Adult Dysphagia Intervention through Telepractice: A Scoping Review

by

Anisha Dhaya

Thesis presented in partial fulfilment of the requirements for the degree of Master of Speech-Language Therapy in the Faculty of Health Sciences at Stellenbosch University.

Dr Daleen Klop

April 2019

DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

April 2019

ABSTRACT

Background: Dysphagia is a serious, life-endangering disorder, experienced by an increasing number of people. Worldwide, there are a limited number of healthcare professionals to provide face-to-face dysphagia intervention. Telepractice has been suggested as a potential solution. The question this scoping review aimed to answer is: How is telepractice applied to adult dysphagia intervention? Objective: To explore the application of telepractice to adult dysphagia intervention, at a national and international level. Inclusion criteria: Data was restricted to literature where participants involved were over the age of 18 years, and experiencing feeding and/or swallowing difficulties at that point in time. The core concepts were telepractice, and adult dysphagia intervention. Sources were only included if published during or after the year 2000, and full text was available in English. Experts were consulted to determine the challenges to implementation in South Africa, based on the results obtained. Experts were required to be: registered with the Health Professions Council of South Africa, providers of adult dysphagia intervention on a weekly basis for the last five years, practice in the Western Cape and be able to communicate effectively in English. Search strategy: The following Boolean search string was used to search 18 databases on 20 April 2018: (Telehealth OR Telecare OR Telemedicine OR Telepractice OR Teletherapy OR Telerehabilitation OR Telestroke OR Tele-dysphagia OR Tele-intervention OR "Telephone intervention" OR "Video conferencing") and (Dysphagia OR Swallow* OR Feeding OR Deglutition) not (Child* Or Paediatric OR Pediatric OR Adolescent OR Infant). Extraction of results: Results were screened by title, and abstract to remove irrelevant articles. Remaining articles were screened by full text by the researcher and an inter-rater. Consensus was reached on which articles to include. The reference lists of these articles were screened by title and identified titles were screened by abstract and full text where necessary. The final selection of studies was charted according to the following categories: author(s), year of publication, location of study, areas of intervention, method of telepractice (equipment, procedure, internet requirements, and duration), and key findings. Presentation of results: Twenty-two articles were included. Dysphagia management was detailed in six articles. Specifically, three focused on rehabilitative management, two on compensatory management, and two on unspecified management. Instrumental assessment, was detailed in eight of the studies. Six studies focused on clinical swallow examinations, two on screening, and one on case history. Two studies focused on dysphagia assessment in general. One study focused on referral. Experts identified lack of resources, poor internet access, and lack of legislature about reimbursement, as key challenges. Proposed solutions included: using existing equipment, free Wi-Fi or USSD programmes, and developing reimbursement policies. Conclusions: Telepractice shows promising opportunities for adult dysphagia intervention with regards to screening, assessment, management and referral. Studies are still required to investigate the use of telepractice in prevention, health promotion and counselling pertaining to adult dysphagia. There is a need for policy development regarding reimbursement of dysphagia-related telepractice services. Experts believe adult dysphagia intervention can be provided using telepractice in South Africa, if adapted to the needs of our context.

Keywords: dysphagia, swallowing, deglutition, telepractice, scoping review

Agtergrond: Disfagie is 'n ernstige, lewensgevaarlike versteuring wat 'n toenemende aantal mense aantas. Wêreldwyd, is daar 'n beperkte hoeveelheid gesondheidswerkers wat disfagie intervensie van aangesig-tot-aangesig kan bied. Telepraktyk word aanbeveel as 'n potensiële oplossing. Die vraag wat hierdie omvangsbepaling beoog om te antwoord is: Hoe word telepraktyk aangewend tot disfagie intervensie? Doelwit: Om die toepassing van telepraktyk in volwasse disfagie intervensie, nasionaal en internasionaal, te verken. Insluitingskriteria: Data was beperk tot literatuur waar deelnemers wat betrokke was, oor die ouderdom van 18 jaar oud was en voeding en/of sluk probleme op daardie stadium ervaar het. Die kernkonsepte was telepraktyk en volwasse disfagie intervensie. Bronne was slegs ingesluit indien dit gedurende, of na die jaar 2000 gepubliseer was en die volle teks in Engels beskikbaar was. Die navorser het deskundiges in die veld geraadpleeg om die uitdagings van die implementering in Suid-Afrika, gebaseer op die verkryde resultate, te bespreek. Deskundiges was vereis om: geregistreer by die Raad vir Gesondheidsberoepe van Suid-Afrika te wees, verskaffers te wees van volwasse disfagie intervensie op 'n weeklikse basis vir die afgelope 5 jaar, te praktiseer in die Wes-Kaap en in staat te wees daartoe om effektiewelik in Engels te kommunikeer. Soekstrategieë: Die volgende Boolean soekstring was op 20 April 2018 gebruik om die 18 databasisse te deursoek: (Telehealth OR Telecare OR Telemedicine OR Telepractice OR Teletherapy OR Telerehabilitation OR Telestroke OR Tele-dysphagia OR Tele-intervention OR "Telephone intervention" OR "Video conferencing") and (Dysphagia OR Swallow* OR Feeding OR Deglutition) not (Child* Or Paediatric OR Pediatric OR Adolescent OR Infant). Onttrekking van resultate: Resultate was gesif volgens titel en abstrak om irrelevante artikels te verwyder. Oorblywende artikels se volle teks was gesif deur die navorser en 'n internasiener. Konsensus was bereik oor watter artikels ingesluit moet word. Die verwysingslyste van hierdie artikels was gesif volgens titel en geïdentifiseerde titels was gesif volgens abstrak en volle teks waar nodig. Die finale seleksie van studies was gekarteer volgens die volgende kategorieë: outeur(s), jaar van publikasie, plek van studie, areas van intervensie, metode van telepraktyk (toerusting, prosedure, internet vereistes, en durasie), en kernbevindinge. Aanbieding van resultate: Twee-en-twintig Artikels was ingesluit. Disfagie behandeling was gedetailleerd in ses artikels. Rehabiliterende behandeling was gefokus op in drie artikels, kompenserende behandeling in twee, en ongespesifiseerde behandeling in twee

artikels. Instrumentele assesserings was gedetailleerd in agt van die studies. Ses studies het gefokus op kliniese sluk ondersoeke, twee op sifting, en een op gevalsgeskiedenis. Daar was twee studies wat algemeen gefokus het op disfagie assessering. Een studie het gefokus op verwysing. Die kern uitdagings wat deur die paneel van deskundiges geïdentifiseer is, was 'n tekort aan hulpbronne, swak internet toegang sowel as 'n tekort aan wetgewing rakende vergoeding. Voorgestelde oplossings sluit in: Die gebruik van bestaande hulpbronne, gratis Wi-Fi of USSD programme, en die ontwikkeling van vergoedingsbeleide.   Konklusie: Telepraktyk bied belowende geleenthede vir volwasse disfagie intervensie met betrekking tot siftings, assessering, behandeling en verwysings. Studies word steeds vereis om die gebruik van telepraktyk in voorkoming, gesondheidsbevordering en berading met betrekking tot volwasse disfagie te ondersoek. Daar is 'n behoefte vir beleid ontwikkeling rakende vergoeding van dienste rakende disfagie intervensie via telepraktyk dienste. Kundiges glo volwasse disfagie intervensie kan deur middel van telepraktyk in Suid Afrika gebied word, indien aangepas by ons konteks.

Sleutelwoorde: disfagie, sluk, telepraktyk, omvangsbepaling

ACKNOWLEDGEMENTS

I would like to extend my sincere gratitude to:

My parents, without whom I would not have been afforded the opportunity to study further. Their consistent reverence for education has always driven me to seize every academic opportunity.

My supervisor, Dr Daleen Klop, for encouraging me to pursue my Masters to begin with. Her guidance has been priceless throughout this process, and I will always be thankful for her willingness and availability to answer any questions at a moment's notice. I wish her everything of the best with her future endeavours.

Gouwa Dawood, for taking time away from her own research to help Dr Klop and I navigate the intricacies of conducting a scoping review. Her guidance played an integral role in shaping this research, and I will always be grateful for her guidance.

Andrea Visser, for assisting with the translation of the abstract to Afrikaans. Her willingness to help and general positivity is truly appreciated.

My loving sister, Sarisha, who always took an interest in my research and supported me despite facing her own medical and career-related struggles this year. I will always be grateful for her ability to help me manage my stress when deadlines and expectations had me at my wit's end.

My dearest friends, Noluthando Mazibuko, Nabeel Sima, and Lyndon Zass, for always reminding me to make time to have fun, and that this thesis is only a component of my life. I also wish to thank Almero Coetzee and Ulandi Prinsloo, my role models, for providing me with a safe haven again, and finally getting engaged. Their ability to balance being intellectually brilliant with living happily ever after, while remaining true to themselves, inspires me every day.

Lastly, I wish to thank Kraigan Reddy, the love of my life. Without his love and support this thesis would never have been completed. I am grateful for the countless back massages, words of affirmation, and his commitment to ensuring I remember to eat something. Thank you for going beyond supporting me, thank you for being proud of my every achievement and always doing whatever you could to ensure I could comfortably work on my thesis.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

AHFS: American Hospital Formulary Service

AOTA: The American Occupational Therapy Association

ASHA: American Speech-Language-Hearing Association

CAC: Controlling and analysis computer

CIHR   Canadian Institutes of Health Research

CINAHL: Cumulative Index of Nursing and Allied Health Literature

CVA: Cerebrovascular accident

EBSCO: Elton B. Stephens Co.

ERIC: Educational Resources Information Center

FIC: Fluoroscope interface computer

HNC: Head and neck cancer

HPCSA   Health Professions Council of South Africa

JBI: Joanna Briggs Institute

KPMG: Klynveld Peat Marwick Goerdeler

LED: Light-emitting diode

Mbit/s   Megabit per second

OT: Occupational therapist

S-VHS: Super video home system

SLT: Speech-language therapist

T-SLP: Telerehabilitation speech-language pathologist

TESS: Teledynamic Evaluation Software System

UN: United Nations

USA: United States of America

USSD: Unstructured supplementary service data

VCR: videocassette recorder

VFSS: Videofluoroscopic swallowing study

CHAPTER 1: INTRODUCTION

Dysphagia is a condition characterised by difficulty during the process of feeding and/or swallowing (Groher & Crary, 2016). It is a complex condition with a wide variety of causes, such as a cerebrovascular accident (CVA) (Groher & Crary, 2016). Current trends indicate that the incidence of stroke is increasing (Thrift et al., 2014). According to Rofes, Vilardell & Clavé (2013), dysphagia presents in more than 50% of stroke survivors and often results in aspiration pneumonia. Aspiration pneumonia is a serious condition, whereby food or liquid enters the lungs during swallowing (Groher & Crary, 2016). It is often the major contributor to fatality within the first year of discharge (Rofes, et al., 2013). Early identification and appropriate management of dysphagia is therefore of great importance.

Dysphagia intervention is generally within the scope of a speech-language therapist (SLT) (American Speech-Language-Hearing Association [ASHA], 2016). However, there are a handful of countries where dysphagia falls within the scope of occupational therapists (OTs), (The American Occupational Therapy Association [AOTA], 2018). Unfortunately, there is a worldwide shortage of both professionals. In developed countries, like the United States of America (USA), the personnel to population ratio for SLTs is approximately 1:2000 (ASHA, 2016), while the ratio in developing countries, such as South Africa, is estimated to be at best 1:25000 (Kathard & Pillay, 2013). This is especially concerning as there are far more developing than developed countries in the world (United Nations [UN], 2014). In addition to this, developing countries are faced with a higher burden of disease, which continues to increase (Boutayeb, 2010). According to Moulin, Joubert, Chopard, Joubert and de Bustos (2011), most strokes occur in rural areas, where patients are less likely to receive swallowing assessments, or services from allied health professionals

The high burden of disease in developing countries is strongly associated with geographical and socio-economic factors (Boutayeb, 2010). In addition to Speech-language therapy services being scarce, they are also often inaccessible. Many SLTs not only limit their service provision to the private sector, but are also based in urban areas (Kathard & Pillay, 2013). The high costs associated with private healthcare make these services less accessible to people who live in poverty, or who do not qualify for private healthcare. This is especially relevant to South Africa, as more than 25% of South Africans are unemployed and more than 50% live below the poverty line (Statistics South Africa, 2017).

The combination of geographical distance, socio-economic factors and most SLTs working in the private sector results in SLT services being largely inaccessible to people living in rural

communities. Almost 20% of South Africans rated the quality of their public clinics as poor, while more than half a million South Africans indicated they had no access to a public clinic (Statistics South Africa, 2016a) Even if SLTs were able and willing to travel to their clients in rural areas, the high SLT to client ratio makes it impossible for SLTs to conduct face-to-face intervention with clients on a regular basis. Telehealth has been suggested as a possible solution to this problem (Kathard & Pillay, 2013). Unfortunately, little research has been conducted about telepractice in adult dysphagia intervention, and none has been conducted in South Africa. The greater problem this study aims to address is therefore, the lack of knowledge around telepractice in adult dysphagia intervention.

In summary, dysphagia is an increasingly prevalent, life-threatening condition which affects feeding and swallowing. There are a limited number of healthcare professionals available to address it, especially in developing countries. Telehealth has been suggested to overcome this challenge, however more research is needed about the application of telepractice to adult dysphagia intervention.

CHAPTER 2: BACKGROUND AND LITERATURE REVIEW

This chapter will provide an overview of telepractice, as well as a brief explanation of dysphagia in relation to a typical swallow. It will elaborate specifically on the core elements of adult dysphagia intervention. Throughout, it will highlight the need for dysphagia intervention via telepractice, especially in less developed areas such as South Africa. Finally, it will narrate the development of the study's title, objective and question, based on the presented information.

