Telepractice with Adults with Dysphagia Post-stroke: A Survey of New Zealand Speech-Language Therapists' Perceptions

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Speech and Language Therapy

At Massey University, Albany, New Zealand

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2022

ABSTRACT

The study explored the perceptions of speech-language therapists (SLTs) in New Zealand on the use of telepractice with adults with dysphagia post-stroke along with the perceived benefits, facilitators, barriers and beliefs. A cross-sectional, predominantly quantitative online survey design was employed via the survey platform Qualtrics. Participants were six SLTs working in New Zealand with experience using telepractice with adults with dysphagia post-stroke.

There were a number of key findings. The results suggested many benefits on the use of telepractice with adults with dysphagia post-stroke: possibility to work from home, reduced travel and costs, use of a support person, and employees' better quality of life. Also, the perceptions of the SLTs with respect to the client, clinician and the workplace/organisation were elicited. In addition, the different practical issues that need consideration while working with adults with dysphagia post-stroke via telepractice were discussed. Directions for future research based on the findings of the study were also identified.

ACKNOWLEDGEMENTS

I, Reshma Sreekumar, at this moment take the opportunity to thank all those beautiful people who inspired and encouraged me throughout my life to achieve my goals.

I would like to acknowledge my supervisors, Dr Mershen Pillay, and Dr Sally Clendon.

To Dr Mershen Pillay, I express sincere thanks from the bottom of my heart for all your support in sharing your wisdom, competence and expertise with me throughout my study.

I thank you also for the meticulous critical suggestions and feedback on every draft and for supporting me throughout, without which I would not have been able to complete this work.

To Dr Sally Clendon, I express my sincere gratitude for all the support rendered during my difficult times which helped empower me, for your quick and complete constructive feedback and suggestions, and your unwavering support.

I would like to convey my sincere gratitude to Linda Oostenrijk and Djhoanna Lambert for introducing me to Massey University.

Thank you, Emily Jones, Senior Professional Clinician, Massey University, for letting me to be a part of your fantastic class on dysphagia, along with undergraduate students.

I would like to thank Patty Govender, Clinical Educator at the Institute of Education, Massey University, for providing excellent feedback on my draft survey questionnaire.

Thanks to all the participants for your valuable time participating in my research.

I would like to acknowledge the work done by Kristy and Mable, for writing support and the pre-reading team for all your efforts.

I would like to show my deep appreciation to the Massey University College of Humanities and Social Sciences for awarding me the International Excellence Scholarship, 2020.

I take this opportunity to thank the most remarkable persons in my life who are my greatest inspiration and support system. Family is an emotional word to me. I do not have enough words to express my love and gratitude towards them. Thank you Acha for being there with me to pick me up when I fall and to say that " It is ok, you can do it. We have faced so many challenges, and this shall also pass." To my Amma, thanks for being the strong pillar of support, always with

powerful words that have inspired me to go through my tough times that helped me be confident and improve myself. You have moulded me to be a good person. I am so blessed to call you both 'Acha' and 'Amma'.

My dearest Chettan, it has been years since we met but you are permanently close by my heart; no matter how hard we fought as all siblings do, in the end, we always loved each other. You have always protected and supported me secretly.

My dear Thara Chechi, thanks for coming to our family and looking after us as your own. No matter what, we will always be there for you.

I also would like to thank all my dear friends at each stage of my life for being with me throughout these days, which would turn into a memorable one. Thank you, dear ones, for endless fun, laughter, dates, trips, phone calls, holding each one's back. It's tough to find friends like you.

Thank you all!!!

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Chapter One: Introduction

1.1 Background

The present study focuses on understanding the perceptions of speech-language therapists (SLTs) in New Zealand on the use of telepractice with adults with dysphagia post-stroke. This includes perceptions of the benefits, facilitators, barriers and beliefs. The findings will contribute to the growing body of information on telepractice in dysphagia practice, including diagnosis and intervention.

Telepractice is the use of telecommunications technology to deliver speech and language therapy (SLT) services to clients in a different location than the therapist (Cason & Cohn, 2014). It includes voice calls, video-conferencing or tele-conferencing to assess and provide therapeutic support to clients, enabling them and the clinician to meet regardless of being in different locations (Akemoglu et al., 2020). Telepractice is a viable service delivery option, particularly to meet the needs of the under-served population (Fong et al., 2020). The concept of under-served area is a region in which there is insufficient health workforce to meet population needs and also regions in which people experience barriers to health care accessibility (Wylie et al., 2013). In addition, the use of telepractice has improved clinical outcomes, reduced the costs involved, and alleviated the barriers of distance and travel (Coyle, 2012).

Telepractice is an effective service delivery option across various disorders, including dysphagia (Morrell et al., 2017). Dysphagia is any disruption in the swallowing process and can severely affect individuals' quality of life, resulting in distress in the client and their family members. In New Zealand, stroke is considered a significant cause of chronic disability and the third most common cause of death (Bay et al., 2015). However, reports on the use of telepractice

with adults with dysphagia post-stroke are almost absent in New Zealand, and hence, the need for this study.

1.2 Rationale for this study

People worldwide are going through a catastrophic, life-threatening pandemic; Coronavirus disease of 2019 (COVID-19) is affecting people of all ages. Older people and those with underlying medical problems are more likely to develop severe illnesses. Given the protection levels, it is difficult for people to receive health care services (Bedford et al., 2020) including adults with dysphagia post-stroke (Maggio et al., 2020). Telepractice is convenient in such a situation and can provide health care services.

New Zealand implemented a strict lockdown on 25 March 2020, even when no deaths were reported (Klein, 2020); then, there were multiple lockdowns in different phases. These lockdowns encompassed strict home quarantine with residents to leave home only for essential purposes such as purchasing food items and medical appointments. In addition, the nation's borders were closed for non-nationals. Such lockdown measures eliminated the virus in New Zealand, almost 11 weeks after the quarantine started. As a result, from January 2020 to August 2021, there were only 2,558 confirmed cases of COVID-19, with 26 deaths in New Zealand (WHO, 2021).

Telepractice has emerged as a driving force in health care in the majority of the countries during the COVID-19 pandemic, wherein health care can be performed remotely without the person having to come to the hospital (Faux et al., 2020). When compared to other countries, the lockdown periods were short in New Zealand (during the study period). This meant that the use of telepractice may not have been as widespread as in other countries. The present study is the

first in New Zealand that explores the perceptions of SLTs on the use of telepractice with adults with dysphagia post-stroke.

Evidence supports that telepractice is a viable and reliable means for screening and assessing people with various health-related needs (Kantarcigil & Malandraki, 2017; Mohan et al., 2017; Morrell et al., 2017). Telepractice also allows consultations between experts and the SLTs, thereby improving client outcomes and, considered to be cost-effective by reducing travel costs for the client and the SLT (Burns et al., 2017; Coyle, 2012; Nordio et al., 2018). Multiple studies have focused on the efficacy of dysphagia management via telepractice (Sharma et al., 2011).

The study will add to the literature by contributing to the growing evidence base of the use of telepractice with adults with dysphagia post-stroke. It will also provide critical information about the New Zealand context. Understanding the perceptions of SLTs working with adults with dysphagia post-stroke in New Zealand will inform the use of telepractice. In addition, this will also help to identify possible solutions to overcoming barriers in using this technology.

1.3 Research question

The study aims to answer the following research question:

> What do SLTs in New Zealand perceive about the use of telepractice with adults with dysphagia post-stroke along with the factors they perceive as barriers, beliefs and facilitators?

1.4 Structure of the thesis

Chapter One of the thesis introduces the background of this study, the rationale, the research question, and the thesis' structure. Chapter Two provides a review of the relevant literature. Chapter Three outlines the methodology used including the research aims, the research design, participant recruitment, procedures, data collection and analysis and ethical considerations. Chapter Four describes the results of the study. Chapter Five discusses the study's findings compared to the relevant literature reviewed in Chapter Two. Finally, Chapter Six presents the conclusions and discusses the limitations, implications for clinical practice, client education, training, and directions for future research.

Chapter Two: Literature Review

2.1 Introduction

This chapter reviews the literature connected with the perceptions of SLTs on the use of telepractice with adults with dysphagia post-stroke. The review starts with definitions of telepractice and related terms, the types of telepractice, and the technology. Additionally, telepractice is reviewed for its benefits and outcomes, and global perspectives in general and with speech and language therapy (SLT), including its use with individuals with dysphagia post-stroke. The impacts of COVID-19 on the use of telepractice are reviewed alongside its benefits, facilitators, and barriers concerning the client, clinician and workplace. Finally, SLTs' beliefs on the use of telepractice with adults with dysphagia post-stroke are examined

2.2 Telepractice

This section reviews the definitions of telepractice, synchronous and asynchronous types of telepractice, technology involved, benefits and outcomes, and global perspectives and describes the impact of COVID-19 on the use of telepractice.

2.2.1 Definitions

According to WHO (2018), telepractice involves telecommunications and virtual technology to provide health care outside of traditional health care facilities. The American Speech-Language-Hearing Association (ASHA, 2019) provided the following definition: "Telepractice is the application of telecommunications technology to the delivery of speech-language pathology (SLP) and audiology professional services at a distance by linking clinician to client or clinician to clinician for assessment, intervention and /or consultation."

It is worth investigating the other terms connected with telepractice, and those used synonymously, such as telerehabilitation, telemedicine, and tele-dysphagia intervention. For

example, telerehabilitation delivers services namely assessment, monitoring, intervention, supervision, education, consultation, and counselling services via information technology (Brennan et al., 2010; Richmond et al., 2017; Rogante et al., 2010; Russell, 2007).

Telemedicine is defined as the use of diagnostic, and treatment services delivered over a distance by a clinician, nurse or related professional (Fong et al., 2011). In addition, the term tele-dysphagia has emerged due to merging the terms telepractice and dysphagia (Coyle, 2012). Tele-dysphagia intervention delivers dysphagia therapy services through telecommunications technology (Cassel, 2016).

In this thesis, the term telepractice is used, even though there are different terms used to deliver dysphagia services through telecommunications channel. The term telepractice is the one that is commonly used in clinical service delivery.

2.2.2 Synchronous and asynchronous telepractice

This section reviews the different types of telepractice, usually classified into synchronous (real-time interaction technology) and asynchronous (store-and-forward) types (Cherney et al., 2011; Keck & Doarn, 2014). In a real-time interaction system, services are provided immediately to individuals and can be done in a nursing home, the client's home via videoconferencing system or using telephone calls (Sasikala et al., 2018). In the "store-and-forward" system, the client and the service provider need not be online simultaneously. Here, images are sent to a remote specialist. A hybrid model that combines synchronous and asynchronous technology has also been used (Cherney et al., 2011; Keck & Doarn, 2014).

2.2.3 Technology involved

This section discusses the various processes involved in telepractice by using advanced technology and systems along with other appliances. Clinicians offering services via telepractice

depend upon different technological processes and solutions. The most effective tool for delivering services through telepractice is videoconferencing (Lowman & Kleinert, 2017; Sharma et al., 2011; Ward et al., 2017). Services for adults with stroke with real-time videoconferencing have achieved equivalent outcomes to a face-to-face assessment (Gregory et al., 2011).

The outcomes of telepractice are enhanced with the use of high quality videoconferencing systems and the use of peripherals. Telepractice research benefitted from more advanced videoconferencing systems capable of transmitting improved audio and video signals (Nordio et al., 2018; Sharma et al., 2011; Tinelli et al., 2017; Ward et al., 2012). The reliability of asynchronous teleconsultation and tele-assessment for adults with dysphagia was studied with three SLPs analysing the "store-and-forward" videofluoroscopic swallow assessments with a good inter-rater agreement (Malandraki et al., 2013). Combining software applications and peripheral devices with videoconferencing equipment is significant in providing health care. Pulse oximeter, medical camera, web cameras, extra lighting and mobile devices were the peripherals used to improve the information collected on dysphagia management (Grogan-Johnson et al., 2010; Ward et al., 2009).

2.2.4 Benefits and outcomes of the use of telepractice

This section will review the benefits and outcomes of the use of telepractice. Telepractice allows consultations between experts and the clinician working with the client, improving treatment outcomes and cost effectiveness by reducing travel costs for the client and clinician (Cason & Cohn, 2014; Coyle, 2012; Ward et al., 2017). The authors also stated that telepractice helps to provide service to multicultural and bilingual population. As such, the need for

telepractice will grow due to four fundamental benefits: improved access, cost efficiency, better service quality and client demand (Grillo, 2019).

Assessment conducted via telepractice provides valid and reliable results compared to the clinical decisions made in face-to-face assessment (Nordio et al., 2018; Sharma et al., 2011; Tinelli et al., 2017; Ward et al., 2012). Also, telepractice enables clinicians to cover a large geographical area and provide more clinical services to clients (Mashima & Doarn, 2008). In addition, the use of telepractice also helps to provide individualised assessment and treatment in familiar surroundings, achieve better satisfaction and reduce the service costs (Burns et al., 2017; Weinstein et al., 2014).

2.2.5 Global perspectives

This section reviews the use of telepractice in the Majority World contexts. Majority World refers to countries which comprise the majority of the world's nations and who are previously termed less developed countries (LCDs) (Wylie et al., 2013). The use of telepractice in delivering health care services in Majority World contexts is on the increase (Combi et al, 2016). The growth of information and communication technology (ICT) has opened up fresh ideas around providing quality health care to people globally via telepractice (Combi et al., 2016). The governments in Majority World contexts are carrying out efforts to incorporate telepractice in their health care systems (Srivastava et al., 2021), and the COVID-19 pandemic has provided an opportunity for the improved use of telepractice in the health sector in many low and middle-income countries (LMICs).

2.2.6 COVID-19 impacts

COVID-19 was declared a global pandemic (WHO, 2021). This pandemic has caused extensive devastation worldwide, leading to high mortality rates (Bedford et al., 2020). As a

result, many health care professionals faced challenges in providing health care to people through in-person care.

Telepractice is a valuable tool for avoiding direct contact between clients and clinicians, especially during the COVID-19 pandemic, when social distancing is a protocol (Faux et al., 2020; Maggio et al., 2020). As a result, telepractice has become an effective means of providing appropriate health care for people with COVID-19 and free of COVID-19 infection in different countries (Aggarwal et al., 2020; Fong et al., 2020; Rech et al., 2020).

2.3 Telepractice in Speech and Language Therapy

This section reviews the use of telepractice by SLTs in various forms of health care provision in SLT.

2.3.1 Types of clinical services

The different types of clinical services delivered in SLT via telepractice vary as illustrated in Table 1. This shows telepractice services used for multiple service delivery options such as treatment, consultation, screening, assessment, follow-up sessions, case review, referral purposes, teacher and family support, and management of different disorders in many countries.

Table 1

Different Clinical Service types delivered via Telepractice

Clinical services	**Country**	**Authors**
Screening	United States of America	Tucker (2012)
Consultation		
Treatment		
Assessment	Australia	Hill and Miller (2012)
Consultation		
Family support		
Teacher support		
Treatment		
Follow-up sessions		
Assessment		
Consultation		

Treatment	India	Mohan et al. (2017)
Management of dysphagia in adults		
Management of aphasia in children		
Management of speech disorders		
Assessment	Hong Kong	Fong et al. (2020)
Screening		
Consultation		
Treatment		
Assessment	New Zealand	NZSTA (2012)
Diagnosis		
Case review		
Referral purpose		

The above table shows that telepractice services can be used for various service delivery options such as assessment, consultation, treatment, follow-up sessions, and referral purposes in different countries.

2.3.2 Types of client groups

This section presents the use of telepractice among various client groups. Telepractice is considered an effective service delivery option across a variety of disorders such as fluency disorders (Carey et al., 2010); childhood speech and language disorders (Grogan-Johnson et al., 2010; Waite et al., 2010); motor disorders in stroke (Piron et al., 2008); and dysphagia (Miles et al., 2020; Morrell et al., 2017; Soldatova et al., 2020).

2.3.3 Types of workplace settings

The different workplace settings in which telepractice services are provided by SLTs in two countries are depicted in Table 2.

Table 2

Workplace Settings of Telepractice

Telepractice settings	**Country**	**Authors**
Public health facility		Hill and Miller (2012)

Private practice	Australia	
Public education settings		
Community service		
Specialist service		
Private education settings		
Self employed	India	Mohan et al. (2017)
Public/private non-profit Organisations		
Central-government organisations		

Telepractice service is provided under more natural settings in-home than in a clinic (Reynolds et al., 2009). This is one of the benefits of the use of telepractice, wherein the clinical service is provided under the settings familiar to the clients. Moreover, telepractice by SLTs is not only confined to service provision in rural areas Mashima and Doarn (2008). The shortage of SLTs in many regions could be easily made up by the use of telepractice.

