation services, including speech therapy services. Similarly, SLTs' initial reservations and anxiety about providing this mode of service delivery during the height of the pandemic lessened considerably with the availability of resources, improved technological infrastructure and having more experience in using telepractice. Although the challenges of telepractice and the overall preference for in-person therapy may still limit the use of telepractice, this service delivery mode is likely to continue even after this pandemic ends. As SLTs become more adept at using telepractice, with more streamlined administrative processes and greater variety of resources, the benefits of telepractice in speech therapy can continue to be harnessed to provide more options for both therapists and clients in future.

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CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose. The study was reviewed by the SingHealth Centralised Institutional Review Board (Ref no. 2020/2561) and deemed to require no further ethical deliberations.

DATA AVAILABILITY STATEMENT

The datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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