2.1. Background on Telepractice

ASHA (2018, p. 1), defines telepractice as, "the application of telecommunications technology to the delivery of speech language pathology and audiology professional services at a distance by linking clinician to client or clinician to clinician for assessment, intervention, and/or consultation." By this definition telepractice would allow SLTs to provide services to a vastly greater portion of the population. Current research shows that telepractice has been implemented in the areas of speech, language, stuttering, voice, and dysphagia, using a variety of telepractice models (Carey & Onslow, 2012; Fu, Theodoros & Ward, 2015; Grogan-Johnson, Alvares, Rowan, & Creaghead, 2010; Hill & Breslin, 2018; Malandraki, Roth & Sheppard, 2014).

There are currently three established models of telepractice in the United States of America, namely: synchronous, asynchronous, and hybrid telepractice (ASHA, 2018). While telepractice is a potential solution, it still poses certain risks, especially regarding privacy. One of the greatest risks is that clinician-client confidentiality will be breached (Watzlaf, Moeini & Firouzan, 2010). all of which pose risks to confidentiality.

The synchronous model allows real-time interaction between clinician and client across an audio and video connection. It aims to emulate the face-to-face experience as closely as possible. This design can also be used by clinicians consulting with each other (ASHA, 2018). However, it cannot be assumed that all households have internet access at home, especially in South Africa. According to Statistics South Africa (2016a) just over 11% of South Africans have internet access from their homes. This may result in people using public areas, such as libraries and internet cafés to access the internet. This lack of a private area may result in passers-by overhearing diagnoses, prognosis, or watching therapy activities.

The asynchronous model of telepractice involves the storing and forwarding of recorded data. It allows clients to record video and auditory clips which are sent to a clinician with the intention of being analysed or monitored for progress (ASHA, 2018). This model may be better

suited to maintaining confidentiality, as it allows clients to record themselves privately before entering a public area to send the recorded data.

Finally, the hybrid model of telepractice involves either a combination of synchronous and asynchronous telepractice, or a combination of telepractice and face-to-face therapy (ASHA, 2018). There is still the risk however, that programmes or websites hosting the video call may have information sharing policies that do not align with those of clinician-client confidentiality (Watzlaf et al., 2010). These may include having clients create a public profile, which contains personal information, in order to sign up to use the website or programme (Watzlaf et al., 2010).

While both ASHA (2018) and AOTA (2017) have released guidelines regarding telepractice, neither have released guidelines specific to the use of telepractice in dysphagia. This is significant, as dysphagia, unlike other areas within the scope of speech-language therapy or occupational therapy, poses a serious safety risk.

2.2. Background on Dysphagia

Dysphagia is characterised by difficulty experienced during the process of feeding and/or swallowing (Groher & Crary, 2016). Before understanding a disordered swallow, it is useful to become familiar with a typical swallow. For this purpose, the following paragraphs provide a brief outline of the physiology of a typical swallow, as described by Groher and Crary (2016).

A typical swallow can be divided into four stages, namely: anticipatory, oral, pharyngeal, and oesophageal. Dysphagia can present at any combination of these stages, or present at a single stage only.

The anticipatory stage involves pre-meal rituals, such as laying the table. It includes the hand-to-mouth movement and modification of the oral posture. Dysphagia intervention seldom focuses on this stage, as difficulty with this stage does not pose a direct safety risk.

The oral stage can be further divided into an oral-preparatory stage and an oral-transport stage. The oral preparatory stage is characterised by placing the food/liquid in the mouth, maintaining a labial seal, and increasing buccal tension, while cyclic jaw movements initiate mastication of a solid bolus. A liquid bolus follows a similar pattern, however after buccal tension is achieved the tongue tip raises to make contact with the hard palate, while the back of the tongue makes contact with the velum to achieve lingual-velar contact. This positioning cups the liquid bolus in preparation of the oral-transport stage. During the oral-transport stage the tongue tip rises and increases contact with the surface of the hard palate, as the posterior part of the tongue drops. At this time the hyoid elevates and the larynx moves anteriorly to protect the airway. The oral-transport stage lasts 1-1,5 seconds in total.

The pharyngeal stage is characterised by the triggering of the pharyngeal swallow as the head of the bolus passes the anterior faucial arches. The pharynx constricts and the velum raises to achieve velopharyngeal closure. The hyoid and larynx continue to move upward and anteriorly, while laryngeal closure is initiated at the levels of the true vocal folds, false vocal folds, and epiglottis. The continued movement of the hyoid and larynx assists with opening of the upper oesophageal sphincter, which is then widened by the pressure of the bolus. The pharyngeal stage, which lasts less than a second, concludes as the bolus passes through the upper oesophageal sphincter and the larynx lowers. It is essential that this stage occur rapidly, as respiration is halted during the pharyngeal stage.

The final stage, the oesophageal stage, lasts 8 – 20 seconds and involves gravity and peristaltic movements transporting the bolus down the oesophagus, through the lower oesophageal sphincter, and into the stomach.

The above paragraphs convey the pattern of a typical swallow, and highlight the manner in which complex actions need to be executed rapidly with accurate timing. With this in mind, it is no surprise that dysphagia requires specialised, complex intervention. Unfortunately, dysphagia is not rare, and it has a wide variety of possible causes. These causes can range from neurologic disorders, to head and neck cancers, oesophageal disorders, respiratory disorders, and even normal aging (Groher & Crary, 2016).

A common neurologic disorder associated with dysphagia is the CVA (stroke). Strokes are a common cause of mortality and morbidity across the world and current trends indicate that the incidence of stroke is increasing (Thrift et al*.,* 2014). More concerning is that strokes are the most common cause of complex disability in adults (Moulin et al*.,* 2011). Approximately 30% of stroke survivors experience permanent disability (Moulin et al*.,* 2011). Disability can greatly hinder the complex pattern of rapid, fine-tuned movements required to achieve a successful swallow, as it often affects the speed and range of muscle movement (La Touche et al., 2015). It is therefore no surprise that dysphagia presents in most stroke survivors and often results in aspiration pneumonia (Rofes et al., 2013). In addition to this many people with disabilities, especially in developing countries report difficulty accessing healthcare facilities due to a lack of disability-friendly transport (Munthali et al., 2017). Unaffordable transport rates have also been reported, especially when people with disability require another person to accompany them to the healthcare facility (Kabia et al., 2018; Pretorius & Steadman, 2018). Telepractice removes the need for transport, thereby making healthcare services vastly more accessible to people with disability.

While CVAs are a common contributor to dysphagia, they are not only the only one. It should

5

be acknowledged that the prevalence of CVAs alone is not a sufficient rationale to conduct a scoping review. Ultimately, dysphagia is the core motivation for the scoping review. According to Groher and Crary (2016), disordered swallows can be associated with neurologic disorders, head and neck cancers, oesophageal disorders, and respiratory and iatrogenic disorders. The impact that each of these areas can have on swallowing, as highlighted by Groher and Crary (2016), will be discussed in more detail below.

Neurologic disorders often result in paresis or paralysis. Common sequelae include: incomplete labial closure, increased oral transit times, oral and/or pharyngeal residue, and delayed triggering of the pharyngeal swallow. All of the above can increase the risk of aspiration. Head and neck cancers can result in dysphagia for a variety of reasons. Surgical treatment of cancer can result in swelling of the mouth and facial disfigurement. Both of which may impact a person's ability to chew and swallow. Chemotherapy is often associated with reduced saliva production, impairing bolus formation and transit. Oesophageal disorders are characterised by structural abnormalities. These abnormalities can result in reduced peristaltic movements, and misdirection of boluses. Another common oesophageal disorder is gastroesophageal reflux disorder. Respiratory and iatrogenic disorders often have a surgical component, such as creation of an artificial airway or postsurgical complications. People often experience reduced subglottic pressure, poor sensation or paralysis.

2.3. Dysphagia Assessment

Swallowing assessments typically rely on a bedside evaluation to indicate the presence of dysphagia, however, instrumental assessment is recommended to provide a comprehensive clinical profile of the patient (Groher & Crary, 2016). Instrumental tests, such as a videofluoroscopic swallow study (VFSS), can assess movement patterns during swallowing, identify threats to airway safety, and evaluate the effectiveness of compensatory manoeuvres (Groher & Crary, 2016). While VFSSs are regarded as the gold standard of instrumental swallowing assessment (Farneti, Fattori & Bastiani, 2017), they rely on SLTs' expertise to be correctly conducted, as well as accurately interpreted (Groher & Crary, 2016). As mentioned earlier, there is a shortage of SLTs globally, especially in rural and remote areas (ASHA, 2016; Kathard & Pillay, 2013; Mashima & Doarn, 2008; Moulin et al*.,* 2011). In addition to this developing countries often struggle with a lack of resources, such as x-ray equipment (Schriver, Meagley, Norris, Geary, & Stein, 2014). This makes comprehensive assessment of dysphagia extremely problematic. It is important that dysphagia be properly assessed and managed, as unidentified or poorly managed dysphagia is strongly associated with mortality (Rofes et al., 2013).

A further complication experienced by people living in rural areas is that of fatigue. According to Moulin et al. (2011), not all hospitals are equipped to manage patients that require the services of allied health professionals, especially hospitals in rural areas. This often results in patients travelling far distances to access these services. This is relevant to dysphagia management, as long journeys can result in fatigue, which may influence the accuracy of results obtained during assessment (Georges, Belz & Potter, 2006).

2.4. Dysphagia Management

Dysphagia management, provided by SLTs, can be divided into three core areas, namely: compensation, rehabilitation, and prevention (Groher & Crary, 2016). Compensatory techniques generally provide temporary relief, and may involve altering the patient's positioning, or food consistency (Groher & Crary, 2016). Rehabilitative techniques aim to re-organise a disordered swallow over a long-term intervention period, often involving exercises and swallowing manoeuvres (Groher & Crary, 2016). Preventative management focuses on avoiding negative outcomes in clients who already have dysphagia, such as recurrent aspiration pneumonia or requiring non-oral feeding (Groher & Crary, 2016). As dysphagia management falls within the scope of SLTs and some OTs (ASHA, 2016; AOTA, 2018), patients at hospitals in rural areas are once again disadvantaged, as many rural hospitals do not have access to allied health professionals (Moulin et al., 2011).

2.5. Background on Reviews

According to Grant and Booth (2009), there are fourteen main review types, namely: critical review, literature review, mapping review, meta-analysis, mixed-methods review, overview, qualitative systematic review, rapid review, scoping review, state-of-the-art review, systematic review, systematic search and review, systematized review, and umbrella review.

A scoping review was determined to be the most suitable review type for this research project, based on the definitions and methodologies, described below, as presented by Grant and Booth (2009). Literature reviews and overviews are defined as generic terms that focus on describing characteristics, rather than content, of existing literature. A state-of-the-art review is viewed as a subtype of a literature review, and was therefore deemed inappropriate for this study. Mapping reviews, meta-analysis, systematic reviews, systematic search and reviews and systematized reviews were deemed to be too restrictive, while critical reviews, mixed-methods reviews and umbrella reviews were too broad, for the topic at hand.

It should also be noted that systematic reviews generally combine evidence from literature to reflect on the effectiveness of a particular type of intervention (JBI, 2015). They are best suited

to answer clearly defined questions, while scoping reviews are best suited to answer more expansive questions (Tricco et al., 2018). According to Levac, Colquhoun and O'Brien (2010), systematic reviews rely heavily on a foundation of randomised controlled trials. If a limited number of randomised controlled trials exists, scoping reviews are recommended. This is especially common in interventions within a rehabilitation setting, such as dysphagia. Adult dysphagia intervention via telepractice is an even more recent area of interest. According to Cassel (2016), there are only a handful of studies focusing on the validity of dysphagia assessment via telepractice, and even less research on therapeutic application of telepractice. No studies were found investigating specific types of intervention. It would therefore not have been suitable to conduct a systematic review. The remaining review types were: rapid review, or scoping review, which are discussed below in more detail.

A rapid review focuses on what is already known about a policy or practice (Grant & Booth, 2009). It follows a methodology similar to a systematic review, but adjusts certain aspects of the review process, such as using less sophisticated search strategies or limiting the quantity of grey literature included. Both of these adjustments would result in a systematic, but superficial review (Grant & Booth, 2009). Rapid reviews allow for a greater deal of inconsistency, as each reviewer has the freedom to select which aspects he/she would like to adjust (Grant & Booth, 2009). In this manner, the validity of a rapid review becomes quite subjective, despite the adjusted aspects and their predicted effects being reported.

Scoping reviews are a relatively new research methodology. In fact, many discrepancies still exist regarding the definition of a scoping review, and its ideal reporting format (Booth & Grant 2009; Colquhoun et al., 2014). There is a general agreement that scoping reviews are a form of knowledge synthesis, and that they aim to map out a particular phenomenon (Arkey & O'Malley, 2005; Booth & Grant, 2009; Colquhoun et al., 2014; Levac et al., 2010; Tricco et al., 2016). A scoping review aims to identify the nature and extent of research evidence, while ensuring a broad and comprehensive retrieval of relevant data, irrespective of study design (Grant & Booth, 2009). While a scoping review does not assess the quality of the data retrieved, it has a highly structured search and reviewing methodological framework (Arksey & O'Malley, 2005; Daudt, Mossel & Scott, 2013; Grant & Booth, 2009; Levac et al., 2010,). In addition to this, the scoping review methodological framework is well suited to identifying gaps in literature (Arksey & O'Malley, 2005; Daudt et al., 2013; Levac et al., 2010). Scoping reviews, according to Arksey and O'Malley (2005), are well suited to complex topics that have not previously been comprehensively reviewed. Dysphagia intervention via telepractice is most certainly a complex topic, about which limited literature exists. The combination of this with

the structured methodological framework provided by Arksey and O'Malley (2005) and expanded on by Levac et al. (2010), makes a scoping review the ideal review type for this research project.

The following sections will describe the process of devising the study's title, determining the objectives, and formulating the scoping review question and sub-questions, as recommended by the Joanna Briggs Institute (JBI) (2015).