2.3.4 Benefits and outcomes

This section reviews the benefits and outcomes of SLT services delivered via telepractice in various forms of health care provision. The use of telepractice in SLT suggests multiple benefits and results. For example, in Australia, SLT services delivered via synchronous telepractice were more cost-efficient than standard care, with the benefits of improved service efficiency and high client and clinician satisfaction (Ward et al., 2017).

Sometimes clients cannot access SLT services locally and telepractice enables clients to access experts remotely. Other times there may be SLT services available locally, but the SLT does not have the necessary expertise. Telepractice allows the primary SLT to work with an expert SLT remotely and this can have benefits: (1) higher quality of care for the client, (2) advanced training to the primary clinician, (3) provide clinical service to multicultural and multilingual population (Cason & Cohn, 2014; Coyle, 2012; Ward et al., 2017). The other benefits include service on par with face-to-face therapy (Kantarcigil & Malandraki, 2017;

Morrell et al., 2017; Nordio et al., 2018) and that dysphagia expertise could be obtained in under-served areas (Malandraki et al., 2011). It is also found that telepractice could come in use in COVID-19 lockdown situations (Kantarcigil & Malandraki, 2017; Morrell et al., 2017; Nordio et al., 2018).

2.3.5 COVID-19 impacts

COVID-19 impacts included physical distancing, stay-at-home, facemask use, and a lot of strain on health care workers worldwide. Many SLTs faced limitations in offering face-to-face health care to people during this pandemic situation, although this is to avoid direct person-to-person contact. It envisages utilising telepractice and suggests that telepractice has now emerged as a new driving force in SLT worldwide.

2.4 Telepractice for Individuals with Dysphagia

This section reviews the application of telepractice in managing dysphagia and COVID-19 impacts.

2.4.1 Application of telepractice in the management of dysphagia

Telepractice services are used in dysphagia management by SLTs. Research studies in The United States of America, Italy and Australia have demonstrated that telepractice is a viable and reliable means of service delivery in the screening, assessment and treatment of adults with dysphagia post-stroke leading to improvement in survival and reduction in the medical care expenditure (Kantarcigil & Malandraki, 2017; Morrell et al., 2017; Nordio et al., 2018). The researchers in these studies concluded that assessment conducted via telepractice provided valid and reliable results compared to the clinical decisions made in the face-to-face assessment. In the case of instrumental and non-instrumental dysphagia evaluation also, there has been high agreement between telepractice and face-to-face delivery of service (Burns et al., 2016). Only in

cases where the severity of dysphagia was more there have been lower levels of consensus among clinicians (Morrell et al., 2017).

2.4.2 COVID-19 impacts

There is potential to keep adults with dysphagia well managed at home and out of the hospital under the COVID-19 pandemic using telepractice. Telepractice is considered a favourable health care option for better-quality health care (Kantarcigil & Malandraki, 2017; Morrell et al., 2017; Weinstein et al., 2014). Furthermore, telepractice helps avoid COVID-19 virus exposure due to proximity to the aero-digestive tract while performing swallow assessments and interventions, as containment of virus spread is a primary focus in health care settings (Maggio et al., 2020; Miles et al., 2020). In addition, many dysphagia treatment techniques are classified as aerosol-generating procedures, placing health workers at risk. Thus, telepractice has become necessary in health care provision during the COVID-19 pandemic, whereby assessment and rehabilitation can be done remotely, without hospital admission (Faux et al., 2020; Miles et al., 2021; Soldatova et al., 2020). Under such circumstances, many organisations have started advocating for the use of telepractice.

2.5 Benefits of clinical services for adults with dysphagia post-stroke via telepractice

This section reviews the benefits of telepractice for delivering clinical services with respect to the client, clinician and the organisation.

2.5.1 Client-based benefits

The client-based benefits of clinical services for adults with dysphagia post-stroke via telepractice are listed in Table 3. Better access to dysphagia experts could significantly benefit individuals with dysphagia. Swales et al. (2020) reported the benefits of telepractice to be (i)

reduced travel time, (ii) flexibility and convenience, (iii) greater access to different models of care, and (iv) availability of clinical services at client's home.

Table 3

Client-based Benefits of Benefits of Clinical Services for Adults with Dysphagia post-stroke via Telepractice

Benefits of telepractice	**Authors**
Better access to speech-language therapy services for an underserved population	Houn and Trottier (2003) Mashima and Doarn (2008)
Improved access to services for people with cultural and linguistic diversity	
Individual therapy programme	
Increased collaboration among team members	
Savings in time and costs	
Improved quality of service in the client's functional environment	McCue et al. (2010)
Improved access to client-centered health care	Regina Molini-Avejonas et al. (2015)
Reduced patient's driving time	
Making health care services more accessible to individuals living in remote areas	
High level of client satisfaction	Orlando et al. (2019)
Providing personalised contact with families	Wrape and McGinn (2019)

The major client-related benefits of clinical service for adults with dysphagia post-stroke include better access of SLT for underserved population, savings in time and costs, improved quality of service in client's functional environment.

2.5.2 Clinician-related benefits

This section reviews the benefits of telepractice for clinicians. Telepractice enables clinicians to cover a large geographical area and provide more clinical services to clients; this is one of the benefits. Table 4 provides the significant clinician-related benefits of telepractice with adults with dysphagia post-stroke.

Table 4

Clinician-related Benefits of Telepractice with Adults with Dysphagia post-stroke.

Clinician-related benefits of telepractice	**Authors**
Treatment in non-clinic settings and treating house-bound clients	Mashima and Doarn (2008) McCue et al. (2010)
Better access to clients, better time efficiency and cost efficiency Plan for adjusting to different factors such as cognitive problems	Coyle (2012)
Cost-effective clinical service delivery option	Hill and Miller (2012)
The quality of service offered via telepractice had similar outcomes when compared with face-to-face therapy in many disorders such as fluency disorders, voice disorders, dysphagia and child speech and language disorders	Lowe et al. (2013) Mashima and Doarn (2008) Wales et al. (2017)
Telepractice is feasible even under COVID-19 pandemic situation	Malandraki et al. (2021)

Better access to clients, better time and cost efficiency and the feasibility of using telepractice under COVID-19 lockdown situations are the other benefits.

2.5.3 Workplace/organisation-related benefits

This section reviews the benefits of telepractice with respect to workplace/organisation and these are tabulated in Table 5

Various workplace/organisation-related benefits influence the delivery of clinical services via telepractice. The major ones include good internet connectivity and accessories, the role of facilitators, client candidacy criteria, privacy and safety safeguards and access to secure service.

Table 5

Workplace/organisation-related Benefits of Telepractice with Adults with Dysphagia post-stroke

Workplace/organisation-related benefits	**Authors**
Good system requirements with appropriate band width	Ayanikalath (2017); Burns et al. (2017) ; Malandraki et al. (2011) Ward et al. (2013)
Availability of computers and other accessories	
Privacy and legal safeguards	Gough et al. (2015)
Safety precautions	

Client candidacy criteria	Richmond et al. (2017)
Facilitator's role	
Availability of information technology support for offering telepractice	Pfitzner et al. (2020)
Organisational access to appropriate technology and good organisation set up	

2.6 Facilitators of clinical services for adults with dysphagia post-stroke via telepractice

This section describes the factors that serve as facilitators in the use of telepractice with respect to the clients, clinicians and the workplace/organisation.

2.6.1 Client-related facilitators of clinical services for adults with dysphagia post-stroke via telepractice

The important client-related facilitators in the use of telepractice include factors pertaining to the suitability of clients Ward et al. (2013). The role of facilitators is important in addressing safety issues in case of emergency and also to help with completing tasks to facilitate the assessment and treatment Malandraki et al. (2021); (Sharma et al., 2011).

2.6.2 Clinician-related facilitators in the use of telepractice with adults with dysphagia post-stroke

The clinician-related facilitators in the use of telepractice are underlined in this section and are outlined in Table 6.

Formal training in telepractice and professional development courses and ethical guidelines are also considered facilitators by Hill and Miller (2012). The significance of training and development is mainly because telepractice involves a change in practice (Edirippulige & Armfield, 2017).

Table 6

Clinician-related Facilitators in the use of Telepractice with Adults with Dysphagia post-stroke

Clinician-related facilitators	**Authors**
Policy statements for people with complex problems	Brennan et al. (2010)
Professional development courses	Hill and Miller (2012)
Demonstrations	
Electronic assessment and treatment resources	
Funding to establish telepractice	
Formal training and ethical guidance	
Prior training for assessing complex cases of dysphagia	Ward et al. (2012)
Formal education and training for clinicians	Edirippulige and Armfield (2017)
Need for clinical training in telepractice service delivery	Miles et al. (2021)

The authors also stated that the terminologies connected with telepractice, the design and clinical implications, technology applications, and national policies associated with telepractice could form the subject matter for such training.

2.6.3 Workplace/organisation-related facilitators in the use of telepractice with adults with dysphagia post-stroke

This section reviews the workplace/organisation-related facilitators in the use of telepractice. The primary workplace/organisation-related facilitators are provided in Table 7. Table 7 delineates the several workplace/organisation-related facilitators in the use of telepractice by SLTs, which include safety precautions, legal standards, space availability in the client's home and clinician facility and also points to the fact that the service platforms should be secure.

Table 7

Workplace/organisation-related Facilitators in the use of Telepractice with Adults with Dysphagia post-stroke

Workplace/organisation-related facilitators	**Authors**
Safety precautions	Gough et al. (2015) Richmond et al. (2017)
Privacy	
Legal standards	
Internet specifications for dysphagia assessment	
Service delivery platforms to be secure in terms of client confidentiality and data storage	Doss et al. (2018)
Appropriate space availability at the client's home and clinician facility	Burgoyne and Cohn (2020)

To accommodate different levels of physical and psychological attributes of individuals with co-morbidities, the service delivery system via telepractice should be flexible.

2.7 Barriers in the use of telepractice

This section discusses some of the significant barriers in using telepractice concerning client, clinician and workplace/organisation.

2.7.1 Client-related barriers in the use of telepractice

This section will review client-related barriers in using telepractice with adults with dysphagia post-stroke. These are presented in Table 8.

The participants perceived several client-related barriers in using telepractice in clinical service delivery. The client-related barriers considered essential in delivering clinical services include client suitability, client safety (client safety means safety measures that prevents incidents that can cause potential harm to patients from individual and organisational factors) movement and hearing disorders, and other comorbidities.

Table 8

Client-related Barriers in the use of Telepractice with Adults with Dysphagia post-stroke

Client-related barriers in the use of telepractice	**Authors**
Case-to-case basis client appropriateness	Brennan et al. (2010)
Client factors like hearing impairment and movement disorders	Ward et al. (2012)
Medical diagnosis of the clients and associated co-morbidities	Ward et al. (2012)
Information provided by the clients could not be checked for accuracy	Kantarcigil and Malandraki (2017)
Clients not remembering the names of the drugs they consume	
Client safety, as far as the management of dysphagia is concerned	Miles et al. (2021)
Reimbursement hurdles	Malandraki et al. (2021)

Reimbursement hurdles are also considered to be an important client-related barrier in the use of telepractice with adults with dysphagia post-stroke.

2.7.2 Clinician-related barriers in the use of telepractice

This section reviews clinician-related barriers to telepractice. The significant clinician-related barriers in the use of telepractice are tabulated in Table 9.

One example of a barrier was a lack of specially trained SLTs in the use of telepractice in dysphagia assessment as instrumental swallowing assessments such as fibreoptic endoscopic evaluation of swallowing (FEES) and modified barium swallow (MBS) have to be administered and interpreted (Malandraki et al., 2011).

Table 9

Clinician-related Barriers in the use of Telepractice with Adults with dysphagia post-stroke

Clinician-related barriers	**Authors**
Lack of skilled and specially trained staff (it is not possible to have telepractice service in all settings)	Bours et al. (2009)
Lack of specially trained SLTs	Malandraki et al. (2011) May and Erickson (2014)
Lack of training of SLPs in telepractice and the lack of evidence for instrumental assessment via telepractice	Hill and Miller (2012)
Lack of adequate training of SLTs	Hill and Miller (2012)
The attitudes and perceptions of the clinicians	May and Erickson (2014)
Difficulty in accurately assessing clients	Pfitzner et al. (2020)
Difficult to convey empathy via telepractice, when working with clients with linguistically or culturally diverse backgrounds	Pfitzner et al. (2020)
Lack of proximity with the client	Miles et al. (2021)
Reduced efficiency when clinical service is provided remotely	Miles et al. (2021)
Consent form for provision of telepractice in dysphagia	Malandraki et al. (2021)

2.7.3 Workplace/organisation-related barriers in the use of telepractice

This section reviews the workplace/organisation-related barriers on the use of telepractice. The primary workplace/organisation-related barriers are provided in Table 10. There are many workplace/organisation-related barriers in the use of telepractice. These include lack of web-based cameras with better zoom quality, lack of a high-quality lighting source, a digital stethoscope, and lack of good quality microphones (Ward et al., 2012). Other than the infrastructure facilities, the platforms used for telepractice should be made secure in terms of client confidentiality and data storage (Doss et al., 2018; Emezue, 2020). These factors will address privacy concerns that pose risks to the code of ethics (Rogers, 2020).

Table 10

Workplace/organisation-related Barriers in the use of Telepractice in the use of telepractice with adults with dysphagia post-stroke

The use of inexpensive web-based software with limited privacy and security settings	
Lack of high-quality images for assessment	Malandraki et al. (2011)
Lack of specially trained SLTs and staff for instrumental swallowing assessments like FEES and MBS for the evaluation of people with dysphagia	
Limited access to technology to conduct services online	
Lack of assessment and treatment resources	
Organisational policy restrictions	May and Erickson (2014)
Privacy concerns posing risk to code of ethics	Rogers (2020)
Legal safeguards, safety precautions, criteria for client candidacy	Miles et al. (2021) Richmond et al. (2017)
Technology specifications (in the implementation of telepractice in the management of people with dysphagia)	
Lack of detailed specifications or guidelines for implementation of telepractice	Malandraki et al. (2021)

In addition to the factors mentioned above, the lack of detailed specifications or guidelines for the implementation of telepractice is also a significant workplace/organisation-related barrier in the use of telepractice.

2.8 Beliefs of SLTs on the use of telepractice

This section reviews the general beliefs of SLTs on the use of telepractice. The opinions of SLTs on the use of telepractice for the delivery of clinical services vary.

The different beliefs include:

(1) Telepractice is used satisfactorily in many forms of health care services. Similar view is suggested by Ward et al. (2014). Also, some SLTs consider telepractice as an effective service delivery platform compared to face-to-face therapy (Regina Molini-Avejonas et al., 2015; Sharma et al., 2013; Swales et al., 2020).

(2) SLTs believed they developed a good rapport with their clients while providing clinical service for dysphagia via telepractice. Also, it was stated that the telepractice system was easy to use (Sharma et al., 2013). In addition, the clients also felt comfortable while conducting their swallow assessment via telepractice.

(3) Some SLTs consider that telepractice could not be taken as a complete replacement for in-person clinical service delivery. The same was stated by Reynolds et al. (2009).

(4) SLTs thought that the infrastructure needed for offering telepractice was entirely different from conventional service delivery, as reported in a survey study conducted in India (Mohan et al., 2017). However, the survey respondents also stated that telepractice could be made affordable, effective, and reliable with adequate technological infrastructure.

(5) Majority of the SLTs felt telepractice was an appropriate clinical service delivery method for individuals with Parkinson's disease (Swales et al., 2020).

(6) Telepractice can be considered an essential clinical service delivery platform in the care of adults with dysphagia. Evidence supports the use of telepractice as an equivalent alternative to in-person dysphagia care for adults in both inpatient and outpatient settings as reported by Malandraki et al. (2021).

2.9 Conclusion

To conclude, this chapter reviewed the available literature concerning the use of telepractice in general and with adults with dysphagia post-stroke in particular. The review started with the definitions of telepractice and related terms, the types, technology involved, benefits and outcome, and the global perspectives in general and concerning telepractice in SLT and individuals with dysphagia. It also reviewed COVID-19 impacts on the use of telepractice.

The benefits, facilitators, and barriers of using telepractice with respect to the client, clinician and workplace were also detailed. Finally, it outlined the beliefs of SLTs on the use of telepractice.

The literature suggested that telepractice is a viable service delivery model across various client populations including adults with dysphagia. The importance of the use of telepractice under different clinical set up and contexts, including COVID-19, has been elaborated. There is lack of sufficient information on the use of telepractice especially with adults with dysphagia post-stroke in New Zealand. This warrants a study under New Zealand context on the perception of SLTs on the use of telepractice. This study's aim is to contribute to the knowledge of the perceptions of SLTs on the use of telepractice, specifically with adults with dysphagia post-stroke, as is presented in the next chapter. This is the first study to explore this in the New Zealand context.