2.1.1 Title of Scoping Review

According to guidelines from the JBI (2015), the title of a scoping review should be informative and include the phrase, "…: a scoping review". The length of the title should be 12-14 words (JBI, 2015), and clearly indicate the topic of the study. JBI (2015) recommends using the following areas of consideration when constructing a title: population, concept, and context. With this in mind, the following determinations were made:

Population: Adults affected by dysphagia

Concept: Provision of intervention through telepractice

Context: Unspecified. The decision was taken to leave the context unspecified, as dysphagia intervention occurs across a wide variety of contexts, not in hospitals alone. By limiting the context to hospitals, or clinics, or homes, or community healthcare centres the range of results would have been limited.

 Based on these considerations, the following title was proposed:

Provision of Dysphagia Intervention to Adults through Telepractice in the field of Speech-Language Therapy: A Scoping Review

As this title exceeded the 14-word limit prescribed by JBI (2015), it was condensed to:

Adult Dysphagia Intervention through Telepractice in the field of Speech-Language Therapy: A Scoping Review

As this title provides a clear indication of the topic, and meets the recommended criteria of the JBI (2015), it was proposed as the title for the research project. However, it was later realised that other healthcare professionals, such a radiologists are also involved in dysphagia assessment. The title was left unspecified until it could be confirmed whether a substantial amount of literature on the topic existed that was not specific to the field of speech-language therapy. As suspected, a substantial quantity of relevant literature, not specific to speech-language therapy, was retrieved when the search strategy was carried out. For this reason, the

following title was decided upon: *Adult Dysphagia Intervention through Telepractice: A Scoping Review*

2.1.2   Scoping Review Objective

The objective of this scoping review is to explore the application of telepractice to adult dysphagia intervention, at a national and international level.

2.1.3   Scoping Review Question

Initially the following question was posed:

What are the current national and international telepractice conventions for adult dysphagia intervention, in the field of speech-language therapy?

The sub-questions were as outlined below:

- Which areas of adult dysphagia intervention are addressed via telepractice?
- What medium of transmission is preferred by most SLTs who provide adult dysphagia intervention via telepractice?
- How does the duration of adult dysphagia intervention sessions, delivered via telepractice, differ from those delivered face-to-face?
- What billing procedures and adjustments are recommended when providing adult dysphagia intervention via telepractice?
- What challenges do South African SLTs from the Western Cape foresee regarding the implementation of the current conventions for adult dysphagia intervention, and how do they recommend overcoming these challenges?

After consultation with a senior researcher, experienced in conducting scoping reviews, the review question was reformulated as:

How is telepractice applied to adult dysphagia intervention?

This question allows for a broader context and focuses specifically on the application of telepractice. The sub-questions however, were not altered. Refer to Table 1 for the operational definitions of the relevant terms used in these questions.

Table 1: *Operational Definitions of Terms in Review Question and Sub-questions*

Term		Operational definition
Telepractice	Synchronous	Real-time interaction between clinician and client, or clinician and clinician, across an audio and/or video

		connection (ASHA, 2018).
	Asynchronous	An exchange of recorded and stored video and/or auditory clips between client and clinician with the intention of being analysed or monitored for progress (ASHA, 2018).
	Hybrid	A combination of synchronous and asynchronous telepractice, or a combination of telepractice and face-to-face therapy (ASHA, 2018).
Adult		A person of 18 years of age or older.
Dysphagia	Oropharyngeal dysphagia	A feeding/ swallowing disorder characterized by difficulty in the oral and/or pharyngeal stage.
	Oesophageal dysphagia	A feeding/ swallowing disorder characterized by difficulty in the oesophageal stage.
(Areas of) Intervention	Prevention	Actions aimed at preventing dysphagia in high-risk populations.
	Health promotion	Actions that aim to encourage a state of being free from illness or injury.
	Screening	The quick, cost-effective testing of a person for the presence of a disease or condition.
	Assessment	In depth investigation of the nature and severity of a disease or condition.
	Management (Compensatory)	Therapy involving short term adjustments, such as making postural adjustments, or modifying food consistency to maximise safety during meals (Groher & Crary, 2016).
	Management (Rehabilitative)	Therapy aimed at improving the swallowing mechanism through exercises and swallowing manoeuvres, to maximize safety during meals and increase oral intake (Groher & Crary, 2016).
	Management	Therapy aimed at minimizing negative outcomes when dysphagia is already present (Groher & Crary,

	(Preventative)	2016).
	Counselling	To explain all relevant procedures and conditions to the client or other relevant parties in a manner that allows him/her to make an informed decision moving forward.
	Referral	Directing the client to relevant services in a timely manner.
Medium of transmission	Audio only	A means of communication which restricts speakers to being heard (not seen), e.g. telephone call
	Audio-visual	A means of communication which allows speakers to be simultaneously heard and seen, e.g. video-call.
Face-to-face		An interaction in which two or more people, in close proximity to each other, converse while facing each other.
Billing procedures		The manner in which clinicians are reimbursed for their services, or able to claim reimbursement for services rendered.

2.6. Summary

In summary, dysphagia is a serious, life-endangering disorder, experienced by an increasing number of people. Worldwide, there are a limited number of SLTs and OTs to provide face-to-face dysphagia intervention. While telepractice has been suggested as a solution, little research exists specifically relating to dysphagia intervention via telepractice. No reviews, systematic reviews, or research syntheses were found on this topic. The objective of this scoping review is to explore the national and international literature on adult dysphagia intervention via telepractice, so that clinicians could be informed by evidence-based knowledge. If clinicians have a clear idea how they can use telepractice for dysphagia intervention, implementation is more likely to be appropriate and efficient to provide services to patients who cannot access the services of allied health professionals face-to-face.

CHAPTER 3: METHODOLOGY

The aim of this chapter is to outline the steps taken to conduct the scoping review, in a replicable manner. From a literature perspective, it will explain how the inclusion and exclusion criteria were selected, as well as how the search strategy was formulated and carried out. It includes a flow chart of the methodological process. With regards to consultation, this chapter explains the methods of consultation considered, and why the method utilised was selected. It also outlines the manner in which consultation was conducted.

3.1. Study Design

Arksey and O'Malley's (2005) methodological framework for scoping reviews was selected as an appropriate study design. To ensure the review was not redundant, a preliminary search for existing scoping reviews on the topic was conducted. The databases searched were: JBI Database of Systematic Reviews and Implementation Reports, Cochrane Database of Systematic Reviews, Academic Search Premier, Africa-wide information, AHFS Consumer medication information, Audiobook collection (EBSCOhost), CINAHL, eBook collection (EBSCOhost), EconLit, E-journals, ERIC, Health source – Consumer edition, Health source – nursing/academic edition, Index to legal periodicals and books (H.W. Wilson), Library, information science and technology abstracts, MasterFILE premier, MEDLINE, Military and government collection, and Newspaper source. No scoping reviews on the topic were retrieved.

Some researchers have voiced concerns about the transparency and completeness of how scoping reviews are reported (Tricco et al*., 2018). As scoping reviews have only recently increased in popularity, for the vast majority of this scoping review reporting guidelines have not existed (Tricco et al*., 2018). For this reason the researcher relied heavily on the existing conduct guidelines provided by the JBI (2015), Arksey and O'Malley (2005) and Levac et al. (2010). These conduct guidelines were considered, along with established reporting guidelines for systematic reviews and meta-analysis, to develop the PRISMA extension for scoping reviews (PRISMA-ScR) (Tricco et al*., 2018).

While the PRISMA-ScR was developed by a group of experts, and has been tested on a South African population, it was published mere months ago (Tricco et al*., 2018). As the PRISMA-ScR has only recently been published, there has been minimal opportunity for critique. For this reason, the researcher also investigated two popular tools used in systematic reviews and meta-analyses. These tools were: the International Society of Pharmoeconomics and Outcomes Research - network meta-analysis (ISPOR NMA) and A Measurement Tool to Assess Systematic Reviews -2 (AMSTAR-2). Both included several items not relevant to scoping

reviews and were largely dependent on the particular type of studies being reviewed (Shea et al*.,* 2017; Zarin et al*.,* 2017). All areas, relevant to a scoping review, had been incorporated into the PRIMSA-ScR. The PRISMA-ScR was therefore selected to ensure transparent and complete reporting of the scoping review at hand.

3.2. Inclusion Criteria

3.2.1. Types of Participants

This scoping review will only include literature where participants involved were over the age of 18 years, and were experiencing feeding and/or swallowing difficulties at that point in time. The decision to exclude based on age, is based on the fact that dysphagia intervention for adults and children differs significantly (Groher & Crary, 2016). The adult population was selected as children are regarded a particularly vulnerable population (Gelberg, Andersen & Leake, 2000). Such a vulnerable population is more likely to require face-to-face intervention. As earlier explained, there is currently minimal literature available regarding dysphagia and telepractice. It was therefore deemed wise to select the adult population as there was a likelihood of more research having been conducted in this population. Male and female participants will be included irrespective of the presence of any additional diagnoses, e.g. Parkinson's disease.

3.2.2. Concept

The core concepts of this scoping review will be telepractice, and adult dysphagia intervention, as defined in Table 1.

3.2.3. Context

According to the JBI (2015), the context of a review is largely dependent on the review's objective and questions. Context often focuses on geographical location, gender, race, and/or cultural factors (JBI, 2015). As this review does not aim to investigate the application of telepractice across a specific culture, race or gender, it is not necessary to restrict these factors in the context.

When considering the geographical location, the decision was made to include national and international studies, as such a paucity of literature exists on telepractice in adult dysphagia intervention. Some researchers choose to restrict context in terms of the intervention facility, e.g. acute care, rehabilitative care, primary health care, or community healthcare (JBI, 2015), as dysphagia intervention can occur at any of the above sites (Groher & Crary, 2016). If there were an abundance of literature on the application of telepractice to adult dysphagia

intervention, it would make sense to narrow the focus to a specific site and provide in depth review in that site. However, the dearth of literature on this topic makes it more beneficial to include all sites in the context.

As mentioned when discussing the title, originally the review planned to focus on the field of speech-language therapy, as this is the researcher's field of expertise. However, after consulting with a senior researcher, it was realised that other healthcare professionals, such as radiographers and nurses, may also be involved in dysphagia intervention. For this reason, an online search of literature was conducted to determine the existence of any literature on the topic not specific to speech-language therapy. This search confirmed that other fields had published literature pertaining to telepractice and adult dysphagia intervention. The context was, therefore, not restricted to the field of speech-language therapy.

3.2.4. Types of Sources

Table 2 provides a comprehensive list of the eligibility criteria used to guide the search.

Table 2: *Eligibility criteria used to guide the search*

	Inclusion criteria	**Exclusion criteria**
General Considerations	Literature must: • Have full text available • Be published between 2000 and 2018 • Be published in English • Be based on research with human subjects • Subjects must be 18 years of age or older	Literature must not: • Only have partial text available • Have been published before the year 2000 • Be unavailable in English • Be based on research with non-human subjects • Include subjects younger than 18 years of age
Specific Considerations	At least one of the following terms must be present in the abstract: • Telehealth • Telecare • Telemedicine • Telepractice	The following terms should not be present anywhere in the full text: • child* • paediatric • pediatric • adolescent

15

		● Teletherapy	● Infant
		● Telerehabilitation	● "eating disorder"
		● Telestroke	● "breastfeed*"
		● Tele-dysphagia	
		● Tele-intervention	
		● "Telephone intervention"	
		● "Video conferencing"	
	It must be present in combination with at least one of the following terms: ● Dysphagia ● Swallow* ● Feeding ● Deglutition	

The restriction to English literature was to ensure that the researcher was able to accurately interpret the literature, and that nothing was lost in translation. The restriction by publication date was motivated by the rapid development of technology and aims to exclude literature relying on technology that is no longer relevant, such as dial-up internet.

3.3. Search Strategy

JBI (2015) recommends the following three-step search strategy: 1) Conduct an initial search and analyse the key words used in the titles and abstracts of the retrieved literature, 2) conduct a second search, including the newly gleaned key words, and 3) search the reference lists of all the literature deemed relevant. To view the full, step-by-step literature search protocol refer to Appendix A.

The initial search was conducted across the following 17 databases: Academic Search Premier, Africa-wide information, AHFS Consumer medication information, Audiobook collection (EBSCOhost), CINAHL, eBook collection (EBSCOhost), EconLit, E-journals, ERIC, Health source – Consumer edition, Health source – nursing/academic edition, Index to legal periodicals and books (H.W. Wilson), Library, information science and technology abstracts, MasterFILE premier, MEDLINE, Military and government collection, and Newspaper source.

A Boolean search technique was used, with the initial search string being: (Telehealth OR Telecare OR Telemedicine OR Telepractice OR Teletherapy OR Telerehabilitation OR Telestroke OR Tele-dysphagia OR Tele-intervention OR "Telephone intervention" OR Web-

16

based OR Online OR Internet-based OR "Video conferencing") and (Dysphagia OR Swallowing OR Feeding) and ("Speech-language therapists" OR "Speech-language pathologists" OR SLT OR "Speech therapy" OR "Occupational therapy" OR OT OR "occupational therapist"). Additional restrictions applied to the search filter were that literature be published between 2000 and 2018, in English and have full text available.

After examining the key words used in the literature retrieved, it was noted that many of the articles included the term, "deglutition." As recommended by JBI (2015) the search was conducted a second time, including "deglutition" as an added term. The retrieved data was then filtered according to the study selection section of the methodological framework outlined by Arksey and O'Malley (2005). This section dictates that retrieved literature should first be excluded by title. This step aims to eliminate literature retrieved as a result of ambiguous terms. In this scoping review, the terms, "online," and, "internet-based," yielded the greatest quantity of irrelevant literature, as they were often used in reference to surveys instead of telepractice. Once literature was excluded by title, as recommended by Arksey and O'Malley (2005), the remaining abstracts were read and irrelevant literature was excluded. Finally, the full text of the remaining articles was read, as recommended by Arksey and O'Malley (2005). To ensure no literature was missed the reference lists of the included literature was searched for relevant titles, as outlined in JBI's third step and Arksey and O'Malley's (2005) framework. The literature selected from the reference lists was excluded based on abstract and then full text. This process of checking reference lists, excluding by abstract and full text was repeated until the literature was exhausted.

At this point, the researcher consulted a senior researcher, experienced in conducting scoping reviews to determine the point at which the inter-rater needed to view the selection of literature. It was during this consultation that the researcher realized that other healthcare professionals may be involved in adult dysphagia intervention via telepractice. It occurred to the researcher that while other professionals may be involved, there was no certainty that they would have published literature on the topic. There was therefore a possibility that the existing retrieved literature could still be used without adjustment.

To determine if other healthcare professionals had published on the topic a new search was conducted where ("Speech-language therapists" OR "Speech-language pathologists" OR SLT OR "Speech therapy" OR "Occupational therapy" OR OT OR "occupational therapist") was excluded from the search terms. This search retrieved over ten thousand results. However, this number halved once the full text, language, and publication date restrictions were filtered. This was however, still far too many results for a scoping review. Based on the first search, the

ambiguous terms, "online," "web-based," and "internet-based" were removed as search terms. This reduced the results to less than 300. A quick view of the first page of results indicated that many of the results were focused on children, and healthy eating. For this reason, the following terms were added to the search string as exclusionary terms: child*, paediatric, pediatric, adolescent, and infant. This further reduced the number of results to less than 150 results. Once again, the researcher viewed the results on the first page and noted that some of the search terms did not appear in the abstracts. As these terms were core concepts being explored, it was decided that they needed to be impactful enough to the literature to be mentioned in the abstracts. For this reason, the filter was added that the search terms (Telehealth OR Telecare OR Telemedicine OR Telepractice OR Teletherapy OR Telerehabilitation OR Telestroke OR Tele-dysphagia OR Tele-intervention OR "Telephone intervention" OR "Video conferencing") and (Dysphagia OR Swallowing OR Feeding OR Deglutition) be present in the abstract of the results. This resulted in 65 results once full text, language and publication date restrictions had been applied.

It then occurred to the researcher that using the terms "swallowing" and "feeding" might be excluding literature with only makes use of "swallow" or "feed." These terms were therefore altered to reflect their truncation symbol forms (swallow* and feed*). This retrieved almost 500 results, however, a quick view of the first page revealed that "feed*" was ambiguous. It was mainly present in the form "feedback," which resulted in many articles being retrieved that did not link to dysphagia at all. "Feed*" was therefore restored to "feeding". This reduced the number of results to 95.

These results were downloaded. Three of the results could not be downloaded, as Stellenbosch University does not have access to them. Their abstracts however, were available and reviewed. One did not meet the inclusion criteria. The other two articles were requested, but no response was received from the authors. During the reference list review, one of the requested articles became available. The other, however was never received, despite requesting it from the author. This article is listed in Appendix B.

The JBI (2015) stipulates that scoping reviews should aim not only to identify published literature, but also unpublished literature. The inclusion of such unpublished literature, often referred to as 'grey' literature, helps to compensate for publication bias and ensure a comprehensive set of results (Pappas & Williams, 2011). Publication bias refers to the tendency for studies presenting positive results to be published more frequently than those presenting null results (Franco, Malhotra & Simonovits, 2014). Pappas and Williams (2011) also highlight

the importance of grey literature in combating the time lag, of up to 127 months, between completion of a study and its publication.

While some academic institutions have databases specifically for unpublished theses and dissertations, they are not always easily accessible. In addition to this, this scoping review aims to address national and international applications of telepractice, and would therefore require manual searching of the grey literature databases of every academic institution worldwide - a highly impractical task. For this reason the decision was taken not to explicitly search for grey literature, but rather ensure that the literature search protocol (Appendix A) did not prevent grey literature from being included. This was accomplished through inclusion of articles which had not been peer reviewed, as well as the use of Google Scholar as a database.

A search strategy was applied to Google Scholar similar to the search strategy applied to the databases on the Stellenbosch University Library website. As Google Scholar does not allow for a rigorous filtration of results, the process took significantly longer and yielded far greater number of results initially. The first search string used the same keywords as the search conducted via the Stellenbosch University Library website. However, this search yielded over 4000 results, as Google Scholar does not permit a researcher to specify that keywords be present in the abstract of results, only the full text or title. It also does not allow the researcher to filter results according to full text availability. It does however, allow filtration by language.

The search was conducted again with the conditions that the words "adult" and "dysphagia" and "tele" needed to appear somewhere within the full text. The words "telepractice" or "telecare" or "telemedicine" or "teletherapy" or "telerehabilitation" or "telestroke" or "tele dysphagia" or "tele intervention" or "telephone intervention" or "video conferencing" or "dysphagia" or "swallowing" or "feeding" appear somewhere within the full text. All articles containing the words "child" "paediatric" "pediatric" and "adolescent" were excluded. This search produced 152 results, of which 106 results provided full text access.

While Google Scholar alone is not adequate to replace traditional search platforms, it has been recommended as an additional database to increase to inclusion of grey literature (Haddaway, Collins & Kirk, 2015). Almost 40% of full text data retrieved from Google Scholar can be classified as grey literature (Haddaway et al., 2015). In broad searches these results usually only appear close to the eightieth page of results, which can be problematic in studies which only retrieve the first one hundred results (Haddaway et al., 2015). This disadvantage however, did not affect the research project at hand, as all retrieved results, for which full text was available, were downloaded and considered for inclusion.

There is however, always the possibility that some grey literature exists and was not retrieved,

as Google Scholar has demonstrated greater success at retrieving specific results than including those results in a general search (Haddaway et al., 2015). For this reason, the researcher manually consulted twelve database links recommended by Pappas and Williams (2011). Unfortunately, eight of these links were no longer active. Of the remaining four, two did not retrieve literature results, but rather clinical trials and conferences to participate in. One had no visible search function and required a €1000 membership fee, while the other had been rebranded to OpenGrey. OpenGrey was still functional and freely accessible. The search string was tested and one result was retrieved. It did not meet the eligibility criteria, as it did not pertain to human subjects.

These results from Google Scholar were downloaded and combined with the results from the library website search, producing a total of 201 articles. After all duplicates were removed and articles were excluded based on their titles, 55 articles remained. Refer to Appendix C for a list of articles excluded by title. Figure 1, provides a summary of the search process which is explained in more detail below.
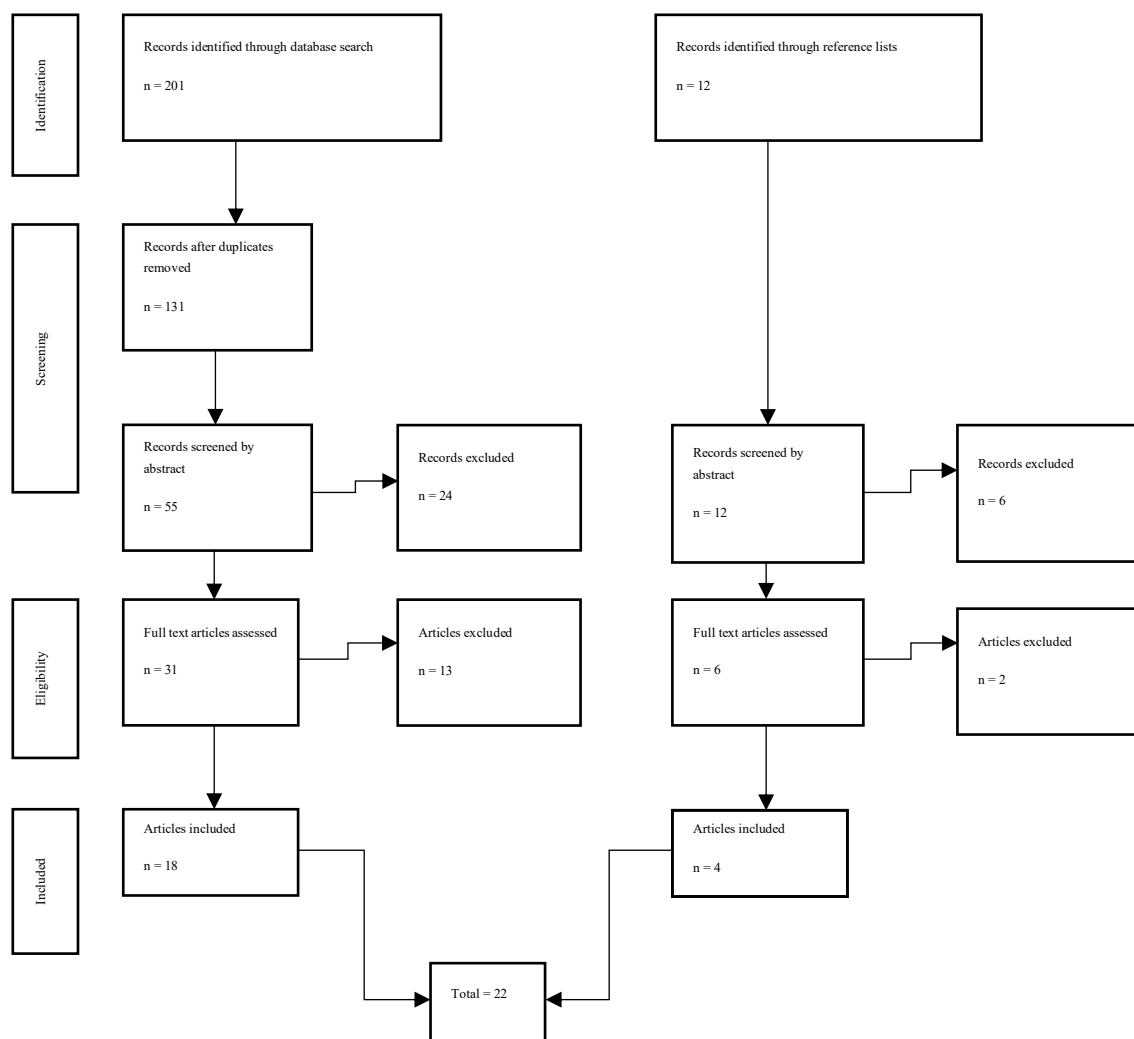

Figure 1: Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flow diagram of search process

The researcher compiled a checklist (Appendix D), based on the eligibility criteria in Table 1, which was used to screen the abstracts of the remaining articles. Initially only the abstracts were read, however adaptations had to be made during the process. There were two problematic situations that required adaptations to the checklist. The first was literature that did not explicitly contain an abstract. In these cases, the entire first page was screened as the abstract would have been. The second problematic situation occurred when the researcher was presented with abstracts which were clearly relevant but had not incorporated the terminology reflected in the checklist. These abstracts had however, often listed the relevant terminology as key words. For this reason, the researcher screened not only the abstracts, but the key words as well. After completion of this screening step 31 articles remained. Refer to Appendix E for a list of articles excluded by abstract.

At this point the researcher compiled a checklist based on the eligibility criteria, and the sub-questions, for full text review (Appendix F). During the full text review, it became apparent that some literature was not explicitly about adults. Due to Google Scholar not accommodating truncation markers, the exclusion of results containing "child" had not excluded results containing "children". Similarly, exclusion of "adolescent" had not resulted in exclusion of "adolescents". The full texts of the remaining articles were read and the researcher recorded whether they should be included or excluded. These 30 articles were also read by an independent speech-language therapist, who acted as an inter-rater. The use of an inter-rater increases reliability of the results obtained (Bless, Higson-Smith & Sithole, 2013). The inter-rater used an uncompleted checklist, identical to the one used by the researcher, to determine which articles should be included and excluded. The researcher and inter-rater then compared checklists to identify any points of contention.

Seven discrepancies were noted, resulting in an inter-rater reliability of 76%. In all seven cases, the inter-rater had included articles the researcher had excluded. Upon further review, the researcher noted that the checklists were not identical. The researcher had added to her checklist that the telepractice procedure described needed to be specific to dysphagia. This addition was not added to the inter-rater's checklist. After revising the inter-rater's checklist, there were only two articles the inter-rater still included. This elevated the inter-rater reliability to 93%. Upon re-review by the researcher and discussion with the inter-rater these two articles were included. As there were only two discrepancies were present, the researcher and inter-rater did not deem it necessary to meet in person. All discussion was conducted electronically. In total 18 articles were included. Refer to Appendix G for a list of the articles excluded by full text.

As recommended by Arksey and O'Malley (2005), the researcher searched the reference lists of these articles. An additional twelve articles were identified by title as likely to be relevant (Appendix H). Six of these articles were excluded upon abstract review (Appendix I), using the same checklist as the previous abstract review process (Appendix D). The full texts of the remaining articles were reviewed by the researcher and inter-rater using updated, identical checklists (Refer to Appendix J and Appendix F, respectively). Once again, checklists were compared. No discrepancies were noted. The reference lists of the remaining four articles were searched for additional relevant titles. None were found. The final number of included articles was 22 (See Appendix K). JBI (2015), recommends that the results be presented as a narrative summary, with an accompanying flow chart. See Figure 1.

3.4. Charting the Data

The final selection of studies was to be charted according to the following categories: author(s), year of publication, years conducted, title, location of study, population, areas of intervention, method of telepractice, location of telepractice provision, provider of device, internet connection required, duration of telepractice interaction (approximately), reimbursement, and key findings. However, after perusal of existing scoping reviews, on other topics, it was clear that including so many categories would be cumbersome to chart. The charting categories were therefore narrowed to: author(s), year of publication, location of study, areas of intervention, method of telepractice, reimbursement, and key findings. These categories were selected as they related most directly to the research questions posed by this research project. The "method of telepractice" was however described according to its equipment, procedure, internet requirements, and duration, thereby incorporating many of the excluded categories. Through the charting process it became clear that none of the articles provided information regarding the manner in which healthcare providers were reimbursed for their services. For this reason, the category "reimbursement" was removed. This adjustment aligns with JBI's (2015) remark that researchers cannot predict what information may be gleaned from the literature, and that charting may have to be restructured. JBI (2015) also highlights the iterative nature of data charting. While charting the data the researcher noted that some articles had made use of ASHA's (2018) terminology regarding telepractice models (synchronous, asynchronous, hybrid). Inclusion of this terminology in the "method of telepractice" category in some articles led the researcher to go back to previous charted data and explicitly state which model had been used. The data was charted in a Microsoft Excel spreadsheet and then converted to a Microsoft Word format which could be easily inserted as Appendix L.