Chapter Three: Methodology

3.1 Introduction

This chapter outlines the methodology used in the study starting with the research question and the chosen research design. Then, details are provided about the participants involved and the process of recruitment of participants. The descriptions of the methods used to collect, analyse and interpret the data are detailed. Finally, the ethical considerations of the study are explained.

3.2 Research aims

The specific aims of the study include:

(1) To explore the perceptions of SLTs in New Zealand with respect to the use of telepractice with adults with dysphagia post-stroke

(2) To investigate the perceived benefits, facilitators, barriers and beliefs in the use of telepractice

3.3 Research design

A cross-sectional, predominantly quantitative survey design was employed in this study. A cross-sectional survey design is a common design generally used to examine participants' attitudes, beliefs, and practices (Creswell & Guetterman, 2019). The design was specifically chosen to capture the perceptions of the participants on the use of telepractice.

3.4 Participants

Participants were SLTs working in New Zealand with experience using telepractice with adults with dysphagia post-stroke, recruited through the New Zealand Speech-Language Therapists' Association (NZSTA) and the Massey University Speech and Language Therapy Programme Facebook page (*https://www.facebook.com/newzealandspeechlanguagetherapy*). An

email containing a brief introduction to the study (Appendix A), the information sheet (Appendix B) and the link to the survey were distributed to the organisation.

The inclusion criteria involved in the recruitment of participants of the study was the following:

The participant should be an SLT working in New Zealand who has experience on telepractice with adults with dysphagia post-stroke.

3.5 Survey development

The questions were drawn from a variety of sources including the content of previous surveys focused on the use of telepractice in the management of dysphagia and other neurological problems (Ayanikalath, 2017). A study on telepractice in people with Parkinson's disease (Swales et al., 2020) was particularly useful. This study specifically informed the development of a questionnaire for eliciting the perceptions of SLTs on the use of telepractice with people with Parkinson's disease. The survey questions were added on to the survey platform Qualtrics (discussed below).

The questionnaire contained a total of 10 items. These included:

1. Participants' demographic information with seven questions: the number of years of experience of the SLTs, the highest level of qualification in SLT, level of education at which the participants learned about dysphagia, professional learning and development undertaken in telepractice by participants, the region in New Zealand where they are based, employment status and the facility where clinical services are offered to adults with dysphagia post-stroke.

2. Clinical services for adults with dysphagia post-stroke with two questions: the number of adults with dysphagia post-stroke treated by the participants during the last two years and the age group of adults with dysphagia post-stroke with whom the participants worked.
3. Two questions about confidence with technology: the confidence level in using technology in general and in clinical practice.
4. Telepractice services for adults with dysphagia post-stroke with four questions: clinical services offered to adults with dysphagia post-stroke via telepractice; the platforms used, items used to augment clinical swallow evaluation via telepractice, and client-related factors considered when deciding to offer adults with dysphagia post-stroke clinical services via telepractice.
5. Expansion of clinical services for adults with dysphagia post-stroke via telepractice with two questions: whether they had a plan to expand clinical services for adults with dysphagia post-stroke via telepractice and the methods of developing clinical services.
6. Benefits of clinical services for adults with dysphagia post-stroke via telepractice: client-related, clinician-related and workplace/organisation-related benefits.
7. Facilitators of clinical services for adults with dysphagia post-stroke via telepractice: client-related, clinician-related and workplace/organisation-related facilitators.
8. Barriers of clinical services for adults with dysphagia post-stroke via Telepractice: client-related, clinician-related and workplace/organisation-related barriers.
9. Beliefs of participants about telepractice: using the level of agreement of the participants on 10 statements captured on a five-point scale (strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and strongly agree).
10. Additional comments with one question.

The format of the questions varied and comprised multiple-choice questions, binary yes-no option questions, Likert scale type responses and open-ended responses. Likert scale type questions use fixed choice response format and are used to measure the attitudes or opinions of the participants (Burns & Grove, 2005). The open-ended questions avoid the bias that exists with pre-determined categories (Maxwell & Satake, 2006) and enable a detailed description of the participants' experience (Bryman, 2016). Strategies for constructing good questions were followed in formulating the survey questions (Creswell & Guetterman, 2019). These strategies included using positive wording, not using jargon, ensuring clarity of questions, asking one question at a time, and ensuring that the answers match the questions in multiple-choice questions.

3.5.1 Pilot Study

A pilot study was conducted by sending a copy of the questionnaire to an expert in telepractice for adults with dysphagia post-stroke in New Zealand with the intention of improving clarity in the questions. It is a recommended best practice to conduct a pilot study of a survey to determine if the sample population can understand the questions, complete the study, and check for any flaws (Ary et al., 2018; Punch, 2013). Pilot study will also help determine whether the survey questions adequately measure what was intended (Ary et al., 2018).

The expert was asked to give detailed feedback about the structure and comment on the questions' relevance and comprehensibility and this feedback was incorporated into the final survey questionnaire to improve clarity and, as a result, reframed six questions. Other changes involved addition of factors when selecting adults with dysphagia post-stroke for clinical services via telepractice (technology skills, access to hardware, access to software, internet quality and access to support person). Finally, questions regarding benefits, facilitators and

barriers of clinical services were altered; here, sub-titles such as client-related factors, clinician related factors and workplace/organisation-related factors were added.

3.6 Data Collection

An anonymous online survey (see Appendix C) was used to collect information from the participants over three weeks via Qualtrics. After two weeks, a follow-up reminder was sent to the organisation, asking them to remind SLTs who met the inclusion criteria to complete the survey.

An online survey is cost-efficient, easy to distribute and access, and allows the participants to complete the survey at their own pace in a place comfortable to them (Dillman et al., 2014). It also considerably reduces the data input time (Irwin et al., 2019). Another advantage of online surveys is guarantee of complete anonymity. Another contextual reason that could be attributed to the use of online surveys is lockdown due to the COVID-19 pandemic, which meant participants could not have been interviewed in person.

Qualtrics was used to design the questionnaire as it is one of the survey platforms that enable researchers to construct and administer surveys quickly. Qualtrics is a web-based survey tool to conduct survey research and data collection in which survey can be prepared, sent and analysed as suggested by California State University Long Beach (Albaum & Smith, 2006; CSULB, 2020).

3.7 Data Analysis

The study used basic descriptive statistics to analyse the data including mean and used frequency counts, frequency tables and graphs to depict the data. Open-ended questions were analysed using a data-driven coding approach (Gibbs, 2015). The processes involved were as follows: (1) reading the responses provided by the participants (2) categorising similar responses

into codes (3) organising codes into themes (4) presenting the number of participants who provided a response under each category in a summary table along with the theme.

3.8 Ethical Considerations

The research project was evaluated by peer review and judged low risk, and a low-risk notification to the Massey University Human Ethics Committee was submitted (Ethics notification number: 4000024328; (see Appendix D). The study aims and procedures were outlined in an information sheet.

Two of the key ethical issues considered were consent and confidentiality. Due to the confidential nature of the study, once the participants chose to complete the survey, consent to participate in the study was implied, which was explained in the information sheet. The information sheet also stated no anticipated risks involved in participating in the survey.

This survey will maintain the privacy and confidentiality of the participants as the survey collected no identifying information such as the participants' name, age, gender, and address to maintain anonymity. Also, the researcher has not directly contacted any of the participants. Only the researcher and her supervisors will have access to the data. Electronic data is stored on a password-protected device and information will be kept for five years following the publication of the results. When disposed of, the University's confidential waste service for printed materials will be utilised.

3.9 Conclusion

This chapter outlined the aims of the research, design, participant recruitment, and data collection and analysis procedures. In addition, it described ethical considerations. The methodological considerations outlined justify the tools and techniques used for the study. A descriptive cross-sectional survey design was the best fit for the study because it permitted

analysis of the perceptions of the participants in the use of telepractice with adults with dysphagia post-stroke. The research design allowed for the actual perceptions and beliefs of the participants to be expressed based on the questionnaire**.**

Overview of the methods

First, literature on the use of telepractice in general and in particular to the management of dysphagia was collected. The research question, the aims of the study and ethical considerations were then formulated. The research design was then arrived up on. It was decided to conduct an online survey by means of Qualtrics tool to understand the perceptions of the SLTs who work with adults with dysphagia post-stroke with respect to the clients, clinicians and the workplace/organisation. The beliefs of SLTs on the use of telepractice were to be elicited by means of Likert scale questions. The questionnaire was developed with 10 items and a pilot study was conducted. The questionnaire was finalised and then sent to participants who are SLTs in New Zealand with experience in telepractice with adults with dysphagia post-stroke. The data obtained from six participants was subjected to analysis and meaningful outcomes were discussed.

Chapter Four: Results

4.1 Introduction

The purpose of this study was to explore the perceptions of speech-language therapists (SLTs) in New Zealand on the use of telepractice with adults with dysphagia post-stroke, along with the perceived benefits, facilitators, barriers, and beliefs using an online survey. This chapter presents the results of the study.

4.2 Survey results

Six SLTs in New Zealand with experience in telepractice with adults with dysphagia post-stroke participated.

4.2.1 Demographics of the participants

The demographics of the participants are explained as follows:

- SLTs' years of experience
- Highest level of qualification in speech and language therapy
- Level of education at which participant learned about dysphagia
- Professional learning and development undertaken in telepractice
- The region in New Zealand where participants are based
- Employment status and
- The facility where clinical services are provided to adults with dysphagia post-stroke.

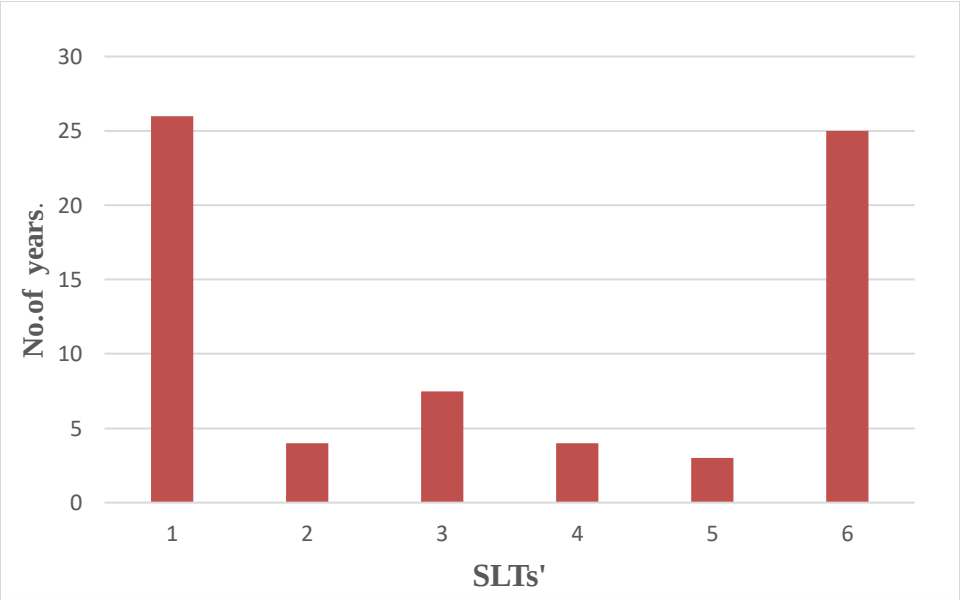
4.2.1.1 SLTs' years of experience

The number of years the participants had practised as therapists varied. The responses ranged from three years to 26 years. Most of the participants (n=4) had between three to

seven years of experience, but two participants (1 and 6) had 26 and 25 years of experience respectively. The mean number of years of experience of the participants was 11.58 years. Figure 1 represents the number of years of experience of the participants.

Figure 1

Number of Years Working as SLT



4.2.1.2 Qualification of the participants

The highest educational qualification of the participants in the study varied. Three participants had completed their undergraduate degree, followed by master's degree (*n*=2) and postgraduate certificate (*n*=1).

4.2.1.3 Learning about dysphagia

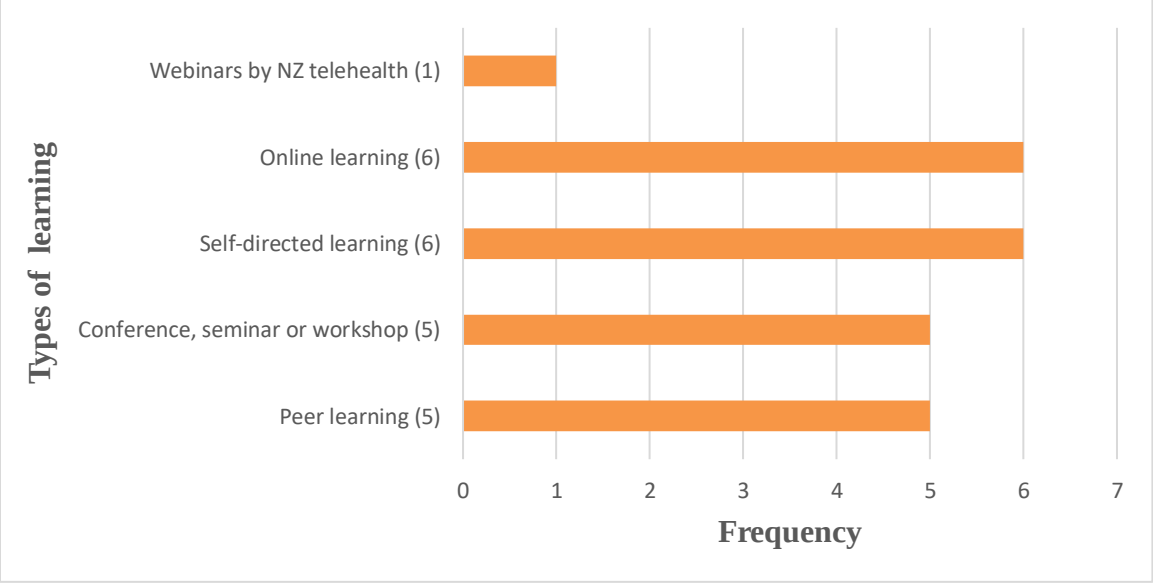
The level of education at which the participants learned about dysphagia varied. Three participants learned dysphagia at the undergraduate level of education, master's level (*n*=2), and postgraduate certificate level (*n*=1).

4.2.1.4 Professional learning and development of participants in telepractice

The participants identified several professional learning and development opportunities they had engaged in relation to telepractice. All the participants (*n*=6) had undertaken self-directed learning (reading books, journal articles) and online learning. The participants' other professional learning and development opportunities included engaging in peer learning (*n*=5) and attending conference, seminar, and workshops (*n*=5). One participant attended New Zealand telehealth webinars. None of the participants had training in telepractice during their undergraduate and postgraduate coursework. Figure 2 depicts the events of professional learning and development of the participants in telepractice.

Figure 2

Events of Professional Learning and Development of the Participants in Telepractice



The events of professional learning and development undertaken in telepractice by the participants varied, as seen above.

4.2.1.5 Regions where participants are based in New Zealand

The regions in New Zealand where the participants were based included Auckland (*n*=3), Whanganui-Manawatu (*n*=1), Hawke's Bay (*n*=1), and Gisborne (*n*=1). Of the 16 regions in New Zealand, the participants were from only four areas; the others are not represented.

4.2.1.6 Employment status of participants

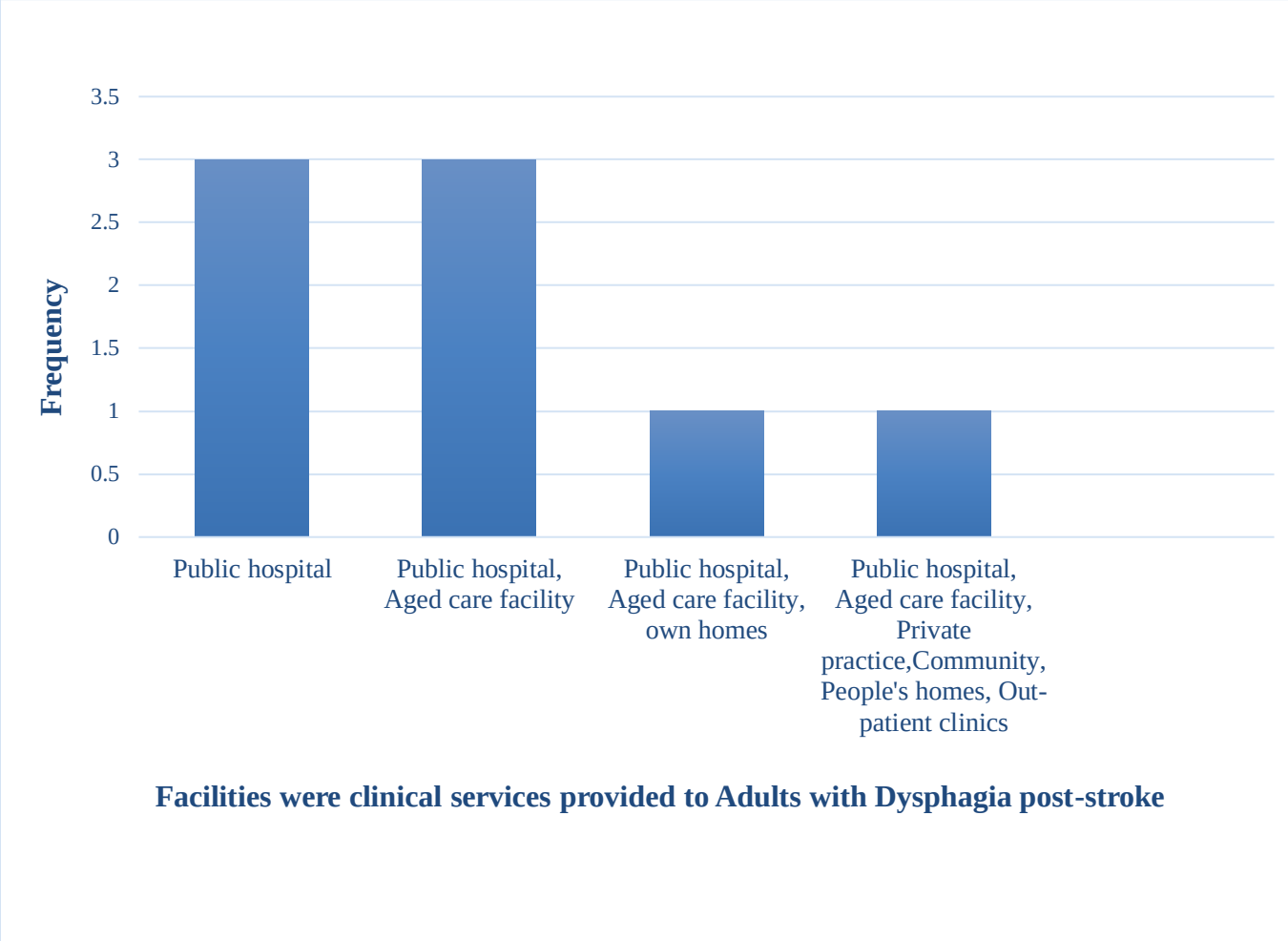
The employment status of the participants in the study included part-time employment (*n*=2) and full-time employment (*n*=4).

4.2.1.7 Facilities where clinical services are provided by participants to adults with dysphagia post-stroke

The facilities where clinical services are provided to adults with dysphagia post-stroke are presented in Figure 3.

Figure 3

Facilities where Clinical Services Provided to Adults with Dysphagia post-stroke



4.2.2 Clinical services to adults with dysphagia post-stroke

The number and age group of adults with dysphagia post-stroke that the SLTs provided clinical services to in the last two years are described here.

4.2.2.1 Number of adults with dysphagia post-stroke seen by participants in the last two years

Table 11 depicts the number of adults with dysphagia post-stroke seen by the participants during the last two years.

Table 11

Number of adults with dysphagia post-stroke seen by participants in the last two years

Number of adults with dysphagia post-stroke seen	Number of SLTs involved
30	1
50	1
75	1
More than 100	3

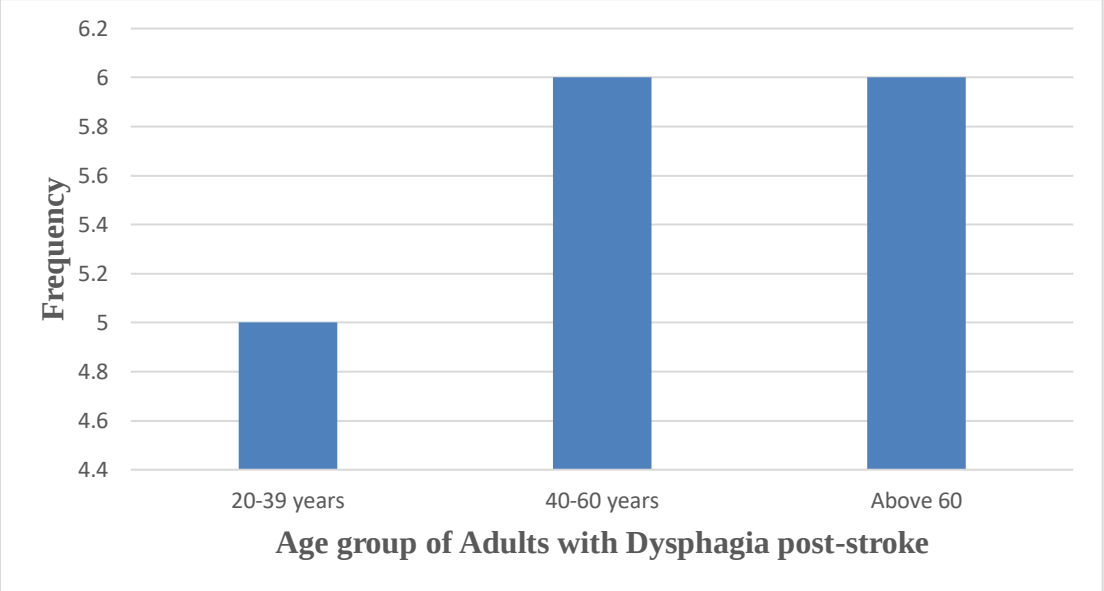
From the table, it is evident that the number of adults with dysphagia post-stroke treated by the participants during the last two years varied and included 30 (*n*=1), 50 (*n*=1), 75 (*n*=1), and 100 and above (*n*=3).

4.2.2.2 Age group of adults with dysphagia post-stroke seen by SLTs

Figure 4 includes the age group of adults with dysphagia post-stroke with whom the participants worked. The participants worked with adults across the age span. All the participants (*n=6*) worked with adults aged more than 40 years, whereas only five participants stated that they worked with clients in the age group of less than 40

Figure 4

The Age Group of Adults with Dysphagia post-stroke seen by SLTs



4.2.3 Confidence with technology

This describes the level of confidence with technology in using technology in general and in clinical practice.

4.2.3.1 Level of confidence of participants in using technology in general

The participants' level of confidence in using technology, in general, was rated as excellent (*n*=3) and good (*n*=3).

4.2.3.2 Level of confidence of participants in using technology in clinical practice

The level of confidence of participants in using technology in clinical practice was rated as good (4) and excellent (2).

4.2.4 Telepractice service to adults with dysphagia post-stroke

This section describes clinical services offered to adults with dysphagia post-stroke via telepractice and the platforms used.

4.2.4.1 Clinical services offered to adults with dysphagia post-stroke via telepractice

The clinical services offered to adults with dysphagia post-stroke varied and included assessment (*n*=5), education for clients and caregivers (*n*=5), direct intervention (exercises) (*n*=4), feeding trials (*n*=3), rehabilitation and compensatory strategies (muscle strength training) (*n*=4).

4.2.4.2 Platforms used for providing clinical services to adults with dysphagia post-stroke by the participants via telepractice

The platforms used by the participants when providing clinical services to adults with dysphagia post-stroke included audio calls such as telephone and Skype calls (*n*=3) and videoconferencing (*n*=5).

4.2.4.3 Items used to augment clinical swallow evaluation via telepractice

No participants stated that they used any of the following items: cervical auscultation, pulse oximetry, surface electromyography, or others to augment clinical swallow evaluation via telepractice.

4.2.4.4 Client-related factors considered when deciding to offer adults with dysphagia post-stroke clinical services via telepractice

The participants considered several client-related factors when deciding to offer telepractice to adults with dysphagia post-stroke including: clinical cognitive behavioural ability such as cognitive functioning, multitasking, attention (*n*=6); physical/sensory ability such as hearing, vision, manual dexterity, sitting tolerance (*n*=5); communication ability such as auditory comprehension, literacy, speech intelligibility (*n*=6); technology skills (*n*=6); access to hardware such as laptop, iPad (*n*=6); access to software such as skype, zoom (*n*=4); internet quality (*n*=5); access to support person such as caregiver (*n*=5).

4.2.5 Expansion of clinical services for adults with dysphagia post-stroke via telepractice

This section describes the plan to expand clinical services to adults with dysphagia post-stroke via telepractice by the participants and the expansion methods.

4.2.5.1 Plan and methods of expanding clinical services to adults with dysphagia post-stroke

The majority of the participants (*n*=4) planned to expand their clinical services to adults with dysphagia post-stroke by increasing the number of clients. The rest of the participants (*n*=2) planned to expand their services by providing communication therapy to clients. However, none of the participants reported growing by increasing the range of equipment or services.

4.2.6 Benefits of clinical services for adults with dysphagia post-stroke via telepractice

The benefits of clinical services for adults with dysphagia post-stroke via telepractice in relation to client, clinician and workplace/organisation are described in this section. These benefits were coded and then organised into themes. The themes are presented in Table 12 and described in more detail in the following sections.

Table 12

Themes identified under the benefits of telepractice

Themes	**Codes included**
Client-related benefits	
COVID-19 and other health factors	Lockdown situations Safety proofing for future lockdowns Less exposure to hospital viruses
Therapy access and logistics	Therapy access Reduced travel Reduced travel costs No parking Reduced cost for private therapy
Clinical service delivery	Seen quicker Session frequency and/or duration Therapy duration
Clinician-related benefits	
Clinical service delivery	Talk with caregivers; See more patients

	More clinical time Quality of work Reduced caseloads Reduced waitlists
Work setting	Work from home, Sessions from office No need to book clinic room Use of trained therapy assistant
COVID-19 factors	Lockdown situations
Reduced travel and costs	Reduced travel time and requirements Reduced cost
Workplace/organisation-related benefits	
Clinical service delivery	Reduced waitlists Equitable access Quality service Ministry of Health targets
Reduced travel and costs	Travel time ; Reduced cost Environmental factors
Employee quality of life	Employee quality of life

4.2.6.1 Client-related benefits

The participants listed the client-related benefits of clinical services for adults with dysphagia post-stroke via telepractice. The participants' responses were coded as illustrated in Table13 and organised into three themes: COVID-19 and other health factors, therapy access and logistics, and clinical service delivery.

Table 13

Code Summary for Client-related Benefits

Theme	**Code**	**Number of SLTs**	**Example**
COVID-19 and other health factors	Lockdown situations	1	"It is really helpful in lockdown situations"
	Safety proofing for future lockdowns	1	"Safety proofing for on-going support and assessments in the event of future lockdowns"
	Less exposure to hospital viruses	1	"… less exposure to hospital viruses"
	Therapy access	2	"More accessible therapy for patients who may not have been able to, or want

			to, come into a clinic or someone visit their home"
Therapy access and logistics	Reduced travel	2	"No need to travel …."
	Reduced travel costs	1	"… reduces travel costs …"
	No parking	1	"… not having to find parking"
	Reduced cost for private therapy	1	"… reduced costs for private practice consults"
Clinical service delivery	Seen quicker	1	"They may be seen quicker as SLTs time may be freed up"
	Session frequency and / or duration	3	"More frequent sessions such as 3 x 15 minutes sessions each week"
	Therapy duration	1	"Intervention can be completed in a more timely manner"

The theme COVID-19 and other health factors included three codes: lockdown situations, safety proofing for future lockdowns and less exposure to hospital viruses. One each of the participants suggested that telepractice is helpful in lockdown situations and acts as safety proofing for on-going support and assessment in future lockdowns. One participant also suggested that one of the client-related benefits of using telepractice could be less exposure to hospital viruses.

The theme therapy access and logistics included five codes: therapy access, reduced travel, reduced travel costs, no parking, and reduced cost for private practice. Two participants suggested therapy access and reduced travel. One of the participants indicated the rest of the codes, such as reduced travel costs, no parking, and lowered costs for private practice. As far as therapy access was concerned, the participants thought that telepractice helped to have more accessible therapy for individuals who may not have been able to, or want to, come into a clinic or someone visit their home.

The last theme service delivery comprised three codes as seen quicker, session frequency and/or duration and therapy duration. The response for seen quicker was that it is possible to see the clients quicker as the SLTs may get their time freed up with telepractice. It is also anticipated

that interventions could be completed in a timely manner and more frequent sessions could be conducted.

4.2.6.2 Clinician-related benefits

The participants were asked to list the clinician-related benefits of clinical services for adults with dysphagia post-stroke via telepractice. The participants' responses were coded as illustrated in Table 14 and organised into four themes: clinical service delivery, work setting, COVID-19 factors; and reduced travel and costs.

The theme clinical service delivery was organised into six codes as talk with caregivers; treat more patients; more clinical time; quality of work; caseloads; and waitlists. Out of these, the statement, see more patients, was suggested by three participants because of the ability to see more patients within a day. Two participants suggested more clinical time as clinician-related benefits of using telepractice. The other benefits of clinician-based telepractice under the theme clinical service delivery included improved quality of work due to time and energy conserved; reduced caseloads and reduced waitlists.

The next theme, work setting, was organised into four codes: work from home, sessions from office, no need to book clinic room, and use of trained therapy assistant at patient's home. These were suggested by one participant each respectively.

Table 14

Code Summary for Clinician-related Benefits

Theme	Code	Number of SLTs	Example
Clinical service delivery	Talk with caregivers	1	"Ability to talk with caregivers at private hospitals"
	See more patients	3	"Ability to see more patients within a day…"
	More clinical time	2	"Increasing clinical time .."
	Quality of work	1	"improved quality of work due to time and energy conserved"
	Reduced caseloads	1	"…. keeps caseloads down"
	Reduced waitlists	1	"…. keeps waitlists down"
Work setting	Work from home	1	"Ability to work from home…"
	Sessions from office	1	"Can do sessions from office"
	No need to book clinic room	1	" Don't have to book clinic room"
	Use of trained therapy assistant	1	"…. we can sometimes use a trained therapy assistant at patient's home…:"
COVID-19 factors	Lockdown situations	1	"it is really helpful in lockdown situations"
Reduced travel and costs	Reduced travel time requirements	2	" there is reduced travel time within the community"
	Reduced cost	1	"reduced cost"

The last theme included reduced travel and costs which comprised two codes such as travel time requirements and reduced cost. Of these reduced travel time requirements was suggested by two participants.

4.2.6.3 Workplace/organisation-related benefits

The participants listed the workplace/organisation-related benefits of clinical services for adults with dysphagia post-stroke via telepractice. The participants' responses were coded as illustrated in Table 15 and organised into three themes: clinical service delivery, reduced travel and costs, and employee quality of life.

Table 15

Code Summary for Workplace/organisation-related Benefits

Theme	Code	Number of SLTs	Example
Clinical service delivery	Reduced waitlists	2	"….potential to keep waitlists down ...."
	Equitable access	1	"More equitable access for more patient (if barriers to assessing such as internet and devices are removed"
	Quality service	1	" …high quality, clear and simple service as there is not much room for 'small talk' or hiding really!"
	Ministry of Health targets	1	"…meet Ministry of Health targets"
Reduced travel and costs	Reduced travel time	1	"Less travel time"
	Reduced cost	2	"Less cost of petrol"
	Environmental factors	1	"Reduced environmental factors regarding travel"
Employee quality of life	Employee quality of life	1	"Healthier, happier employees, better work-life balance and general quality of life"

The theme of clinical service delivery comprised four codes as reduced waitlists, equitable access; quality service; and Ministry of Health targets. Out of these, the statement, reduced waitlists, was suggested by two participants. More equitable access for more patients (if barriers to assessing such as internet and devices are removed) was mentioned by one participant. Telepractice results in high quality, clear and simple service as there is not much

room for ‘small talk’ or hiding, was the statement of another participant. The other information was concerning meeting Ministry of Health targets.

The second theme was reduced travel and costs, which was organised into three codes: reduced travel time, reduced cost, and reduced environmental factors regarding travel. Of these, reduced cost was mentioned by two participants and the others by one participant each. The reason for reduced cost included less cost of petrol as there is less travel.

The last theme was employee quality of life, which one participant put forward mainly because of the perception that telepractice resulted in healthier and happier employees, better work-life balance and general quality of life.

4.2.7 Facilitators of clinical services for adults with dysphagia post-stroke via telepractice

The participants were asked to list the client, clinician and workplace/organisation-related facilitators of clinical services for adults with dysphagia post-stroke via telepractice. These facilitators were coded and then organised into themes. The themes identified under the facilitators of telepractice are presented Table 16 and described in more detail in the following sections.