3.5. Consultation

Arksey and O'Malley's (2005) framework includes an optional consultation stage. The purpose of this stage is to increase the usefulness of the results by gaining insights from important stakeholders (Arksey & O'Malley, 2005). For the purpose of this research project, key stakeholders would be SLTs who regularly provide adult dysphagia intervention, clients who receive dysphagia intervention and, if applicable, their caregivers. OTs were not regarded as an appropriate population to consult with, as South African OT's do not provide dysphagia intervention. The decision was made to consult with SLTs, rather than their clients and caregivers, as adult dysphagia intervention is a broad topic. A clinician is expected to have clear understanding of all areas of intervention, but clients may only be familiar with the intervention specific to their case. As this scoping review is not focused on one particular telepractice procedure associated with one particular area of intervention, it was deemed best suited to stakeholders with professional knowledge of adult dysphagia intervention.

There is no prescribed method of consultation outlined by Arksey and O'Malley (2005). The researcher considered quick and cost-effective questionnaires, a focus group and an expert panel before deciding to conduct expert panel interviews. The aims of this study are descriptive and qualitative in nature. Questionnaires were rejected, as they are not well suited to collecting qualitative data (Naudé & Bornman, 2018). A focus group allows for discussion in greater depth and an interaction where members can feed off of each other to produce a wide variety of views on the topic at hand (Naudé & Bornman, 2018). At this point that the researcher was made aware of Naudé and Bornman's (2018) resource on measuring instruments, specifically the expert panel.

Naudé and Bornman (2018, p. 147), define an expert panel as "a group of people, with extensive skill or knowledge in a particular field, who convene for the purpose of providing specialised expertise, including professional, practical advice and guidance related to a specific topic or area of interest." Expert panels can serve a host of purposes, ranging from making specific decisions about inclusion or exclusion of certain questions in an assessment instrument, to providing more general feedback on important issues linked to the topic or research question (Naudé & Bornman, 2018). With reference to this research project, it was decided that an expert panel would be able to identify potential challenges with replicating the telepractice methods described in the results, and offer solutions or adaptations. The goal would be for them to ultimately reach consensus on how they as clinicians would need to adapt the described procedures to utilize them. A focus group on the other hand is centred on gaining understanding of the group members' feelings towards the topic (Naudé & Bornman, 2018).

There is no intention of reaching a consensus, but rather one of exploring the divergent viewpoints of all the members (Naudé & Bornman, 2018). For this reason, it was decided to consult an expert panel.

The specific aim of this consultation phase is to increase the usefulness of the literary information collected. Specifically to identify ways current telepractice procedures utilised in adult dysphagia intervention can be adapted to suit the South African context. The following objectives were proposed:

- To facilitate knowledge transfer
- To expose problems with the proposed methods of telepractice,
- To suggest ways to enhance the use of telepractice in dysphagia intervention

Naudé and Bornman (2018), provide specific guidelines about selecting members of the panel, as the term "expert" is highly subjective. They recommend developing an expert profile, which all members of the panel need to fit. Based on this recommendation and their example profiles, the following profile was developed:

Table 3: *Expert profile*

Inclusion criteria	Exclusion criteria
Is a registered speech-language therapist in South Africa	Is not registered as a speech-language therapist in South Africa
Has provided adult dysphagia intervention on a weekly basis for the last five years	Has not provided adult dysphagia intervention on a weekly basis for the last five years
Participating in the panel is not a conflict of interest.	Participating in the panel is a conflict of interest.

The inclusion criteria were drawn up based on legal requirements, such as registration as a SLT, and well as competence. After discussion with another SLT it was agreed that for a SLT to be regarded as competent in dysphagia intervention, they needed to have engaged with dysphagia intervention on a regular basis for a significant amount of time. For this reason it was decided that participants be required to have provided adult dysphagia intervention at least once a week for the preceding five years. According to Naudé and Bornman (2018), the size of the panel is dependent largely on the aim of the panel. They recommend that the minimum

be set as the fewest number of members required to cover the breadth and depth of the topic. According to Chernysheva, Korchuganova, Borisov and Mind Mi's (2015) hierarchical model in Naudé and Bornman (2018), the recommended number is between seven and nine experts.

Naudé and Bornman (2018) make specific recommendations depending on whether the expert panel is conducted electronically versus in person. Panels conducted in person generally begin with a briefing where the research is explained and outcomes for the panel are communicated (Naudé and Bornman, 2018). It is recommended to provide panel members with more detailed information before the panel discussion to ensure all members feel well-prepared for the discussion. A Delphi expert panel, on the other hand, involves multiple rounds of electronic questionnaires (Naudé and Bornman, 2018). The first round usually focuses on open-ended questions. The researcher analyses the responses for themes and summarises them into response which the panel members are required to prioritise or rank (Naudé & Bornman, 2018). The discrepancies of how different members ranked the items are then presented to the panel and each member is required to reconsider or justify their ranking. This process continues until a consensus is reached (Naudé and Bornman, 2018). Based on this description, it is clear that the Delphi technique would work excellently in a situation where an expert panel needed to reach consensus regarding content to be included or excluded on a particular instrument. For example, selecting the target words of an articulation assessment.

However, the core aim of the expert panel for this research project is to expose problems with the proposed methods of telepractice, and suggest ways to enhance the use of telepractice in dysphagia intervention. The researcher is not focusing on the content of dysphagia intervention, but rather the manner in which it can be conducted. For this reason, a face-to-face expert panel was selected.

As the researcher began gathering names of potential participants it became apparent that coordinating a time and venue that would suit all the invited experts' schedules would be close to impossible. While Arksey and O'Malley (2005) do not stipulate that consultation need to involve a representative sample, the researcher did not want to invite experts who all work at the same facility, as they would likely hold similar views. It was also desired to get input from experts practicing in both the private and public sector. The researcher contemplated hosting multiple smaller expert panels in different locations, but this idea was ultimately discarded. From an ethical and logistical perspective, the researcher had to consider how demanding the schedules of these experts are and whether participating in an expert panel was an ethically-sound reason to remove multiple SLTs simultaneously, from patients requiring their care. For this reason, the researcher began considering interviewing experts individually, instead of

hosting a panel.

Before settling on this method, the researcher needed to re-examine whether it met the objectives of the consultation component. As mentioned earlier, Arksey and O'Malley (2005) highlight that the aim of the consultation stage is to increase the usefulness of the results by gaining insights from important stakeholders. Naudé and Bornman (2018) describe interviews as a means to acquire rich information from participants. They emphasize the suitability of interviews to situations where participants are not easily accessible, and have strict time constraints. Interviewing experts about the findings of this research project would certainly expose experts to the latest information and the interview questions would probe them to brainstorm how they could implement this knowledge in practice, thereby increasing the usefulness of the results.

This is an especially relevant goal as, despite the increasing popularity of scoping and systematic reviews, current research shows that high-quality evidence is not being consistently put into practice by clinicians across all disciplines, in both developing and developed countries as a result of poor knowledge transfer (Straus, Tetroe & Graham, 2011). This is possibly why Levac et al. (2010) recommend that knowledge transfer be the aim of consultation. According to the Canadian Institutes of Health Research (CIHR) (2016, p. 4), knowledge transfer is "a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve health, provide more effective health services and products and strengthen the healthcare system." Each interview would focus not only on relaying the information gleaned from the scoping review, but also on the experts' opinions on the feasibility of implementing such applications.

Once the decision was made to consult with experts through interviews, ethical clearance was obtained from the health research ethics committee of Stellenbosch University (Appendix M). A list of potential panel members was compiled, based on the expert profile in Table 3. Eight of the potential panel members were contacted and invited to participate in the panel discussion. Those who indicated they were willing to participate received a short document outlining the topic being researched, the results obtained from the literature, and the ideal outcomes of the interview (See appendix N). Each interested potential member also received a consent form to complete (Appendix O). The researcher coordinated a date and time that suited each participant. For practical reasons, such as unreliable network connections and the need to audio record and transcribe the interviews, the researcher chose to conduct face-to-face interviews.

It should be noted that the insights gleaned during these consultations cannot be generalised

across all of South Africa. While funding for the health department is allocated at a national level, there are vast differences across the individual provinces with regards to economic conditions (National Treasury, 2018; Simo-Kengne, 2018). The Western Cape, for example is regarded as an economically advanced province in South Africa, along with Gauteng, when compared to other provinces (Lieberman, 2002; Simo-Kengne, 2018). It stands to reason that provinces which are economically better equipped are likely to have better access to resources. The views held by SLTs in these provinces are therefore likely to differ from those in other provinces.

In addition to this, the way technology is currently being utilised by each province differs greatly. As mentioned previously, most South Africans live below the poverty line, and are therefore more likely to rely on healthcare from government facilities. It is therefore relevant to pay heed to the way government is currently utilising internet-based technologies with which the public are expected to engage. A simple search of South Africa's provincial government websites revealed that there is great inconsistency across the provincial department of health websites (Provincial Government of South Africa, 2018). While they are all hosted by the same domain (gov.za), they have differently structured hostnames and different protocol identifiers (http: or https:). Some even exist as pathways rather than independent websites, such as the Gauteng and Western Cape's departments of health.

While this may seem like irrelevant inconsistency, it reflects an aspect of competence with online technology, across the different provinces. Something as simple as using the "https:" protocol identifier instead "http:" ensures a website is securely encrypted. As maintaining patient confidentiality is a key component of telepractice (Watzlaf et al., 2010), it is concerning that only the Western Cape's website was securely encrypted. More concerning is that the Northern Cape does not have a website for their provincial department of health, at all (Provincial Government of South Africa, 2018). Investigating an intervention technique that relies so heavily on technology and on internet access, it only seemed appropriate to start the consultation process in a province that displayed such competence with online technology. For this reason, as well as logical limitations, experts were recruited from the Western Cape only.

Each expert panel participant met with the researcher over lunch, or before or after work at a mutually agreed location. In addition to the information pack sent to each participant before the interview, each interview began with a brief explanation of the research. Outcomes for the interview were also communicated. Ideally, the outcome of the interviews was to inform experts in the area of adult dysphagia intervention of the current telepractice conventions relevant to adult dysphagia intervention, and to troubleshoot how these telepractice

27

conventions could be implemented in South Africa. The implementation outcome focused on access to equipment, internet and reimbursement, in the South African context.

At the start of each interview, the researcher reminded the participant that the interview would be audio recorded to ensure accurate analysis of the interview, as indicated in the informed consent form. The content of the interview involved: the researcher briefly presenting the results of her scoping review, if the participant indicated they had not read the information pack, and posing predetermined questions to the expert which aimed to identify key challenges with implementation of telepractice in South Africa, and recommend possible solutions to overcome the identified challenges. Each interview was approximately one hour in duration.

Fourteen experts were contacted via e-mail. One e-mail could not be delivered, and four experts indicated they were unable to participate. Four experts did not respond, despite being e-mailed repeatedly. Five experts indicated willingness to participate and were interviewed over the course of five weeks, to accommodate their schedules. While including eight experts would have been ideal (Chernysheva et al*.,* 2015), the consultation component of a scoping review does not have to take the form of expert consultation, nor does it aim to be representative (Arksey & O'Malley).

CHAPTER 4: RESULTS

This chapter will focus on the results obtained during the first five stages of the scoping review. The quantity and nature of studies included will be presented, along with the data extracted from each study. The results from the consultation stage will be presented and discussed in chapter six.

4.1. Results Obtained

The results obtained will be discussed according to the main conceptual categories charted, as recommended by JBI (2015). These categories were:

- Author
- Year of publication
- Location
- Study purpose
- Area(s) of intervention
- Method of telepractice
- Key findings relating to dysphagia

Figure 2 displays the different authors cited and their respective contribution to the final group of selected articles. It is clear that the bulk of the research was conducted by Burns, Ward, Russell, Hill and Theodoros. This is not surprising, as they are often cited together.
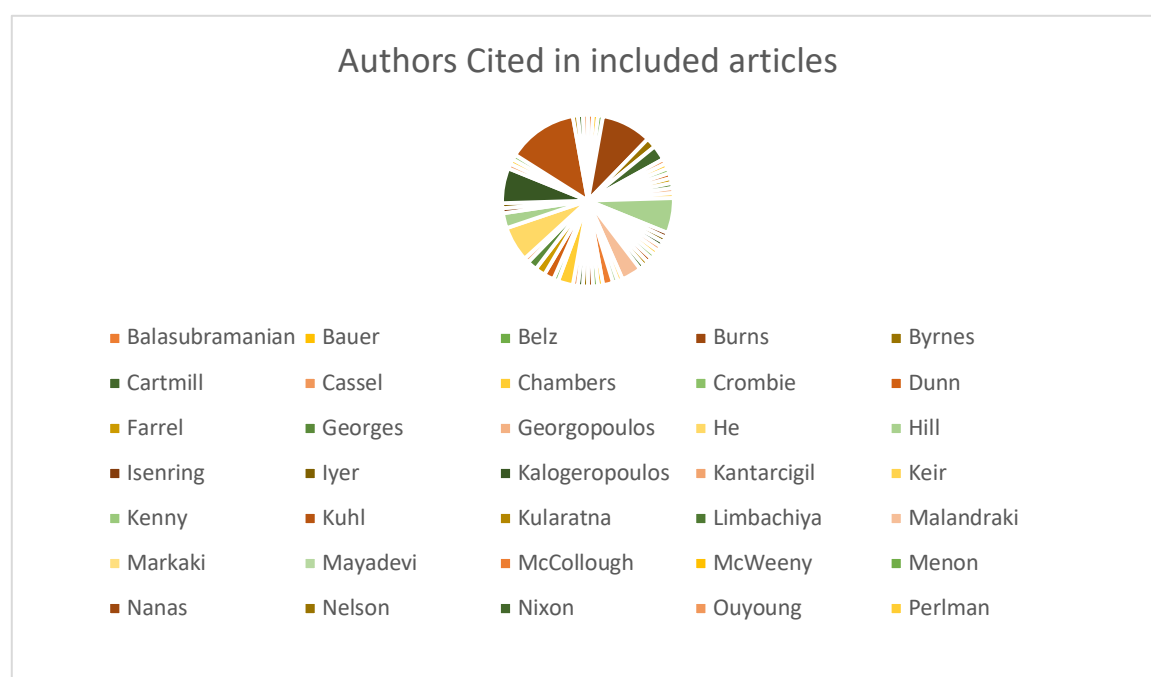
Figure 2: Authors cited in included articles

29

The bulk of the research included was published after 2010, with only four of the 22 articles being published before 2010. This is depicted below, in figure 3.
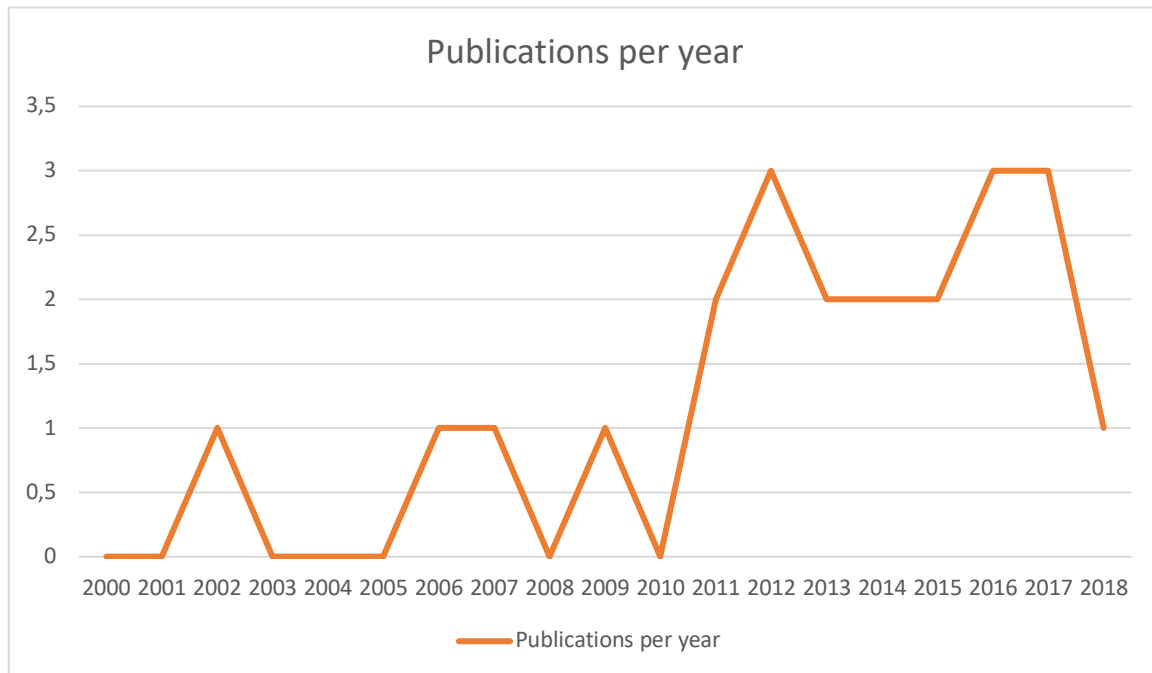
Figure 3: Publications per year

Of the 22 studies included, the vast majority were conducted in Australia and the United States of America (USA), with only two being conducted in India and Greece. Even these were not conducted independently, but in collaboration with the USA.

Figure 4: Location of studies included according to country

30

Each of the studies has a different, however, the study purposes can be categorised according to whether they were exploratory, descriptive, correlational or causative in nature. Figure 5, below displays the distribution of the Types of study purposes.
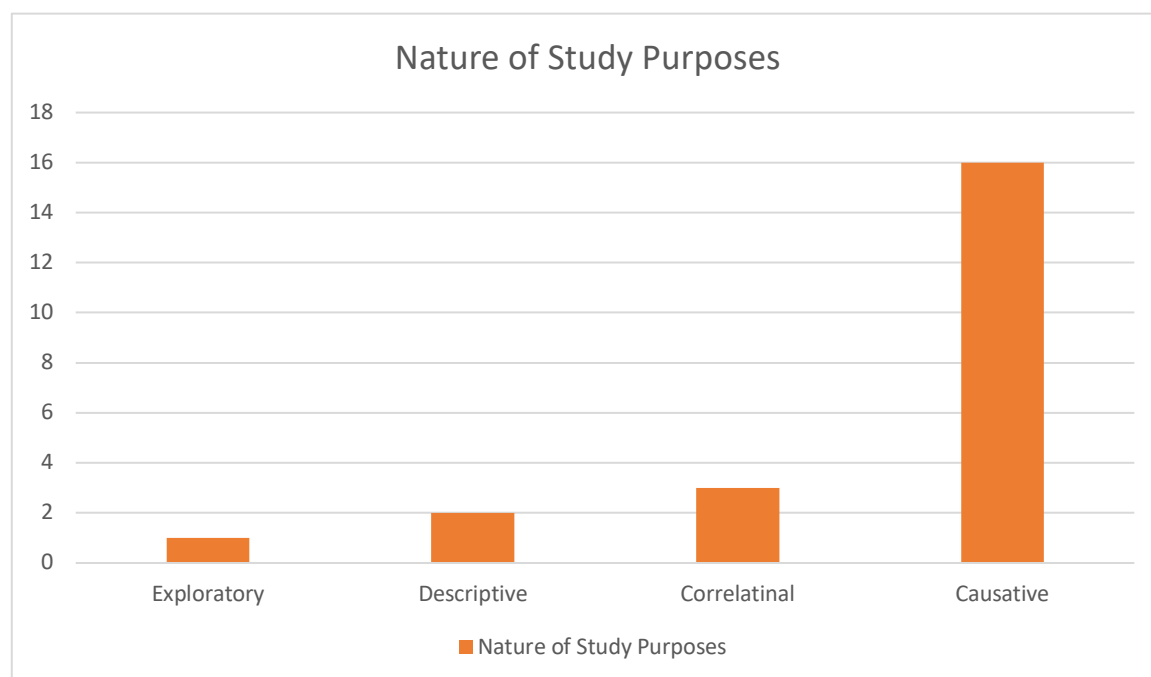
Figure 5: Nature of study purposes of included articles

With regards to the areas of intervention addressed, dysphagia management was detailed in six of the articles. Specifically, rehabilitative management was focused on in three articles, compensatory management in two, and management was unspecified in two articles. Instrumental assessment, specifically VFSS, was detailed in eight of the studies. Six studies focused on clinical swallow examinations, two on screening, and one on case history. There were two studies which focused on dysphagia assessment in general. There was one study that focused on referral. It should be noted that these figures do not sum to 22, as some articles covered numerous areas of intervention. A diagram displaying the areas of intervention addressed by the set of articles is provided as Figure 6. The methods of telepractice applied are outlined clearly in table 4. The key findings for each study are available in appendix L. As they do not relate directly to the aims of this study they will not be discussed here.
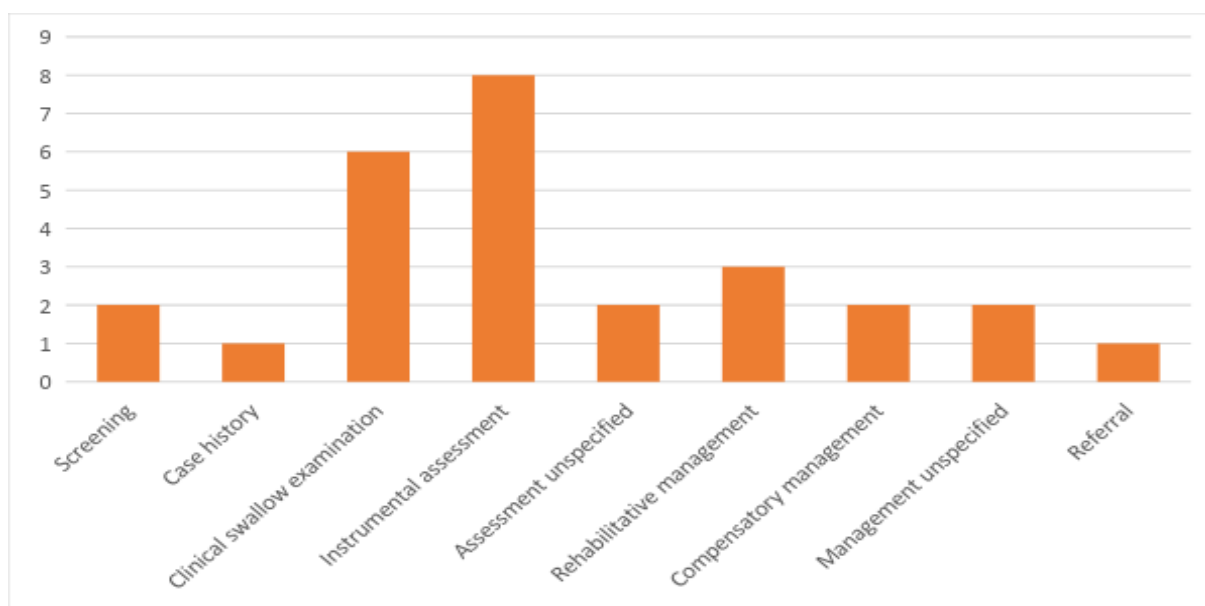
Figure 6: Areas of adult dysphagia addressed by selected studies

Table 4: *Characteristics of Telepractice methods*

Area of intervention	Medium of transmission			Telepractice models		
	Audio only	Visual only	Audio-visual	Synchronous model	Asynchronous model	Hybrid model
Screening	0	2	0	1	1	0
Case History	0	1	0	0	1	0
Clinical swallow examination	0	0	6	6	0	0
Instrumental assessment	0	2	6	7	1	0
Assessment unspecified	0	0	2	2	0	0
Rehabilitative management	0	1	2	1	2	0
Compensatory management	0	0	2	0	0	2
Management unspecified	0	1	2	2	1	0
Referral	0	1	0	0	1	0
TOTAL	**0**	**8**	**20**	**19**	**7**	**2**

CHAPTER 5: DISCUSSION

This chapter will provide an interpretation of the results and aim to answer the research questions posed in chapter one. While it will not directly discuss the results from the consultation stage, insights gleaned during consultation are briefly included, where appropriate. Before addressing the review question, there are a few limitations to keep in mind.

Firstly, while the research was conducted across four countries, either Australia or the USA were involved in all of the studies. Of the 22 articles included, 14 studies took place in Australia exclusively, and six in the USA exclusively. The remaining two studies were collaborations between the USA and Greece, and the USA and India. Both the USA and Australia are developed countries (UN, 2014) and therefore have access to resources which developing countries may not necessarily have access to. In addition to this, the burden of disease is greater in developing countries than developed countries (Boutayeb, 2010).

The lines are slightly blurred when it comes to assessing the resources of India and Greece. Although regarded as a developing country (UN, 2014), India is also known for its advanced technology. According to the Global Technology Innovation Report, India ranked third after China and the USA in the category of "Global Tech Innovation Leader" (Klynveld Peat Marwick Goerdeler [KPMG], 2018). It therefore stands to reason that India would have access to technology atypical of other developing countries, and more typical of a developed country. This is especially relevant to the topic of adult dysphagia intervention via telepractice, as telepractice relies heavily on technology. In contrast to this, while Greece is classified as a developed country (United Nations, 2014), in late 2009 Greece began to experience a financial crisis (The New York Times, 2016). The study involving Greece was published in 2013, during the financial crisis. As mentioned earlier, the economic conditions of a country contribute to its burden of disease (Boutayeb, 2010). It is therefore unclear how representative the study in Greece was of a developed or developing country.

In the introduction, Moulin et al., (2011) highlighted how important it is to provide dysphagia intervention via telepractice in underdeveloped areas, as these are the areas where people are unlikely to have access to SLTs and other allied health professionals. Telepractice was proposed to reduce the time and money spent by people living in underdeveloped areas travelling to healthcare facilities in developed areas. It is therefore concerning that the bulk of the research pertaining to adult dysphagia intervention via telepractice has been conducted in developed countries. It raises questions about how replicable these telepractice procedures are

in less developed contexts. It is possible that research from developing countries exists, but is only available in languages other than English. It is therefore a limitation that only English results were included. However, this restriction was necessary to ensure the researcher had complete understanding of the literature. Ideally, we would like all people to have access to dysphagia intervention across the world. Presently, the research reflects dysphagia intervention via telepractice being available only to developed countries or developing countries with uncharacteristically developed technology, while relying heavily on the USA and Australia. The clear divide of research across the USA and Australia also aligns with a clear divide of researchers in each country.

There seem to be two clear groups leading the research efforts in this area. In the American studies, Georgia Malandraki was an author of two thirds of the literature. Similarly, Elizabeth Ward was the lead author of eight of the fourteen Australian articles, and a featured author on the remaining six articles. In addition to this, Clare Burns was an author of ten of the fourteen publications. An implication of this being that more than 70% of the Australian literature was produced by some combination of Burns and Ward. The consequence of the same researchers conducting most of the research is that it introduces an opportunity for bias. According to Bless et al. (2013), no researcher can ever be completely objective. Their personal views always feed into the research. These views may be evident through the topic choice, or even steps within the research project (Bless et al., 2013). Any researcher bias contributed by Ward would therefore be present in all 14 Australian studies. It is also possible that the researchers may have overlooked minor details, as they were so familiar with each other and this field of research. In fact, the telepractice methods used were often replicated from their previous studies. Five of the Australian studies used the exact same telepractice procedure, and three of the American studies used the exact same procedure.