Table 16

Themes Identified under the Facilitators of Telepractice

Themes	**Codes included**
Client-related facilitators	
Devices	Telephone support iPad Video call device
Technology	Technology Familiarity with technology
Support person	Support person Supportive partner

Willingness	Willingness
Clinician-related facilitators	
Training	Training and Experience Positive feedback
Finding solutions	Problem solving Talking as a team Flexibility and open minded approach
Experience with technology	Comes in handy To connect Confidence
Workplace/organisation-related facilitators	
Work setting	Telephone booths Work from home Quiet room
Support by organisation	Organisation support Posters

4.2.7.1 Client-related facilitators

The participants were asked to list the client-related facilitators of clinical services for adults with dysphagia post-stroke via telepractice. The participants' responses were coded as illustrated in Table 17 and organised into four themes: devices, technology; support person; and willingness.

Table 17

Code Summary for Client-related Facilitators

Themes	**Code**	**Number of SLTs**	**Example**
Devices	Telephone support	1	"Telephone support to set up initially…"
	iPads	1	"… loan iPads"
	Internet access	2	"Access to internet"
	Video call experience	1	"Video call experience with family"
Technology	Technology skills	1	"…technology skills.."
	Familiarity	1	"Familiarity with technology"
Support person	Support person	1	"Support person to facilitate"
	Supportive partner	1	"Supportive partner husband willing to help get them set up"
Willingness	Willingness	1	"Willingness to give it a try"

Two participants stated that the most frequently identified client-related facilitator regarding the theme devices was internet access. The responses included access to internet and gadgets. In addition, one of the participants suggested telephone support, iPads on loan, and video call experience with family members as other client-related facilitators in using telepractice under the theme devices.

The second theme technology comprised two codes: technology skills and familiarity. Technology skills and understanding of technology were considered as client-related facilitators and were proposed by one each of the participants.

The third theme identified was support person and was organised into two codes: support person and supporting partner. Support person to facilitate and a supportive husband willing to help set up were the statements suggested by one each of the participants.

The last theme was willingness, which included giving telepractice a try. One participant stated this.

4.2.7.2 Clinician-related facilitators

The participants were asked to list the clinician-related facilitators of clinical services for adults with dysphagia post-stroke via telepractice. The participants' responses were coded as illustrated in Table 18 and organised into three themes: training, finding solutions, and experience with technology.

The theme training was organised into three codes: training, experience, and positive feedback. Two participants suggested training to use zoom. One example was providing positive feedback after a session was considered a clinician-related facilitator by one participant. Having

experience was identified as a clinician-related facilitator as “it comes in handy when trying to explain to clients how to connect if they are unfamiliar”.

The second theme was finding solutions; this was organised into four codes as problem-solving, team discussion, flexibility, and an open-minded approach. Among these, problem-solving was mentioned by two participants. Examples included a willingness to be available for problem-solving over the phone. Talking as a team regarding success, flexibility, and open-minded approach were the other clinician-related facilitators in using telepractice as suggested by one each of the participants.

Table 18

Code Summary for Clinician-related Facilitators

Themes	**Code**	**Number of SLTs**	**Example**
Training	Training	2	“.. training how to use zoom..”
	Experience	1	“Experience with zoom and training how to use it”
	Positive feedback	1	“providing positive feedback after a session like "thanks for the session, it went really well, I got all I needed"
Finding solutions	Problem solving	2	“Willingness to being available for problem solving over the phone”
	Talking as a team	1	“..talking as a team regarding success”
	Flexibility	1	“Flexibility”
	Open minded approach	1	“Open minded approach..”
Experience with technology	Comes in handy	1	“This comes in handy when trying to explain to a patient …”
	To connect	1	“…. how to connect if they are unfamiliar”
	Confidence	2	“Use of a buddy system to improve confidence”

The last theme was experience with technology and was organised into three codes as it comes in handy, to connect and confidence. As far as confidence in using technology was concerned, the primary response included utilising a buddy system to improve morale. Statements suggesting clinician-related facilitators under the theme experience with technology also included being able to support the person to connect if he is unfamiliar.

4.2.7.3 Workplace/organisation-related facilitators

The workplace/organisation-related facilitators of clinical services for adults with dysphagia post-stroke via telepractice were collected and analysed. The participants' responses were coded as illustrated in Table 19 and organised into two themes: work setting and support by organisation.

The participants' most frequently identified workplace/organisation-related facilitators under the theme work setting include worked from home; suggested by two participants each. The other workplace/organisation-related facilitators included telephone booths and a quiet room dedicated to telepractice in the workplace.

Table 19

Code Summary for Workplace/Organisation-related Facilitators

Theme	**Code**	**Number of SLTs**	**Example**
Work setting	Telephone booths	1	"Telephone booths are great…"
	Work from home	2	"Allowance to work from home one day a week"
	Quiet room	1	".. quiet room dedicated to TH in the workplace"
Support by organisation	Organisation support	1	"… supported by the organisation".
	Posters	1	"posters encouraging use of telehealth"

The other theme of organisation-related facilitator comprised two codes: organisation support and posters. These were suggested by one participant each. For example, the reason included telepractice was endorsed by the organisation, and posters encouraged the use of telepractice.

4.2.8 Barriers of clinical services for adults with dysphagia post-stroke via telepractice

The client, clinician and workplace/organisation-related barriers of clinical services for adults with dysphagia post-stroke via telepractice were coded and then organised into themes. The themes are presented in Table 20 and described in more detail in the following sections.

Table 20

Themes Identified under the Barriers of Telepractice

Themes	**Codes included**
Client-related barriers	
Technology	Technology set up; Technology skills Technology familiarity Internet
Clinical service	Preference for in-patient visits Reduced rapport Lack of support person Reluctance
Patient character	Cognitive impairment
Clinician-related barriers	
Technology	Fear of technology Familiarity
Mind set	Dislike of change Preference for in-person meeting Reluctance Prefer face-to-face Willingness
Therapy access	Quality of intervention Ability to talk to client Effort and/or skill
Workplace/organisation-related barriers	
Therapy	Objective assessment

Work setting	Quiet clinic room Lack of space
Devices	Lack of shared laptop Poor internet quality

4.2.8.1 Client-related barriers

The participants listed the client-related barriers of clinical services for adults with dysphagia post-stroke via telepractice. Under the theme technology, were four codes; these included technology set up, technology skills, technology familiarity and the internet. The most frequently identified client-related barrier (*n*=4) was poor internet quality. Poor technology skill was another barrier identified by two participants. Poor technology skill was another barrier suggested by two participants.

The responses were coded as illustrated in Table 21 and organised into three themes: technology, clinical service, and patient character.

Table 21

Code Summary for Client-related Barriers

Themes	**Code**	**Number of SLTs**	**Example**
Technology	Technology set up	1	"Use of technology set up…"
	Technology skills	2	"Poor technology skills.."
	Technology familiarity	1	"Lack of familiarity with technology"
	Internet quality	4	".. poor internet quality…"
Clinical service	Preference for in-patient visits	1	'preference for in-person visits when COVID-19 has not been an issue"
	Reduced rapport	1	"reported reduced rapport at times"
	Lack of support person	1	"Lack of support person to facilitate"
	Reluctance	1	".. being reluctant to giving it a go - saying "I'm a bit of a dinosaur"

Patient character	Cognitive impairment	1	“cognitive impairment”

Poor technology skill was stated as one of the barriers by two participants under the theme of technology. The other barriers under the theme of technology included lack of familiarity with technology and the use of technology set up and reported by one participant each. Reluctance to give telepractice a go was suggested as one of the barriers in using telepractice by one participant.

4.2.8.2 Clinician-related barriers

The clinician-related barriers of clinical services for adults with dysphagia post-stroke via telepractice were organised into three themes, as detailed in Table 22.

Table 22

Code Summary for Clinician-related Barriers

Theme	**Code**	**Number of SLTs**	**Example**
Technology	Fear of technology	1	“Fear of technology..”
	Lack of familiarity	1	“Lack of familiarity with technology”
Mind set	Dislike of change	1	“Dislike of change”
	Preference for in-person meeting	1	“Preference for in-person meeting / connection”
	Reluctance	1	“Reluctance to give it a go”
	Prefer face-to-face	1	“prefer face-to-face”
	Lack of Willingness	1	“Lack of willingness to change normal practice”
Therapy access	Fear of quality of intervention	1	“ ..fear of quality of intervention being compromised..”
	Ability to talk to clients	1	“Ability to talk to client through IT issues without being there physically”
	Effort and/or skill	1	“Effort and/or skill required to support clients with technology issues..”

Under the theme technology, two codes included fear of technology and lack of familiarity. The second theme was mind set and included: dislike of change, preference for an in-person meeting, reluctance, prefer face-to-face, and willingness. Under the third theme therapy access, three codes included fear of the quality of intervention, ability to talk to the clients, and effort and/or skill required to support clients with technology issues.

4.2.8.3 Workplace/organisation-related barriers

The workplace/organisation-related barriers of clinical services for adults with dysphagia post-stroke via telepractice were organised into three themes, as detailed in Table 23.

Table 23

Code Summary for Workplace/Organisation-related Barriers

Theme	**Code**	**Number of SLTs**	**Example**
Therapy	Objective assessment	1	"We can't do objective measures via telepractice such as cough reflex testing"
Work setting	Quiet clinic room	1	"Access to quiet clinic room"
	Lack of space	1	"Lack of space to work in a quiet room"
Devices	Lack of shared laptop	1	"Access to shared laptop"
	Poor internet quality	1	".. lack of good quality internet"

Under the theme therapy, was included one code objective assessment referring to an example of cough reflex testing. The second theme worked setting included two codes: quiet clinic room and lack of space. The third theme under workplace/organisation-related barriers was devices and was organised into two codes: lack of shared laptop and poor internet quality.

4.3. Beliefs about telepractice

The participants indicated on a five-point Likert scale whether they agreed or disagreed with a series of 10 statements about telepractice. The participants' responses are presented in Table 24.

Table 24

Frequency counts of the beliefs of SLTs about the use of telepractice

Sl. No.	Statement	Responses				
		SD	SwD	NDA	SwA	SA
1	Telepractice is an appropriate method to deliver clinical services for adults with dysphagia post-stroke	0	0	1	**3**	2
2	Telepractice will eventually become a mainstream delivery method for speech-language therapy services for adults with dysphagia post-stroke	0	**3**	1	0	2
3	In 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice	0	0	2	1	**3**
4	Over the next 10 years, older client's limited familiarity and interest in technology will become less of a barrier to telepractice	1	1	**2**	1	1
5	I will only use telepractice if in-patient delivery is not an option	1	**3**	0	1	1
6	You cannot develop the same level of client-clinician rapport via telepractice as is achieved in-person	0	**5**	0	0	1
7	My workplace/organisation is open and interested in using telepractice to provide services for adults with dysphagia post-stroke	0	0	**2**	**2**	**2**
8	Telepractice can be used to provide a service that is as effective as in-person delivery	0	1	**2**	1	**2**
9	Telepractice will only benefit adults with dysphagia post-stroke who live in regional towns or rural areas, not city centres	**3**	2	1	0	0
10	Telepractice has the potential to improve the level of care I am currently providing for adults with dysphagia post-stroke	0	1	1	**3**	1

(Key SD: Strongly disagree, SwD: Somewhat disagree, NDA: neither disagree nor agree;

SwA: Somewhat agree; SA: Strongly agree)

4.3.1 Levels of agreement of SLTs

The first statement, telepractice is an appropriate method to deliver clinical services to adults with dysphagia post-stroke was agreed upon by five out of six participants. The second statement that telepractice will eventually become a mainstream delivery method for speech-language therapy services for adults with dysphagia post-stroke had a mixed response with half of the participants somewhat disagreeing, one participant neither disagreeing nor agreeing, and two participants strongly agreeing.

For the third statement that in 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice, three participants strongly agreed and one participant somewhat agreed. Two participants neither agreed nor disagreed.

The fourth statement that over the next 10 years, older clients' limited familiarity and interest in technology will become less of a barrier in the use of telepractice had a mixed response, with two participants agreeing, two participants disagreeing and two neither agreeing nor disagreeing.

The fifth statement that telepractice will be used only if inpatient delivery is not an option was agreed upon only by two participants, whereas four participants disagreed with this statement.

The majority of the participants (five out of six) somewhat disagreed with the sixth statement that they could not develop the same level of client-clinician rapport via telepractice as is achieved in person. Only one participant strongly agreed with this statement.

The seventh statement that the participants' workplace/organisation was open and interested in using telepractice to provide services for adults with dysphagia post-stroke was agreed on by four out of six participants, whereas, two participants neither agreed nor disagreed.

The response to the eighth statement was that one-half of the participants believed that they could deliver clinical services for adults with dysphagia post-stroke through telepractice as effectively as in-person service delivery. Only one participant somewhat disagreed while two participants neither disagreed nor agreed with this statement.

The majority of the participants (three participants strongly disagreeing and one somewhat disagreeing) did not believe the ninth statement that telepractice will only benefit adults with dysphagia post-stroke who live in regional towns or rural areas, not city centres whereas, one participant neither disagreed nor agreed.

The tenth statement that telepractice had the potential to improve the level of care given to adults with dysphagia post-stroke was somewhat agreed upon by one-half of the participants and one each of the participants strongly agreed, somewhat disagreed and neither disagreed nor agreed.

4.3.2 Conclusion

The responses from the participants with respect to the perceptions of the use of telepractice with dysphagia post-stroke were analysed and presented in this chapter. The results started with explaining the demographics of the participants, their clinical and telepractice services, benefits, facilitators, barriers of the participants with respect to adults with dysphagia post-stroke and also enumerated the beliefs with regard to the use of telepractice as evidenced from 10 statements.

Chapter Five: Discussion

5.1 Introduction

The purpose of this study was to explore the perceptions of SLTs in New Zealand on the use of telepractice with adults with dysphagia post-stroke along with their perceived benefits, facilitators, barriers, and beliefs. This chapter presents a discussion of the results of the study. The key points discussed under the perceptions of SLTs on the use of telepractice with adults with dysphagia post-stroke are as follows:

(1) The nature of clinical services offered

(2) Telepractice as influenced by SLT training and professional development

(3) Telepractice as an appropriate method to deliver clinical services

(4) Benefits and facilitators of telepractice in New Zealand

(5) Barriers limiting the use of telepractice

(6) Perceived benefits on the use of telepractice

5.2 Clinical services offered to adults with dysphagia post-stroke via telepractice

The clinical services offered by the participants to adults with dysphagia post-stroke via telepractice varied. It is understood that effective clinical services included assessment, education for clients and caregivers, direct intervention (exercises), feeding trials, rehabilitation and compensatory strategies (muscle strength training). According to NZSTA (2012), SLTs in New Zealand used telepractice for assessment, diagnosis, case reviews and referral purposes. It is to be construed that the use of telepractice by SLTs in New Zealand additionally involves case reviews and referral purposes. The study's outcomes are in line with the findings of many authors in different countries such as in Hong Kong (Fong et al., 2020); in Australia (Hill & Miller,

2012); in India (Mohan et al., 2017), and the United States of America (Tucker, 2012). Services like consultation, follow-up sessions, family support, teacher support, natural therapy, and assessment offered by SLPs in Australia (Hill & Miller, 2012). More of paediatric population was served when compared to adult population. The present study's focus was telepractice with adults; therefore, paediatric population was not considered. As far as the use of telepractice in other countries is concerned, in the USA, the primary services provided by SLPs via telepractice were assessment, consultation and screening (Tucker, 2012); follow-up services, management and assessment in India (Mohan et al., 2017); treatment, follow-up sessions, supervision, screening and assessment in Hong Kong (Fong et al., 2020).

New Zealand uses telepractice for education for clients and caregivers. The other services such as assessment, direct intervention (exercises), feeding trials, rehabilitation and compensatory strategies (muscle strength training) are also delivered when compared to the use of telepractice in different countries as mentioned above. It could be inferred that the use of telepractice by SLTs in New Zealand is varied.

5.2.1 Telepractice provides SLTs with an option to expand services to underserved populations

The platforms used to deliver clinical services via telepractice play a significant role in adequate health care provision. The various media used by the participants when providing clinical services to adults with dysphagia post-stroke in New Zealand included audio calls such as phone and Skype and video conferencing. Successful telerehabilitation services for adults with stroke and the benefits of telepractice in real-time video conferencing for providing care for such individuals have been highlighted (Gregory et al., 2011). Videoconferencing is a common medium used by clinicians to provide telepractice services and online assessment of dysphagia

due to more accessibility (Hill & Miller, 2012; Lowman & Kleinert, 2017). Also, telepractice via videoconferencing with adults with dysphagia due to head and neck cancer resulted in positive client and clinician satisfaction (Ward et al., 2017). The present study's finding that videoconferencing was used as a platform for offering telepractice was supported by five out of six participants. This finding is in line with the reports of Hill and Miller (2012) and Lowman and Kleinert (2017) who stated that videoconferencing was the most effective tool for delivering clinical services via telepractice. As far as the mode of clinical service delivery via telepractice was concerned, most of the therapists in Hong Kong used the videoconferencing, telephone, and "store-and-forward" approach (Fong et al., 2020). However, none of the participants stated that they used the “store-and-forward" type of telepractice method in New Zealand.