In retrospect, it is also possible that defining adults as people above the age of eighteen years may have excluded relevant results. While the law views people over the age of eighteen years as adults, the physiology of the swallow matures during adolescence (Groher & Crary, 2016).

Keeping the above limitations in mind, the results were interpreted to answer the posed research questions:

Which areas of adult dysphagia intervention are addressed via telepractice?

Of the nine areas of intervention described in Table 1, five are addressed by the studies reviewed, namely: screening, assessment (clinical swallow examination and instrumental assessment), and management (compensatory and rehabilitative). In addition to this, one study

focused specifically on case history, a component preceding the clinical swallow examination. Prevention, health promotion, preventative management and counselling were not addressed by the studies. This is likely because, apart from counselling, these areas are seldom the focus of face-to-face dysphagia intervention (Groher & Crary, 2016). Despite this, some of the participants felt that counselling and health promotion would be ideal areas in which to introduce telepractice, as they pose no direct risks to the patient.

It is interesting to see, once again, a divide between the American researchers and Australian researchers. Figure 3 displays the areas of intervention addressed by each country. Note that India and Greece are represented as American, as they collaborated with America. There is a clear trend of both countries focusing on assessment, however, the USA focused almost entirely on instrumental assessment, while Australia focused on clinical swallow examination.
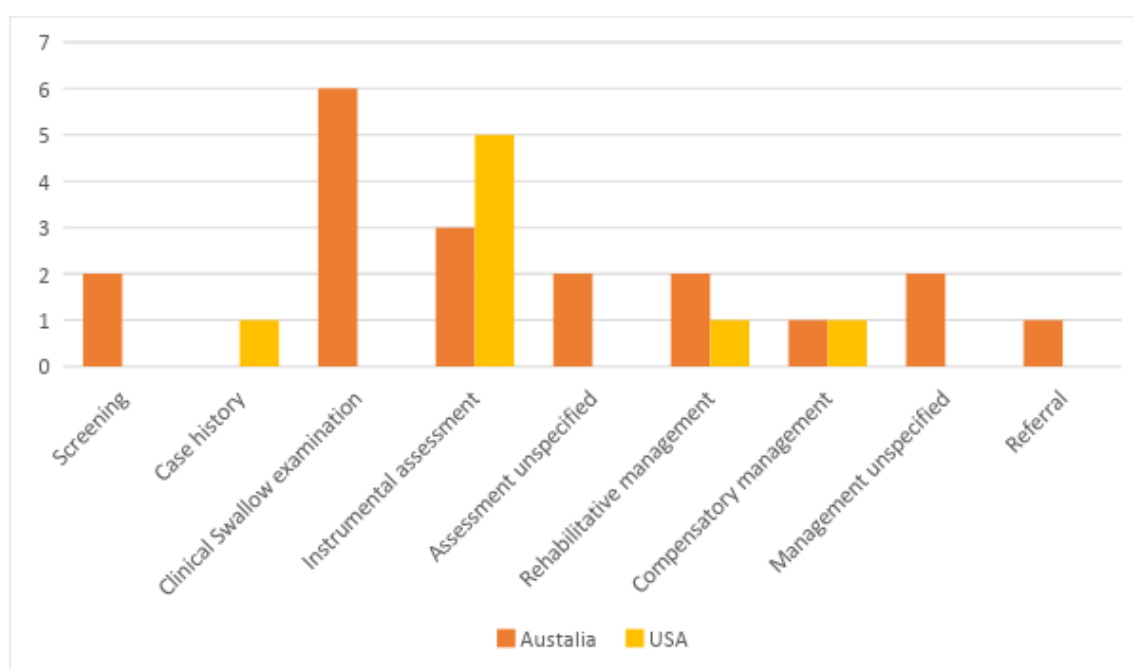
Figure 7: Areas of Intervention addressed according to countries

Based on the results in Figure 2 and 3, thus far telepractice in dysphagia intervention has focused largely on assessment. This was unexpected, as assessment is typically such a "hands-on," risky area of intervention (Groher & Crary, 2016). This is however, extremely encouraging, as early identification plays a key role in successful management (Bray et al., 2016). Dysphagia is a life-threatening condition that many people may not be diagnosed with simply because they cannot access personnel to assess them (Mulin et al., 2011; Rofes et al., 2013). This is especially true for people who require instrumental assessment. It is therefore appropriate that most of the research on assessment via telepractice focused on instrumental assessment, as illustrated in Figure 4.

The added bonus of instrumental assessment via telepractice, as highlighted by Georges et al. (2006), is that is reduces patient fatigue. Conducting instrumental assessment via telepractice therefore reduces the risk to the patient and reduces their travel expenses. The second largest area of interest, pertaining to assessment, was the clinical swallow examination, followed by unspecified assessment and case history, respectively. Management still appears to be largely unexplored, with only seven articles addressing management. Based on the summarised timeline provided as Figure 5, it is clear that studies addressing adult dysphagia management via telepractice only began in 2015. While the studies focusing on assessment were largely conducted by Malandraki, Ward, and/or Burns, the management studies were mostly conducted by different researchers. This is promising as it indicates a growing interest in the field of telepractice for adult dysphagia intervention, and it reduces the likelihood of researcher bias being carried across all the literature.
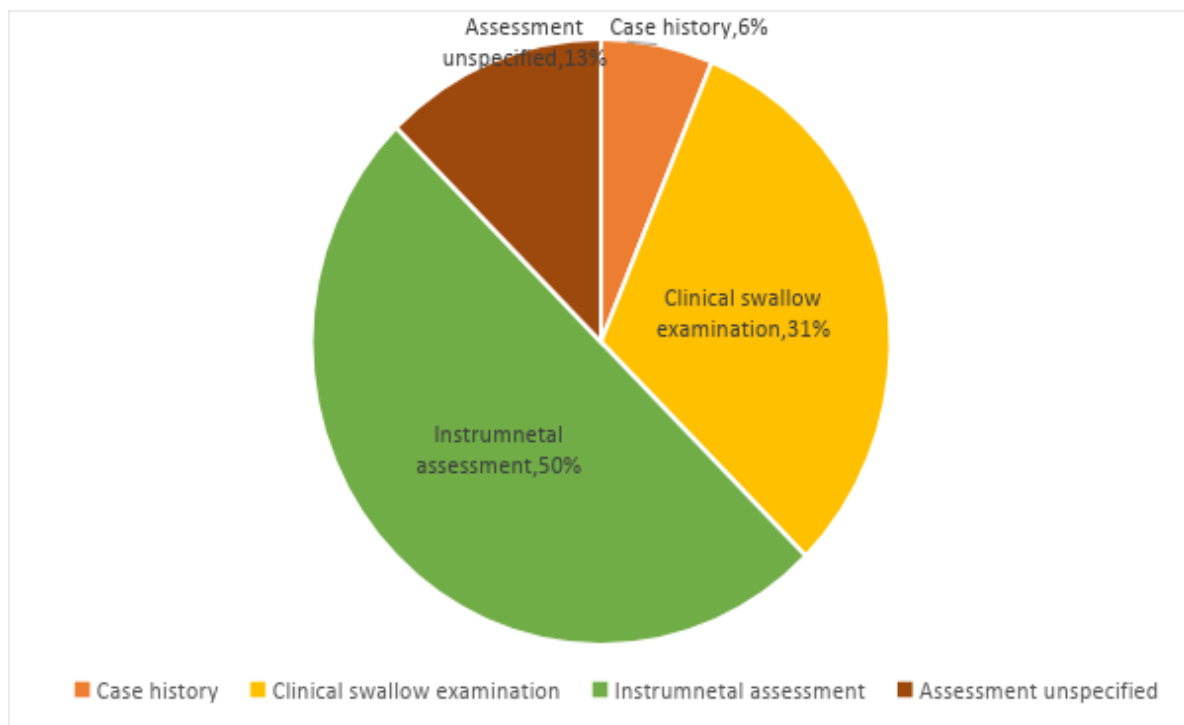
Figure 8: Types of assessment in telepractice
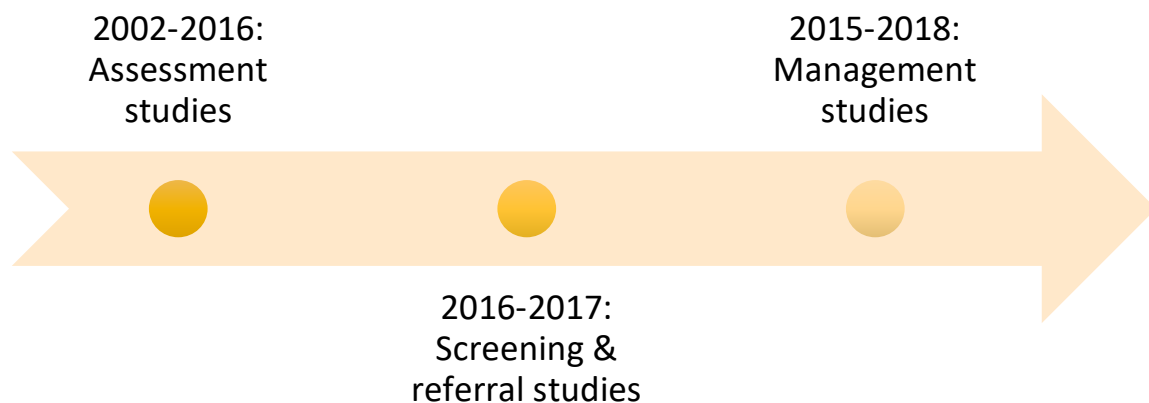
Figure 9: Summarised Timeline of Areas of Intervention addressed

What medium of transmission is preferred by most speech-language therapist (SLTs) who provide adult dysphagia intervention via telepractice?

This question aimed to determine, specifically whether SLTs preferred to conduct telepractice sessions using an audio only, visual only, or audio-visual medium. This was relevant to the researcher as underdeveloped areas, such as South Africa, do not always have access to an internet connection. This would make videoconferencing extremely difficult in such areas. During the consultation stage, experts felt it would be essential to have audio and visual mediums in most intervention areas. This preference, in combination with a lack of resources is likely one of the factors holding experts back from implementing telepractice in South Africa.

This research question also aimed to determine which of ASHA's (2018) models of telepractice were being used most frequently. In order to answer this question, it is necessary to look at the charted data from the category "method of telepractice." The characteristics of this data that are relevant to the question have been summarised above, in Table 4.

With regards to screening, both synchronous and asynchronous models were used equally, however the visual only condition was preferred. This makes sense as screening procedures were conducted using applications where patients answered questions by selecting or typing answers on a tablet or laptop. It should be noted however, that only two studies have been conducted which involve adult dysphagia screening, and both were conducted relatively recently (Wall et al., 2016; Ward et al., 2017). It is therefore likely that the current information may not be truly representative of SLTs preferences when conducting adult dysphagia screening via telepractice. In both cases, patients were required to complete the screening

protocols at a healthcare facility. The downside of this is that patients will be required to travel some distance, although it is likely to be far less than the status quo. A positive is that patients are not required to have their own tablets or laptops to complete the screening protocol. This makes the service more feasible in economically challenged areas.

Only one study has been conducted evaluating an electronic case history form specific to adult dysphagia (Kantarcigil & Malandraki, 2017). This form was administered using the asynchronous model in a visual only medium. Patients used a secure, web-based electronic platform to answer a total of 70 questions. These questions related to: identifying information, communication, medical history, and swallowing/feeding history. Answers followed a yes/no, multiple choice, ranking, or open-ended format. Clinicians were able to use the same platform to retrieve patients' completed forms. Once again patients experience the benefit of not needing their own devices. In addition to this, the use of a secure, web-based electronic platform alleviates the concerns raised by Watzlaf et al. (2010) regarding patient confidentiality. Unfortunately, this study is the only study relating to dysphagia case history and telepractice, its characteristics therefore cannot be regarded as those preferred by SLTs, as no alternative has been investigated.

With regards to the clinical swallow examinations, slightly more information was available. All the studies were based on the same procedure developed by Sharma et al. (2011), and all utilised a synchronous model with audio and visual transmission. The setup involved two laptops, one at the patient end and the other at the clinician end. The laptop at the clinician end had a fixed web camera, while the web camera on the patient end was free standing. Both cameras had zoom capabilities. The assessment was conducted using videoconferencing software with a split-screen view to allow the patient to see themselves and the clinician at all times. The laptop on the patient end was positioned on a portable stand which could be adjusted according to the patient's height and positioning. To assist with visualisation of laryngeal elevation, a piece of white tape was placed on the patient's thyroid notch. A free-field combined echo-cancelling microphone, web conference microphone and lapel microphone (to be fitted on the patient) were included to assist with conveying auditory information. A pulse oximeter was also attached to the patient's finger and monitored by an assistant. The assistant was responsible for relaying and repeating information when necessary, conveying tactile information, and delivering food and liquid boluses when appropriate. Boluses were delivered using clear, plastic utensils and cups, and food colouring dye was added to the water trials to assist with visualisation. Over the years, Ward et al. (2012a, 2012b, 2013, 2014) replicated this procedure to investigate its validity and feasibility in different conditions with different

populations. The findings of these studies are charted in Appendix L. It should be noted that in all studies the patient was required to be at a healthcare facility to use the equipment. Studies have not yet been conducted from patients' homes. This is not too concerning, however, as clinical swallow evaluations are generally conducted on patients suspected of having dysphagia while they are still in an acute setting. What is concerning is that the videoconferencing software is simply described as "custom." It is not clear what protections were put in place to ensure confidential information was being securely transmitted.

While variation was limited in the way clinical swallow examinations were conducted, we start to see more variation in technique with the instrumental assessments. This is likely due to the fact that studies were conducted by both the American and Australian groups, unlike the clinical swallow examination which was only contributed to by the Australian group. There were three key methodologies developed, of which two were synchronous and one was asynchronous.