5.2.2 Methods of augmentation of clinical practice

It will be worthwhile to look into the items used to augment clinical swallow evaluation via telepractice, as is being done by SLTs in other countries. It is noted that the participants did not report different service delivery platforms. Telepractice offers diverse clinical-based applications for service delivery (Malandraki et al., 2014); the SLTs of New Zealand did not utilise these, may be due to the lack of knowledge of the use of sophisticated equipment to deliver services via telepractice. The lack of using a variety of applications could be considered a weakness and could be traced to insufficient training and professional development of SLTs. Only one-half of the SLTs in the present study planned to expand their clinical services to adults with dysphagia post-stroke via telepractice. Another outcome of the study was that two-thirds of the SLTs in the survey planned to expand their clinical services to adults with dysphagia post-stroke by increasing the number of clients. The rest planned to expand their clinical services by providing communication therapy. However, none of the participants reported that they planned

to expand their clinical services by increasing the range of equipment or content of services. This indicates that the SLTs in New Zealand lack sufficient training in the use of different equipments for clinical service delivery.

Most of the respondents of a survey study in Australia wanted to expand their telepractice service for more outreach (Hill & Miller, 2012). Participants in this survey stated that they had not used any of these methods in New Zealand, such as cervical auscultation, pulse oximeter, surface electromyography or others to augment clinical swallow evaluation via telepractice. And, this is in contrast with the reports of Hill and Miller (2012); Ward et al. (2009); Ward et al. (2014), wherein items such as pulse oximeter, medical camera, web camera and extra lighting were used by SLPs in their clinical practice. However, SLTs in New Zealand are not inclined to expand their telepractice service for more outreach and broaden the client population by augmenting their practice by the increasing the range of equipments.

5.2.3 Client-related factors considered when deciding to offer clinical services

Client-related factors are significant features to be considered when deciding to offer clinical service with adults with dysphagia post-stroke via telepractice. Therefore, the study participants considered various factors (as described in chapter four) when deciding to provide telepractice with adults with dysphagia post-stroke. Different factors have been suggested by earlier researchers to be considered while deciding to use telepractice with individuals with dysphagia (Malandraki et al., 2011; Morrell et al., 2017; Tinelli et al., 2017; Ward et al., 2014). The outcome of the assessment of dysphagia via telepractice depends up on the severity of the case; hence it is difficult to obtain similar agreement with that of face-to-face assessment when the severity of stroke is more. Lower levels of agreement with that of face-to-face assessment was obtained by clinicians while using telepractice with individuals with severe

stroke (Morrell et al., 2017). On the other hand, clinical trials by Malandraki et al. (2011) with 32 individuals (with a primary diagnosis of stroke or head and neck cancer) concluded that the utilization of an online telepractice system was possible for assessing and evaluating the severity of dysphagia, the degree of penetration/aspiration and for providing clinical recommendations. In the case of instrumental and non-instrumental dysphagia evaluation also, there has been a high agreement between telepractice and face-to-face delivery of service (Burns et al., 2016). The client-related factors related to clinical services with adults with dysphagia post-stroke via telepractice considered by the participants were many, comprising cognitive behavioural ability, physical, sensory ability and communication ability as far as the behaviour of the individuals is concerned. In addition, technology skills, access to hardware, software and support persons were also considered as client factors while choosing clients for clinical service delivery via telepractice by the participants. One crucial area regarding telepractice and stroke is visual impairments affecting cognition, causing adverse effects in the daily life of the individuals (Tinelli et al., 2017). However, severity of dysphagia, one of the essential factors considered by other researchers was not considered by the SLTs in New Zealand while offering telepractice. Lack of adequate professional training and development in dysphagia assessment via telepractice could be the primary reason for this. Therefore, SLTs should rectify this weakness by undergoing proper training and professional development on dysphagia management to offer clinical practices via telepractice with adults with dysphagia post-stroke.

5.3 Telepractice is influenced by the training and professional development of SLTs

Training and professional development are considered essential factors for the effective use of telepractice in clinical service delivery across various health professions.

5.3.1 Advantages of formal training and limitations of the curriculum in New Zealand

Formal training and professional development are essential to clinicians in handling complex cases of dysphagia via telepractice. The overall perceptions shared by the participants in professional training and development reflect that they have not undergone adequate training. The present study revealed that none of the participants had training in telepractice during their undergraduate and postgraduate course work in universities. It is to understand that the participants are constrained to use opportunity such as attending seminars, conferences; reading books and articles and peer learning to build up and improve their knowledge on telepractice to manage dysphagia. The participants had also to undergo self-directed and online learning and attend webinars on telepractice because telepractice was not included in the curriculum of universities then. There is enough opportunity in New Zealand for further improvising the training process into a more focussed one by offering hands-on training on telepractice by professional organisations. NZSTA has developed programmes by which members can continue to have professional development (NZSTA, 2018).

The importance of formal training of clinicians in handling complex cases of dysphagia via telepractice and the use of ethical guidelines reports was highlighted by many researchers (Edirippulige & Armfield, 2017; Hill & Miller, 2012; Ward et al., 2014). It is because telepractice involves a change in practice (Edirippulige & Armfield, 2017). The need for clinical training in telepractice service delivery was indicated by Miles et al. (2020). According to Mohan et al. (2017), a short-term training or a certificate course in telepractice is essential to deliver clinical services through telepractice. There is a general agreement by many researchers, as stated above, that formal training and professional development in the use of telepractice is

essential in adequate health care provision to adults with dysphagia post-stroke. Offering opportunities to gain hands-on training with different platforms of telepractice in the professional development programmes for SLTs in New Zealand is required. These would help improve the professional skills and confidence level of SLTs. They would go for more use of telepractice in managing adults with dysphagia post-stroke even though the participants expressed good confidence level in using technology in general and in clinical practice. There is an apparent need to conduct more specific and focussed training and professional development on telepractice and dysphagia management for the SLTs in New Zealand.

5.3.2 Level of confidence of SLTs

One of the many factors influencing SLTs' considerations in utilising telepractice with adults with dysphagia post-stroke is confidence in using technology; in general, and in clinical practice. The significance of technology in telepractice is highlighted by many workers (Bours et al., 2009; Sharma et al., 2011; Ward et al., 2012). Having a high level of confidence, the SLTs of New Zealand could be encouraged to offer clinical services through telepractice.

5. 4 Benefits and facilitators of telepractice under New Zealand context

This section discusses the benefits and facilitators of the use of telepractice by SLTs in New Zealand.

5.4.1 Telepractice is an appropriate method to deliver clinical services with adults with dysphagia post-stroke

Telepractice is considered a vital method for delivering clinical services to adults with dysphagia post-stroke. The participants perceived numerous benefits to the use of telepractice with adults with dysphagia post-stroke at the client level, clinician level and workplace/organisation level.

5.4.2 Perceived benefits of the use of telepractice in delivering clinical services

Overall, it is found that the participants suggested many benefits to the use of telepractice with adults with dysphagia post-stroke. Many of these benefits were reiterated by other researchers in various locations. Only in a few cases there was a contradiction with the statements of other researchers. The factors that are contradictory included factors such as safety precautions, privacy and legal standards, and also professional development and training of the SLTs; these are discussed later in this section.

The participants expressed that telepractice helps to remove risks associated with COVID-19 and other health factors with less exposure to hospital virus. In addition, the participants also enumerated reduced travel and costs for receiving medical care and less waiting time in a clinical setup.

A key finding arising from the study under the clinician-related benefits is that telepractice is helpful in lockdown situations and was more so because it was possible to work from home, have office sessions, and use trained therapy assistants at the client's home. The responses obtained in the study on client-related benefits are in line with the observations of several researchers (Coyle, 2012; Hill & Miller, 2012; Mashima & Doarn, 2008; McCue et al., 2010; Tucker, 2012). Many researchers (Lowe et al., 2013; Mashima & Doarn, 2008; Wales et al., 2017) stated that the quality of service offered via telepractice had similar outcomes compared with face-to-face therapy in many disorders, including dysphagia; the participants also detailed identical statements.

Good internet connectivity and availability of computers and other gadgets were considered necessary workplace-related benefits by Ayanikalath (2017); Burns et al. (2016); Malandraki et al. (2011); Ward et al. (2013). Also, privacy and legal safeguards, safety

precautions, client candidacy criteria, facilitators' role, and internet and infrastructure were suggested as workplace-related benefits of using telepractice by Gough et al. (2015) and Richmond et al. (2017). However, none of these benefits were indicated by the participants of the study. The participants of the study considered other factors as workplace/organisation-related benefits which include quality service delivery, equitable access to more clients, employee quality of life and better work-life balance.

The participants reported a range of perceived benefits to the use of telepractice concerning the client, clinician, and workplace/organisation. From the above discussion, it is clear that telepractice in general and its use in managing adults with dysphagia post-stroke has several benefits. The significant advantages concerning the client, clinician and workplace/organisation are enumerated and discussed above.

5.4.3 Perceived facilitators in the use of telepractice in delivering clinical services with adults with dysphagia post-stroke

Various client-related, clinician-related and workplace-related facilitators influence the delivery of clinical services via telepractice. This section discusses the role of facilitators in the use of telepractice concerning the clients, clinicians and the workplace/organisation. The part of facilitators is essential in addressing safety issues in case of emergency and also to help with completing tasks to facilitate the assessment or treatment (Malandraki et al., 2014; Sharma et al., 2011).

The frequently identified client-related facilitators by participants under the theme devices were internet support and support person. One of the important client-related facilitators identified by the participants was a trained support person, who could be a family member. The use of a trained support person as a facilitator was proposed by Burns et al. (2017); Malandraki

et al. (2014); Sharma et al. (2011); Ward et al. (2013). According to Miles et al. (2020), providing the facilitators with adequate training will address safety issues that could come up during the service delivery. The facilitators should not be used as substitutes for specialists for dysphagia. It is to be noted that facilitators should only be assisting the client.

In India, a survey study found that clinicians learned to use telepractice through personal experience than formal training (Mohan et al., 2017). Similarly in the present survey, it has been found that participants have undergone self-directed study with respect to telepractice with dysphagia management. Prior training and preparation are essential for accessing more complex cases of dysphagia in clients while using telepractice (Edirippulige & Armfield, 2017; Hill & Miller, 2012; Ward & Burns, 2014). To conclude, the participants were attributing more importance to training and experience with technology as client-related facilitators.

The most frequently identified workplace/organisation-related facilitator by the participants was work from home. Appropriate space availability at the client's home and clinician facility has been identified as an essential workplace-related facilitator by Burgoyne and Cohn (2020). It is necessary for practical work from home, such as delivery and reception of services without distractions, as identified by the SLTs of New Zealand. The other workplace-related facilitator includes support by the organisation because telepractice supports the organisation. Factors such as safety precautions, privacy and legal standards, and internet specification in telepractice for dysphagia management were emphasised by Gough et al. (2015) and Richmond et al. (2017). The participants did not identify these significant factors as facilitators. Also, there is a general agreement that formal training in telepractice is necessary in effective health care provision to adults with dysphagia post-stroke. To conclude, it seen that the participants were attributing due significance to work setting and support by an organisation

concerning workplace/organisation-related facilitators of using telepractice for adults with dysphagia post-stroke.

In general, it is clear from the above discussion that telepractice with adults with dysphagia post-stroke has a variety of facilitators as perceived by the participants. Having an excellent organisational set up was considered a crucial factor in facilitating telepractice, according to Ward et al. (2013). In the New Zealand context, training and experience with technology and a good organisation set up with adequate support from the organisation are the major factors influencing facilitators in the use of telepractice with dysphagia post-stroke. To conclude, it is imperative to access all the factors mentioned above to ensure the smooth delivery of clinical services via telepractice.

5.5 Barriers limiting the use of telepractice in New Zealand

Telepractice has immense potential in providing a better quality of life to adults with dysphagia post-stroke under different systems of health care in many contexts. Still, one should understand that implementing telepractice has numerous barriers. This section discusses the obstacles of clinical services in the use of telepractice with adults with dysphagia post-stroke concerning the client, clinician and the workplace/organisation.

The participants' most frequently identified client-related barrier was poor internet quality, which was suggested by most participants. The significance of technology in telepractice is highlighted by many researchers (Bours et al., 2009; Sharma et al., 2011; Ward et al., 2012). While using telepractice, the images should be of high quality for better assessment of people with dysphagia, and that bandwidth plays an essential role, according to Sharma et al. (2011). On the other hand, Ward et al. (2012) reported a need for a high-quality lighting source, digital stethoscope, and good quality microphones as factors of importance.

Client character was the other major factor identified by the participants concerning client-related barriers in the use of telepractice. Different workers identified several factors concerning client suitability:

- case-to-case basis client appropriateness (Brennan et al., 2010).
- Factors like hearing impairment and movement disorders (Ward et al., 2012).
- The medical diagnosis of the clients and associated co-morbidities (Ward et al., 2014).

In addition, Miles et al. (2020) came up with the idea of client safety as a significant client-based barrier in the use of telepractice and Malandraki et al. (2021) stated reimbursement hurdle as a client-based barrier in the use of telepractice. However, the latter two factors were not identified as factors of importance by the participants.

The significant clinician-related barriers identified by the participants were:

- Fear of technology and, dislike of change.
- Preference for an in-person meeting.
- Lack of willingness to change standard practice.

Also, the lack of effort and skills required to support clients with technology issues was considered a barrier. These responses are in line with the statements of May and Erickson (2014) and Miles et al. (2020), who reiterated that the attitudes and perceptions of the clinicians play a significant role in the use of telepractice. The difficulty to convey empathy via telepractice when working with clients with linguistically or culturally diverse backgrounds, as stated by Pfitzner et al. (2020), was not identified as a barrier by the participants. It could conclude that variations exist in identifying client-related barriers by the participants when compared with those of other researchers. Special mention should be made of factors such as preference for an in-person meeting and lack of willingness to change standard practice. These factors could be perceived as

the major stumbling blocks limiting the increased use of telepractice by the SLTs in New Zealand, and efforts should be made to alleviate these barriers.

Lack of access to a quiet clinic room and lack of space to work in a quiet room were considered significant workplace/organisation-related barriers in using telepractice. The response that requirement of a quiet room with sufficient space is to be considered significant for telepractice to be effective. Similar observation was stated by Bours et al. (2009) which indicate that it is not possible to have telepractice in all clinical settings.

Also, inexpensive web-based software with limited privacy and security settings is a barrier. The platforms used for telepractice should be made secure in terms of patient confidentiality and data storage (Doss et al., 2018; Emezue, 2020). Therefore, the response by the participants that lack access to a quiet clinic room and lack of space to work in a quiet room as workplace/organisation-related barriers of using telepractice is justified.

Lack of shared laptops and poor internet quality were suggested as other workplace-related barriers. These have been endorsed by a survey study in Australia, which found that the commonly reported barriers by SLPs while providing telepractice services included internet connectivity problems, limited access to technology to conduct services online and lack of assessment and treatment resources (Hill & Miller, 2012). In addition, Miles et al. (2020) and Richmond et al. (2017) also suggested that internet connectivity and technology specifications act as barriers in implementing telepractice in the management of patients with dysphagia. One SLT in New Zealand expressed inability to use telepractice because objective measurements such as cough testing cannot be assessed via telepractice. The above response by one participant that objective measurements could not be assessed via telepractice could have stemmed from the fact that the SLTs in New Zealand lack sufficient training and professional development in the

use of telepractice. It is found that the uptake of telepractice has increased among the SLTs in countries like India and Brazil, following the COVID-19 pandemic (Aggarwal et al., 2020; Rech et al., 2020). Therefore, clients and clinicians expressed more satisfaction in telepractice (Brennan et al., 2009) and the use of telepractice in the remote assessment of swallowing disorders is considered valid and feasible as per Sharma et al. (2011).

From the above discussion, it is clear that telepractice in general and its use in the management of adults with dysphagia post-stroke encompass many barriers and limitations, even though reports state that it is a better system for addressing health care. The participants reported a range of perceived barriers concerning the client, clinician, and workplace/organisation. The significant barriers concerning the client, clinician and workplace/organisation were enumerated and discussed above.

5.6 Beliefs of SLTs in the use of telepractice with adults with dysphagia post-stroke

This section discusses the beliefs of SLTs on the use of telepractice. A key finding arising from the study was that SLTs while performing telepractice with adults with dysphagia post-stroke are not equipped with sufficient equipment, training, and professional development to augment their clinical service delivery.

5.6.1 Telepractice is an appropriate method to deliver clinical services

The primary objective of using telepractice is to improve access to health care services by providing clinical services from a distance. Most participants viewed telepractice as an appropriate method to deliver SLT services to adults with dysphagia post-stroke. This is in agreement with the observations of several authors that telepractice is an effective service delivery platform compared to face-to-face therapy (Regina Molini-Avejonas et al., 2015; Sharma et al., 2013; Swales et al., 2020). Only a few SLTs considered telepractice to be less

effective than face-to-face therapy (Fong et al., 2020). This consideration might have stemmed from the fact that SLTs might have certain misconceptions about the effectiveness of telepractice. The absence of professional development trainings for the SLTs on the use of telepractice could have added to this thought.

The statement telepractice will eventually become a mainstream delivery method for SLT services for adults with dysphagia post-stroke had a mixed response with half of the participants somewhat disagreeing, one participant neither disagreeing nor agreeing, and two participants strongly agreeing.

Furthermore, there is an increased uptake of telepractice among the SLTs in countries like India and Brazil following the COVID-19 pandemic (Aggarwal et al., 2020; Rech et al., 2020). Therefore, it is logical to perceive that telepractice will become a mainstream service delivery method for SLT for adults with dysphagia post-stroke, even though one-half of the participants somewhat disagreed with the statement. Therefore, it should be because telepractice helps provide clinical services to adults with dysphagia post-stroke irrespective of the location.

Telepractice had the potential to improve the level of care given to adults with dysphagia post-stroke was strongly agreed upon by one-half of the participants. This observation is in line with the observations of earlier researchers that improved quality of service in the client's functional environment could be provided by telepractice (McCue et al., 2010) and that many SLPs in Australia wanted to expand their telepractice service for more outreach and to broaden the client population (Hill & Miller, 2012) . As such, it could be concluded that there is a general agreement that telepractice had the potential to improve the level of care given to adults with dysphagia post-stroke. This could possibly be due to improved access to specialists with

expertise in dysphagia and more frequent service because of enhanced access, as suggested by Tucker (2012).

5.6.2 Access to telepractice by adults with dysphagia post-stroke

Access to telepractice is an essential factor in delivering clinical services. There is more agreement with the statement that in 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice. Given the fact that improved access to clinical services for remotely located families and the provision of health care continuously to a client can be achieved by telepractice (Burgoyne & Cohn, 2020; Cole et al., 2019), it could perceive that in 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice. Furthermore, assuming a generally similar trend with the elderly population in New Zealand, it could perceive that over the next ten years, older clients' limited familiarity and interest in technology will become less of a barrier in the use of telepractice.

The extent of area that could be covered by SLTs to offer clinical services is found to be vast. In addition, telepractice enabled clinicians to cover a large geographical area and provide more clinical services to needy people (Mashima & Doarn, 2008). However, many reports are stating that telepractice improved access to SLT services for underserved populations (Burgoyne & Cohn, 2020; Cole et al., 2019; Houn & Trottier, 2003). In this connection it is apt to explore the awareness of stroke in an ethnic urban population. It was found that participants of a survey from Pacific ethnic groups in New Zealand were not able to identify the risks associated with stroke when compared to New Zealand/European participants Bay et al. (2015). Also, those participants from Maori, Pacific and Asian origins were less likely to go in for immediate medical attention.

The statement that over the next 10 years, older clients' limited familiarity and interest in technology will become less of a barrier to telepractice had a mixed response from the participants. In a survey study in Australia with adults with Parkinson's disease, Swales et al. (2020) suggested that SLPs perceived that older individuals' limited familiarity and interest with technology is set to reduce over a period of 10 years.

5.6.3 Client-clinician rapport via telepractice

Developing a good rapport between the client and the clinician is essential in delivering clinical services via telepractice. The majority of the participants (five out of six) somewhat disagreed with the statement that they could not develop the same level of client-clinician rapport via telepractice as is achieved in person. Only one participant strongly agreed with this statement. The fact that SLTs could create the exact status of client-clinician connection via telepractice has been endorsed by earlier researchers. According to Sharma et al. (2013), the majority of the clinicians felt that they developed a good rapport with their clients while providing clinical service for dysphagia via telepractice. A good level of caregiver satisfaction with clinician empathy and rapport in the use of telepractice for clinical service delivery was mentioned by (Orlando et al., 2019).

5.6.4 Workplace set up and access to telepractice

Workplace set up is a significant consideration in the use of telepractice delivery. Two of the participants neither disagreed nor agreed and four out of six somewhat agreed or strongly agreed with the statement that their workplace was open. They were interested in using telepractice to provide clinical services for adults with dysphagia post-stroke. It states that organisational access to appropriate technology and information technology support for practicing telepractice is a significant corporate benefit of the use of telepractice (Pfitzner et al.,

2020). In addition, it suggests that growing evidence projects the advantages of telepractice over the traditional in-person approach regarding service efficiency, better quality service outcomes, and seeing more clients promptly (Regina Molini-Avejonas et al., 2015). These could be considered the significant reasons for the participants' interest in using telepractice to provide clinical services for adults with dysphagia post-stroke.

5.6.5 Telepractice *vs* face-to-face clinical service delivery

There is a general debate among the SLTs whether telepractice or face-to-face delivery of clinical services is better or on par with each other. One-half of the participants believed that it could deliver clinical services for adults with dysphagia post-stroke through telepractice as effectively as in-person service delivery. One participant somewhat agreed to this statement, and two participants strongly agreed. There is a general agreement with many SLTs that it could deliver clinical services through telepractice as effectively as in-person service delivery in many disorders, including dysphagia (Lowe et al., 2013; Mashima & Doarn, 2008; Regina Molini-Avejonas et al., 2015; Sharma et al., 2013; Wales et al., 2017). Also, in some cases, telepractice could be considered superior to face-to-face delivery of clinical services in terms of better client satisfaction and service delivery (Burns et al., 2017). The majority of the respondents in a survey study in Australia believed that clinical services could be delivered via telepractice to individuals with Parkinson's disease as effectively as in face-to-face therapy and that telepractice could become a mainstream service delivery option (Swales et al., 2020). Also, it states that evidence to date supports the use of telepractice as an equivalent alternative to in-person dysphagia care for adults in inpatient and outpatient settings (Malandraki et al., 2021). Thus, it could perceive that telepractice is an appropriate clinical service delivery method for adults with dysphagia post-stroke and is as effective as in-person service delivery.

To the statement that SLTs would use telepractice only if inpatient service delivery is not an option, one participant strongly disagreed, and three participants somewhat disagreed. Only one of the participants somewhat agreed and strongly agreed with the statement. According to Swales et al. (2020), a similar view might have come from the primary purpose of the remote delivery model, which is to reach those in underserved regions and who cannot easily access clinical support. As there is a general disagreement by the participants, it could perceive that SLTs of New Zealand do not comply with the statement that they would use telepractice only if inpatient service delivery is not an option.

To conclude, participants considered telepractice as a feasible and effective clinical service delivery option. The agreement could be generalised by responding to the 10 statements provided by the participants. It may be construed that the participants viewed telepractice as a viable clinical service delivery option that may provide improved health care and benefits to adults with dysphagia post-stroke, irrespective of the location/region.

Chapter Six: Conclusion

This chapter summarises the purpose, rationale and key findings of the study which aimed to explore the perceptions of speech-language therapists (SLTs) in New Zealand on the use of telepractice with adults with dysphagia post-stroke along with perceived benefits, facilitators, barriers, and beliefs. The strengths and limitations of the study are discussed. The implications for clinicians, client educators and vocational training and the thoughts on future research are also enumerated.

6.1 Purpose, design and rationale

A review of the literature on the use of telepractice by SLTs with adults with dysphagia post-stroke reveals a lack of research in this field of clinical practice in New Zealand. It could be because telepractice with adults with dysphagia post-stroke is a highly specialised technical field. As a result, only significantly fewer SLTs in New Zealand may be using this clinical service delivery method. However, the work done elsewhere suggests that this service delivery model can be effective and efficient with a lot of benefits and good client and clinical satisfaction.

The online survey participants were SLTs working in New Zealand with experience in using telepractice with adults with dysphagia post-stroke. This study has helped fill the literature gap by bringing out the perceptions of SLTs in New Zealand and describe the outcomes of the use of telepractice with adults with dysphagia post-stroke. The findings also would contribute to the growing body of information on the use of telepractice in dysphagia with adults, including diagnosis and interventions.

The study used a descriptive cross-sectional survey design. Predominantly quantitative data and a few qualitative parameters have been collected via the survey platform Qualtrics to describe the perceptions and beliefs of the SLTs who use telepractice. The participants were

recruited indirectly through the New Zealand Speech-Language Therapists' Association and the Massey University Speech and Language Programme Facebook page.

The demographics of the respondents, their clinical settings, their confidence with the technology, different clinical services along with the platforms used for delivering telepractice, the benefits, facilitators and barriers on the use of telepractice concerning the clients, clinicians and workplace/organisation were studied and enumerated. Finally, the beliefs of the SLTs who use telepractice with adults with dysphagia post-stroke, which was captured using ten statements on a five-point scale, are discussed.

The study results suggested that there are many benefits and positive effects on the use of telepractice with adults with dysphagia post-stroke. Also, the perceptions of the SLTs concerning clients, clinicians and the workplace varied. In addition, the study deliberates the practical issues that need considering while working with adults with dysphagia post-stroke via telepractice.

6.2 Limitations of the study

The results of this study should be considered against the limitations. The limitations include:

(1) Sample size

(2) COVID-19 lockdown

(3) Regional representation

(4) Lack of experience with ethnic group population

(5) Limited field of study

(6) Confidential nature of data collection

(7) Type and time of receiving training on telepractice by SLTs

The number of participants (n=6) can be construed as a limitation; despite sending a follow-up reminder asking the organisation to remind the SLTs who met the inclusion criteria for

participation in the survey. The reduced number of participants should be considered in the light of the fact that the study focussed on the use of telepractice with adults with dysphagia post-stroke, which is a super-speciality in medicine.

There may not be many SLTs who have a similar population as their clients; this could be one reason for the fewer participants. Also, when compared to other countries, the lockdown period due to the COVID-19 pandemic was short in New Zealand at the time of the study; this could mean that telepractice may not have been as widespread as is the case elsewhere. When we look at these facts, we should consider that this number of participants is adequate for eliciting information on the use of telepractice. Although the number of participants involved in the study was less, it is representative of the SLTs working in the super-specialised field of adults with dysphagia post-stroke.

The SLTs from only four regions (out of 16 regions) in New Zealand have participated in the study. The responses of the participants were based on the region where they are working. The same should be considered as a limitation of the study as there could be a bias as far as the regions are concerned, and the outcomes could not be generalised throughout New Zealand. In addition, the participants have not mentioned their experience in using telepractice with Māori and Pacific people population; this is to be considered as another limitation. It could be because the focus of the study was not on Māori and Pacific people. The participants might not have had individuals from Māori and Pacific people population as their clients. As a result, the study could not assess the participants' perceptions in offering clinical services to diverse ethnic groups in New Zealand.

The study focussed only on adults with dysphagia post-stroke. Any other population is not considered (like paediatric and people with other neurological problems) and this could be

interpreted as a limitation of the study. Furthermore, it did not include the age group of the participants in the questionnaire to maintain privacy and confidentiality and is a limitation because it is impossible to ascertain whether the perceptions and beliefs have come from participants of younger or older age groups. Also, it could not analyse the differences in the perception between the age groups of the participants. Finally, even though the study elicited the information at the stage at which the participants received training in telepractice, there was no question detailing the type and appropriate time of training to be provided to SLTs on telepractice and this forms another limitation of the present study.

6.3 Strengths of the study

The study's strength lies in the development of the questionnaire in that this could measure the parameters collected in the true sense. The results showed agreement with the outcomes obtained by other researchers in different locations, even though many factors affect the effectiveness of telepractice. The participants identified a range of benefits to using telepractice and suggested several facilitators for further improvement. In addition, it also delineated significant barriers to the use of telepractice.

The use of quantitative and a few qualitative questions to elicit responses from the participants resulted in improving the comprehensiveness of the overall findings and expanded the dimensions of the study. The understanding of the perceptions of SLTs on the use of telepractice with adults with dysphagia post-stroke has helped to outline solutions to improve the use of this service delivery model to this client population. This is in the light of the fact that there is no comprehensive data available on the perceptions of SLTs in the use of telepractice in New Zealand.

6.4 Validity and reliability of the study

Steps were taken to see that the respondents understood all the survey questions as intended. After the pilot study removed some questions and a few modifications, this study did a little reframing for six questions, including sub-titles such as client-related, clinician-related, and workplace/organisation-related factors. Further, the questionnaire covered a range of topics related to the use of telepractice. A proper representation of the total population has been surveyed even though the number of participants was small, as the study pertained to a super-speciality clinical practice, thus assuring reliability. Also, the results obtained are consistent and add to the reliability of the study. It could be suggested that this study has helped to understand the practical aspects of telepractice use. The study also has helped in bringing out the usefulness of this service delivery as an effective and efficient model with a lot of benefits to the clinician as well as the clients, even though with some limitations and barriers. Thus, it could be stated that the methodology of the study has helped to bring out the factors affecting clinician acceptance of telepractice, which are significant to the uptake and expansion of telepractice among the SLTs in New Zealand. These key factors must be addressed to facilitate the improved use and sustainability of telepractice in clinical services in New Zealand.

6.5 Implications for clinical practice, client education, and training

The significant outcomes of the study have the potential to be extrapolated and adopted into clinical trials by the SLTs working with adults with dysphagia post-stroke. The data on the perceived benefits, facilitators, barriers and beliefs on the use of telepractice by the participants will help in understanding the intricacies in the implementation of telepractice in clinical service delivery. These would also help in formulating vocational training programmes and imparting client education for easy adoption of telepractice. Even though the study has certain limitations,

many factors form the basis for the widespread use of telepractice by SLTs in New Zealand. It also reflects the opinions expressed by the participants. It considers that the study provides a strong base for telepractice and, therefore, can result in greater uptake by the SLTs for managing adults with dysphagia post-stroke. While the focus of the study is on the use of telepractice with adults with dysphagia post-stroke, the results could be generalised into the delivery of clinical services in other primary health conditions. And, this should be considered in the light of the COVID-19 pandemic when the utility and safety of traditional face-to-face delivery of clinical services was highly variable and guarded across many countries.

The following are the implications for areas of clinical practice, client education and training derived from the study:

(1) Use of improved devices for offering telepractice and equipments for assessing and managing dysphagia via telepractice.

(2) Formulating vocational training programmes for imparting hands-on training to clinicians and educating clients and caretakers for easy adoption of telepractice.

(3) Research on best practice models to provide the opportunity for telepractice to be integrated fully into the health care system in New Zealand.

6.6 Directions for future research

The study results have revealed the perceptions of SLTs in New Zealand on the use of telepractice with adults with dysphagia post-stroke. These, included details on the benefits, facilitators, and barriers of the SLTs regarding clients, clinicians, the workplace, and their beliefs. The enumerated obstacles call for further studies of these aspects, as these are the constraints faced by the SLTs in New Zealand, and these require to be addressed. The study's outcomes add to the knowledge bank in the field of telepractice with adults with dysphagia post-

stroke, as this is the first of the kind study taken up in New Zealand. In addition, the results are helpful for SLTs for furthering their knowledge on several aspects of telepractice use; these are emulated by more SLTs from different regions of New Zealand. The results, thus, could inspire other researchers to carry out further studies on the multidimensional aspects of telepractice use not only in the management of dysphagia but also in other health disorders with different client populations. Many areas need further research, such as the systems for offering telepractice and the augmentation of the same for expanding telepractice service. Further research in this field will provide the opportunity for SLTs to use telepractice and to integrate this system more into the health care provision in New Zealand.

6.7 Conclusion

This chapter emphasises the concluding remarks of the study. The concluding remarks have been presented under different topics: the purpose, design and rationale of the study; limitations of the study; strengths of the study; validity and reliability of the study; implications for clinical practice, client education, and training; and directions for future research. Overall, the study revealed the perceptions of the SLTs in New Zealand in using telepractice with adults with dysphagia post-stroke in reference to the benefits, facilitators, barriers and beliefs. These lead to the fact that telepractice could be considered a vital method for delivering clinical services to adults with dysphagia post-stroke and that the participants would like to use telepractice. Also, it is understood that the participants are of the opinion that telepractice is on par with face-to-face delivery of clinical services. The perception that telepractice would help to avoid risks withCOVID-19 is to be construed as an important and practical reason for the increased interest in the use of this service delivery option. Given a chance, the participants would like to augment their clinical set up with the addition of more clients. It is also imperative

that appropriate training be provided to the SLTs in New Zealand in the use of telepractice. The participants believed that telepractice resulted in healthier and happier employees providing a better work-life balance and general quality of life. This belief is an important step in the increased acceptance of using this method of clinical service delivery by the SLTs of New Zealand, even though there are limitations.

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Appendices

Appendix A: Recruitment email example

I am Reshma Sreekumar, a master's student in the Speech and Language Therapy programme in the Institute of Education at Massey University, Auckland. My supervisors are Dr. Mershen Pillay and Dr. Sally Clendon.

I would like to ask for your assistance in recruiting participants for my master's research project. The aim of this project is to understand the perceptions of speech-language therapists in New Zealand on the use of telepractice with adults with dysphagia post-stroke and any factors they perceive as barriers and facilitators. The project involves completing an online survey.

To recruit participants, I would like to share the information sheet via the NZSTA social media pages. Is this something that the NZSTA would consider? I have attached my information sheet and low risk notification. Please let me know if there is any additional information I could provide.

Please do not hesitate to email on m.pillay@massey.ac.nz

or Reshma.Sreekumar.1@uni.massey.ac.nz , if you have any questions about this research project.

Here is the link to my survey

https://massey.au1.qualtrics.com/jfe/form/SV_8rbVk7TUV8yTNeS

I look forward to hearing from you.

Kind regards,

Reshma Sreekumar

Master's student,

Massey University,

Auckland, New Zealand

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MATĀURANGA

Appendix B: Information Sheet

Telepractice with Adults with Dysphagia Post-stroke: A Survey of New Zealand Speech-Language Therapists' Perceptions

Information Sheet

Invitation to participate in an online survey

I am Reshma Sreekumar, a Master's student in the Speech and Language Therapy programme at Massey University, Auckland. I would like to invite you to participate in a study exploring the perceptions of speech-language therapists (SLTs) with respect to telepractice with adults with dysphagia post-stroke.

The study is part of the requirements to fulfil my master's programme. It is being supervised by Dr. Mershen Pillay and Dr. Sally Clendon who are both Senior Lecturers in the Speech and Language Therapy programme in the Institute of Education at Massey University, Auckland.

In this study, speech-language therapists in New Zealand who have experience engaging in telepractice with adults with dysphagia post-stroke will be invited to complete an anonymous online survey. I would like to invite you to participate. By participating in this study, you will be contributing to the growing body of information on the use of telepractice in dysphagia therapy.

Project Procedures

The project will require completing an anonymous online survey at any time convenient to you. The survey will take approximately 20 minutes to complete. The survey responses will be analysed to summarise and explore the trends in this field.

Please note that by choosing to complete the online survey, your consent to participate in this study will be implied. The responses will remain anonymous and no identifying information will be collected. Once you have submitted your responses, it will not be possible to delete or amend your information due to the anonymous nature of the survey.

There are no anticipated risks involved with your participation. When the study is completed, the results will be presented in my master's thesis. The results may also be presented at scientific conferences and published in a research journal.

No publication arising out of the study shall have your name or personal details, as the survey is anonymous in nature.

Electronic data will be stored on password protected devices. The data will be stored for no longer than five years following the completion of this project. After that period, the University confidential waste service will be used to destroy any printed materials.

Participant's rights

In following the ethical procedures, I assure you that you are under no obligation to consent to participate in this study. Once you decide to participate in this study, you have the right to:

- Decline to answer any question in the survey
- Contact the research team with any questions regarding the study
- Be given a summary of the findings when the project is completed – email your requests to Reshma.Sreekumar.1@uni.massey.ac.nz

Survey Link

If you are interested in being involved in this project, you can complete the online survey by following this link https://massey.au1.qualtrics.com/jfe/form/SV_8rbVk7TUV8yTNeS

Thank you for taking time to consider my request. If you have any questions or concerns regarding the proposed study, please contact one of the following researchers.

Project Contacts

Reshma Sreekumar
Reshma.Sreekumar.1@uni.massey.ac.nz

Dr. Mershen Pillay
m.pillay@massey.ac.nz

Appendix C: Online questionnaire

Telepractice with Adults with Dysphagia post-stroke: A Survey of New Zealand Speech-Language Therapists' Perceptions Questionnaire

1. Speech-Language Therapists' (SLTs) demographic information

1.1 How many years have you worked as a speech-language therapist?

1.2 What is your highest level of qualification in speech and language therapy?

- ○ Undergraduate level
- ○ Postgraduate Certificate
- ○ Postgraduate Diploma
- ○ Master's level
- ○ Doctoral level
- ○ Other (please specify)

1.3 When in your education did you learn about dysphagia? (select all that apply)

- ☐ Undergraduate level
- ☐ Postgraduate Certificate
- ☐ Postgraduate Diploma
- ☐ Master's level
- ☐ Doctoral level
- ☐ Other (please specify)

1.4 What types of professional learning and development have you undertaken in telepractice? (select all that apply)

- ☐ None
- ☐ Undergraduate coursework
- ☐ Postgraduate coursework
- ☐ Peer learning
- ☐ Conference, seminar or workshop
- ☐ Self-directed learning, e.g., reading books or journal articles
- ☐ Online learning, e.g., blogs, websites, participation in forums
- ☐ Other (please specify) _____

1.5 Where are you based in New Zealand?

- ○ Auckland
- ○ Northland
- ○ Waikato
- ○ Bay of Plenty
- ○ Gisborne
- ○ Hawke's Bay
- ○ Taranaki
- ○ Wellington
- ○ Whanganui-Manawatu
- ○ Malborough
- ○ Nelson
- ○ Tasman
- ○ West Coast
- ○ Canterbury
- ○ Otago
- ○ Southland

1.6 What is your employment status?

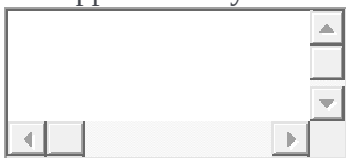
- ○ Full time
- ○ Part time

1.7 Where do you provide clinical services for adults with dysphagia post-stroke? (select all that apply)

- ☐ Public hospital
- ☐ Private practice
- ☐ Aged care facility
- ☐ Other (please specify) _____

2. Clinical services for adults with dysphagia post-stroke

2.1 Approximately how many adults with dysphagia post-stroke have you worked with during the last two years?



2.2 What age group were these adults? (select all that apply)

- ☐ 20 to 39 years
- ☐ 40 to 60 years
- ☐ Above 60 years

3. Confidence with technology

3.1 Please rate your level of confidence using technology in general.

- ○ Poor
- ○ Fair
- ○ Good
- ○ Excellent

3.2 Please rate your level of confidence using technology in your clinical practice.

- ○ Poor
- ○ Fair
- ○ Good
- ○ Excellent

4. Telepractice services for adults with dysphagia post-stroke

4.1 What clinical services have you provided for adults with dysphagia post-stroke via telepractice? (select all that apply)

- ☐ Assessment
- ☐ Direct intervention (e.g., exercises)
- ☐ Feeding trials
- ☐ Rehabilitation/compensatory strategies (e.g., muscle strength training)
- ☐ Education for clients and caregivers
- ☐ Other (please specify) _____

4.2 What platforms have you used when providing clinical services for adults with dysphagia post-stroke via telepractice? (select all that apply)

- ☐ Audio calls (phone, skype)
- ☐ Video-conferencing
- ☐ Other (please specify) _____

4.3 Do you use any of the following to augment your clinical swallow evaluation via telepractice? (select all that apply)

- ☐ Cervical Auscultation
- ☐ Pulse Oximetry
- ☐ SEMG- Surface Electromyography
- ☐ Other (please specify) _____
- ☐ None of the above

4.4 What client-related factors do you consider when deciding to offer adults with dysphagia post-stroke clinical services via telepractice? (select all that apply)

- ☐ Cognitive/behavioral ability (e.g., cognitive functioning, multitasking, attention)
- ☐ Physical/sensory ability (e.g., hearing, vision, manual dexterity, sitting tolerance)
- ☐ Communication ability (e.g., auditory comprehension, literacy, speech intelligibility)
- ☐ Technology skills

- ☐ Access to hardware (e.g., laptop, iPad)
- ☐ Access to software (e.g., skype, zoom)
- ☐ Internet qaulity
- ☐ Access to support person (e.g., caregiver)
- ☐ Other (please specify)

5. Expansion of clinical services for adults with dysphagia post-stroke via telepractice

5.1 Do you plan to expand your clinical services for adults with dysphagia post-stroke via telepractice?

- ○ Yes
- ○ No

5.2 How do you plan to expand your clinical services via telepractice? (select all that apply)

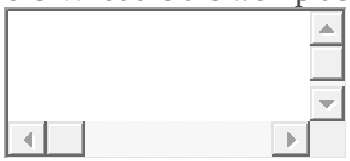
- ☐ Increase number of clients
- ☐ Expand range of equipment
- ☐ Expand range of services
- ☐ Other (please specify)

6. Benefits of clinical services for adults with dysphagia post-stroke via telepractice

6.1 What are the client-related benefits?

6.2 What are the clinician-related benefits?

6.3 What are the workplace/organisation-related benefits?

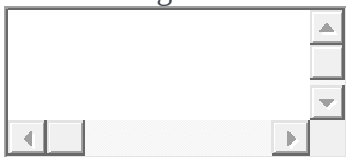


7. Facilitators of clinical services for adults with dysphagia post-stroke via telepractice

7.1 What client-related facilitators have you experienced (e.g., technology skills, internet quality)?

7.2 What clinician-related facilitators have you experienced (e.g., experience, confidence)?

7.3 What organization/workplace related facilitators have you experienced (e.g., quite space, IT support)?

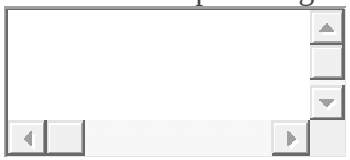


8. Barriers to clinical services for adults with dysphagia post-stroke via telepractice

8.1 What client-related barriers have you experienced?

8.2 What clinician-related barriers have you experienced?

8.3 What workplace/organisation-related barriers have you experienced?



9. Beliefs about telepractice

9.1 Indicate your level of agreement with the following statements:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Telepractice is an appropriate method to deliver clinical services for adults with dysphagia post-stroke.	Telepractice is an appropriate method to deliver clinical services for adults with dysphagia post-stroke.	Telepractice is an appropriate method to deliver clinical services for adults with dysphagia post-stroke.	Telepractice is an appropriate method to deliver clinical services for adults with dysphagia post-stroke.	Telepractice is an appropriate method to deliver clinical services for adults with dysphagia post-stroke.	Telepractice is an appropriate method to deliver clinical services for adults with dysphagia post-stroke.

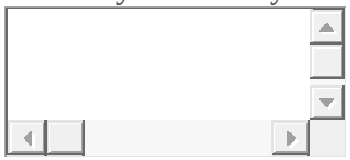
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Telepractice will eventually become a mainstream delivery method for speech-language therapy services for adults with dysphagia post-stroke.	Telepractice will eventually become a mainstream delivery method for speech-language therapy services for adults with dysphagia post-stroke. Strongly disagree	Telepractice will eventually become a mainstream delivery method for speech-language therapy services for adults with dysphagia post-stroke. Somewhat disagree	Telepractice will eventually become a mainstream delivery method for speech-language therapy services for adults with dysphagia post-stroke. Neither agree nor disagree	Telepractice will eventually become a mainstream delivery method for speech-language therapy services for adults with dysphagia post-stroke. Somewhat agree	Telepractice will eventually become a mainstream delivery method for speech-language therapy services for adults with dysphagia post-stroke. Strongly agree
In 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice.	In 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice. Strongly disagree	In 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice. Somewhat disagree	In 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice. Neither agree nor disagree	In 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice. Somewhat agree	In 10 years, most adults in New Zealand with dysphagia post-stroke will have access to clinical services via telepractice. Strongly agree
Over the next 10 years, older clients' limited familiarity and interest in technology will become less of a barrier to telepractice.	Over the next 10 years, older clients' limited familiarity and interest in technology will become less of a barrier to telepractice.	Over the next 10 years, older clients' limited familiarity and interest in technology will become less of a barrier to telepractice.	Over the next 10 years, older clients' limited familiarity and interest in technology will become less of a barrier to telepractice.	Over the next 10 years, older clients' limited familiarity and interest in technology will become less of a barrier to telepractice.	Over the next 10 years, older clients' limited familiarity and interest in technology will become less of a barrier to telepractice.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I will only use telepractice if in-person delivery is not an option.	I will only use telepractice if in-person delivery is not an option. Strongly disagree	I will only use telepractice if in-person delivery is not an option. Somewhat disagree	I will only use telepractice if in-person delivery is not an option. Neither agree nor disagree	I will only use telepractice if in-person delivery is not an option. Somewhat agree	I will only use telepractice if in-person delivery is not an option. Strongly agree
You cannot develop the same level of client-clinician rapport via telepractice as is achieved in-person.	You cannot develop the same level of client-clinician rapport via telepractice as is achieved in-person. Strongly disagree	You cannot develop the same level of client-clinician rapport via telepractice as is achieved in-person. Somewhat disagree	You cannot develop the same level of client-clinician rapport via telepractice as is achieved in-person. Neither agree nor disagree	You cannot develop the same level of client-clinician rapport via telepractice as is achieved in-person. Somewhat agree	You cannot develop the same level of client-clinician rapport via telepractice as is achieved in-person. Strongly agree
My workplace/organisation is open and interested in using telepractice to provide services for adults with dysphagia post-stroke.	My workplace/organisation is open and interested in using telepractice to provide services for adults with dysphagia post-stroke. Strongly disagree	My workplace/organisation is open and interested in using telepractice to provide services for adults with dysphagia post-stroke. Somewhat disagree	My workplace/organisation is open and interested in using telepractice to provide services for adults with dysphagia post-stroke. Neither agree nor disagree	My workplace/organisation is open and interested in using telepractice to provide services for adults with dysphagia post-stroke. Somewhat agree	My workplace/organisation is open and interested in using telepractice to provide services for adults with dysphagia post-stroke. Strongly agree
Telepractice can be	Telepractice can be	Telepractice can be	Telepractice can be	Telepractice can be	Telepractice can be

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
used to provide a service that is as effective as in-person delivery.	used to provide a service that is as effective as in-person delivery. Strongly disagree	used to provide a service that is as effective as in-person delivery. Somewhat disagree	used to provide a service that is as effective as in-person delivery. Neither agree nor disagree	used to provide a service that is as effective as in-person delivery. Somewhat agree	used to provide a service that is as effective as in-person delivery. Strongly agree
Telepractice will only benefit adults with dysphagia post-stroke who live in regional towns or rural areas, not city centres.	Telepractice will only benefit adults with dysphagia post-stroke who live in regional towns or rural areas, not city centres. Strongly disagree	Telepractice will only benefit adults with dysphagia post-stroke who live in regional towns or rural areas, not city centres. Somewhat disagree	Telepractice will only benefit adults with dysphagia post-stroke who live in regional towns or rural areas, not city centres. Neither agree nor disagree	Telepractice will only benefit adults with dysphagia post-stroke who live in regional towns or rural areas, not city centres. Somewhat agree	Telepractice will only benefit adults with dysphagia post-stroke who live in regional towns or rural areas, not city centres. Strongly agree
Telepractice has the potential to improve the level of care I am currently providing for adults with dysphagia post-stroke.	Telepractice has the potential to improve the level of care I am currently providing for adults with dysphagia post-stroke. Strongly disagree	Telepractice has the potential to improve the level of care I am currently providing for adults with dysphagia post-stroke. Somewhat disagree	Telepractice has the potential to improve the level of care I am currently providing for adults with dysphagia post-stroke. Neither agree nor disagree	Telepractice has the potential to improve the level of care I am currently providing for adults with dysphagia post-stroke. Somewhat agree	Telepractice has the potential to improve the level of care I am currently providing for adults with dysphagia post-stroke. Strongly agree

10. Additional comments

10.1 Do you have any additional comments related to working with adults with dysphagia post-stroke via telepractice?



APPENDIX D: Ethics approval letter

Ethics Notification Number: 4000024328

Title: Telepractice with Adults with Dysphagia post-stroke: A Survey of New Zealand Speech-Language Therapists' Perceptions

Thank you for your notification which you have assessed as Low Risk.

Your project has been recorded in our system which is reported in the Annual Report of the Massey University Human Ethics Committee.

The low-risk notification for this project is valid for a maximum of three years.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research. If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Professor Craig Johnson, Director (Research Ethics), email: humanethics@massey.ac.nz. "

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish required evidence of committee approval (with an approval number), you will have to complete the application form again answering yes to the publication question to provide more information to go before one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of

the research.

You are reminded that staff researchers and supervisors are fully responsible for ensuring that the information in the low risk notification has met the requirements and guidelines for submission of a low-risk notification.

If you wish to print an official copy of this letter, please login to the RIMS system, and under the Reporting section, View Reports you will find a link to run the LR Report.

Yours sincerely

Professor Craig Johnson

Chair, Human Ethics Chairs' Committee and

Director (Research Ethics)