Perlman and Witthawaskul (2002) developed the Teledynamic Evaluation Software System (TESS) with the intention of performing high-quality swallowing assessments from a remote location, in real-time, using an internet connection. Figure 6 illustrates the system's configuration as Perlman and Witthawaskul (2002) described it in their research. Essentially, the system involved two computers, one in the x-ray suite and the other at the remote clinician's location. The one in the x-ray suite was connected to the fluoroscope monitor and was responsible for capturing the video signals from the fluoroscope. These were simultaneously converted to full resolution formats and optimal-transmission formats. The latter were sent to the second computer, while the former were stored for later retrieval in a secure data bank. At the second computer the clinician was able to analyse the videos.

The videos could be viewed in real-time speed or frame by frame. It was also possible to rewind the videos and manipulate the lighting or contrast levels. This computer was also able to retrieve the videos stored in full resolution from the first computer after the assessment. The clinician at the remote location communicated with the staff in the x-ray suite via telephone. There was a 3-5 second delay in some transmissions, however the current internet speeds available far exceed those used by Perlman and Witthawaskul (2002). In fact, TESS was utilised by Malandraki et al. (2011, 2012) and the delay was reduced to 1-2 seconds. The reason cited for this was high internet traffic at peak times of the day. It was recommended that TESS be utilised at less busy times, such as early in the morning.

This system shows promise for the many healthcare facilities that may have videofluoroscopy equipment, but not SLTs on the staff. While many people will still need to travel to get to these

facilities, they will likely travel shorter distances. This is encouraging as it could reduce patients' waiting times to be assessed, as there would be more functioning facilities. It could also reduce patient fatigue. As mentioned by Georges et al. (2006), fatigue is a common consequence of travel that can influence the results of dysphagia assessment. Unfortunately, TESS does not appear to be commercially available.

Based on TESS, Georges et al. (2006) configured a very similar system in Kansas. Instead of two computers they made used of a videoconferencing device (Polycom) which connected directly to the fluoroscope and allowed the clinicians to communicate. A key difference in this setup was that there were SLTs at both locations. However, the SLT in the rural location was not comfortable conducting instrumental assessments. The advantage of this method is that it not only provided a patient with their required service, but also provided mentorship to a less confident SLT. The experts consulted, from the public sector, were particularly excited about this. One participant, P4 (public and private sectors), explained that the high burden of disease in South Africa results in most health professionals being trained as generalists. It is therefore extremely beneficial to provide new clinicians with mentorship, not just for their current patients, but also for the many future patients. As P3, from the public sector, put it, "...and then she becomes an expert in it and she can pass it along." (P3, public sector, line 102)

Like Georges et al. (2006), Malandraki et al. (2011) also made some adjustments to TESS's configuration. Specifically, a web camera was added to the computer at the x-ray suite to allow the clinician to observe the patient's posture, level of alertness and method of ambulation.
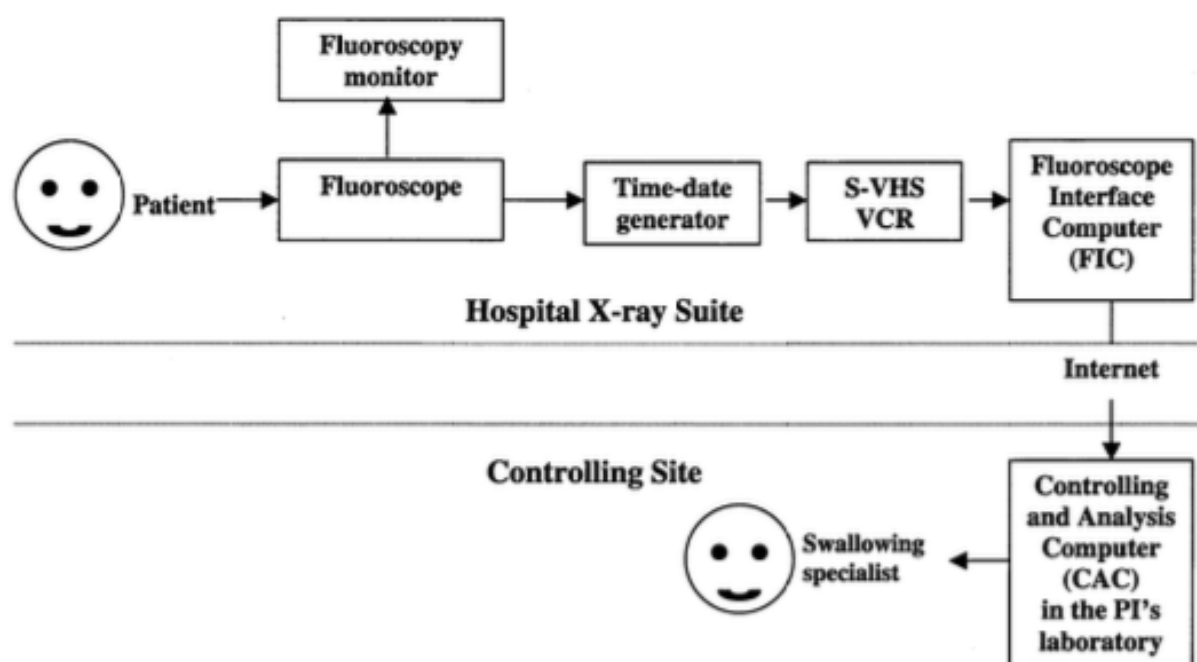
Figure 10: Configuration of Teledynamic Evaluation Software System (TESS) (from Perlman & Witthawaskul, 2002, p. 163)

40

The second synchronous methodology was introduced by the Australian researchers. Burns et al. (2016) made use of a system very similar to Sharma et al.'s (2011) clinical swallow examination procedure. To an extent, it was a combination of Sharma et al.'s (2011) method and TESS. The setup still involved two computers, one in the x-ray suite and the other at the remote clinician's location. However, it also incorporated pan/tilt/zoom cameras, free-field combined echo-cancelling microphones and a lapel microphone. Instead of using the traditional split screen view, it made use of a three-way split screen. This allowed simultaneous visualisation of the patient/staff in the x-ray suite, the clinician and the VFSS data. Similar to the clinical swallow examination procedure, an assistant was present with the patient. This setup is illustrated in Figure 7. It should be noted that there was one visual-only model used by Burns et al. (2015) which closely resembled the TESS configuration, but this study specifically aimed to determine which computer and internet condition provided the best quality transmission of VFSS data. A 4-6 Mbit/s internet line produced the best results.
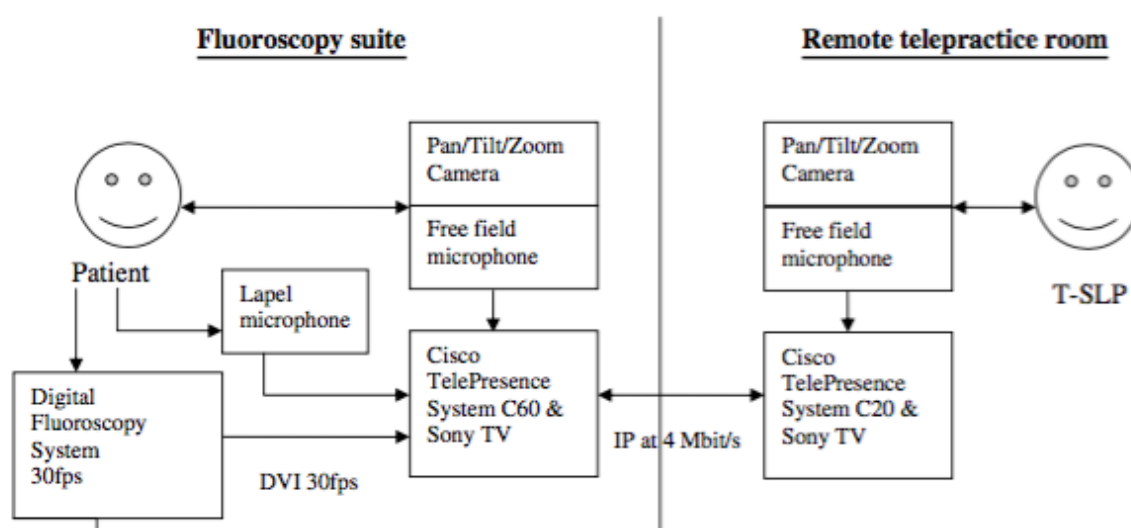
Figure 11: Configuration of system used by Burns et al. (2016) T-SLP= telerehabilitation speech-language pathologist (from Burns et al., 2016, p. 475)

The final instrumental assessment methodology established was developed by Malandraki et al. (2013). This system stands out from the others, as it makes use of an asynchronous model of telepractice. The core component of this system was the development of a website which stored patient information, case histories and VFSS recordings. This website made it possible for instrumental assessment to be conducted in one country (Greece) by a novice clinician, and analysed a day later in another country (USA) by an expert. Despite the day's delay the study found that patients received better intervention than if the novice had proceeded alone. This is very encouraging, as it holds great potential for developing countries, such as South Africa,

where SLTs are an exceptionally scarce resource. Unfortunately, the study does not specify how the data was stored, specifically how secure it was. Telepractice can pose significant risks to patient confidentiality (Watzlaf et al., 2010), and it is unclear whether any precautions were taken to protect patients in this regard. Some of the experts consulted felt this method could be implemented in South Africa, but were generally more receptive to the synchronous methods. This method was especially challenging to the participants from the private sector, as it introduced the dilemma of double billing. The involvement of two clinicians left participants questioning which clinician would be paid by the medical aid, if the medical aid agreed to pay at all.

There were two studies which focused on assessment in a more general manner. Both of these studies utilized a synchronous model with audio-visual transmission and were conducted with patients post-laryngectomy. In the first study (Ward et al., 2007), the setup involved two computers that communicated through an internet connection. The clinician and patient communicated using headset microphones and specialized videoconferencing software. A mirror was attached to the computer monitor at the patient end to allow the patient to view their stoma. A lamp was also utilized at the patient end to improve visibility of the stoma and oral cavity. However, it appears the additional lighting was insufficient as in the second study Ward et al. (2009) made use of a free-standing camera and a custom made light source. Both systems were able to capture high quality still images, videos and audio recordings. These procedures were categorised as unspecified assessments, because while they clearly do not involve instrumental assessment, no mention is made of food or liquid trials. This makes it difficult to classify them as clinical swallow examinations. Irrespective the procedure was effectively used when assessing the swallowing of patients post-laryngectomy.

While assessment tended to favour the synchronous model of telepractice, rehabilitative management favoured the asynchronous model. Two of these three studies involved the use of apps, e.g. SwallowIT and Head Matters. In both cases, the apps incorporated instructional videos, images and text to guide patients through a personalised set of exercises. Clinicians were able to remotely monitor patients' progress. This method of rehabilitative management was found to be effective and satisfactory to both clinicians and patients. This is extremely encouraging, as the use of such apps reduces the time and money patients would need to spend to travel to clinicians. It also likely to encourage patients to engage with therapeutic exercises more frequently than if they were only able to see their SLT once a month. The downside, however, is that the patients are required to have their own devices on which to use the apps. This may not be financially feasible for patients living in rural areas, and the possession of

expensive devices could increase a risk of theft. Clinicians would need to carefully consider each case to determine whether this method of management is what is best suited to the patient, holistically. In addition to this there are risks to confidentiality, as some apps require users to create a public profile (Watzlaf et al., 2010). The study does not specify if this is the case with the apps involved.

Two studies made use of the hybrid model of telepractice. The first provided rehabilitative and compensatory management. This study, conducted by Mayadevi et al. (2018), involved a cross-continental, monthly videoconference. The videoconference system on each end consisted of a video monitor, high definition video camera, microphone and speakers. The videoconference allowed clinicians from India and the USA to discuss cases involving persistent dysphagia they were currently managing. The goal being for the group to collectively devise an appropriate management plan. This model is regarded as a hybrid model because patients were seen for at least two face-to-face therapy sessions before their cases were discussed at the conference.

The other hybrid model was employed by Cassel (2016), but this time for compensatory management only. This model involved videoconferencing patients during mealtimes. Clinicians would cue patients to use the manoeuvres and postures learned in the previous two face-to-face sessions. A positive of this method is that it allows patients to receive therapy from the comfort of their homes. Unfortunately, the implication of this is that patients require their own devices. VSee and FaceTime are the videoconferencing software that were used. Both ensure patient confidentiality through encryption (Apple Inc., 2018; Cassel, 2016), however FaceTime is only available on Apple devices. Both hybrid models were effectively used and patients showed improvement.

Two articles focused on management in general. Synchronous and asynchronous models were utilised. The study by Burns et al. (2017) followed a synchronous, hub and spoke design. This allowed clinicians at a specialist healthcare centre (the hub) to provide therapy to patients across the region who would have been referred to them. Therapy sessions involved a videoconferencing system, a pan/tilt/zoom camera, LED screen and multidirectional microphone. The regional clinician was present during sessions to capture and transmit audio-visual recordings using a handheld medical camera. This clinician was also relied on to provide close-up views using a general imaging probe and/or intraoral probe. The study found that this method of management increased the rate of rehabilitation and was positively received by patients and clinicians. An additional benefit, not mentioned by the study, is the mentorship received by clinicians at spoke sites. This may over time result in a greater number of clinicians being able to provide specialist services, thereby increasing access to specialist services. Once

again participants were concerned that this model would not be feasible, because medical aids would not reimburse two clinicians.

The second article (Ward and Burns, 2014), mentioned that dysphagia management can be provided through the use of apps, using an asynchronous telepractice model. Unfortunately, this article did not specify the apps by name.

Finally, there was one study which focused on referral. This study, conducted by Wall et al. (2016), utilised an algorithm to interpret patient response on a screening protocol and prioritise referral. An asynchronous model was employed, with visual only transmission. Patients completed the screener and the algorithm prioritised their need for referral as high, medium or low. High-risk patients were referred for a face-to-face session within four days, medium-risk within seven days, and low-risk patients were advised to continue attending their usual follow-up appointments. The referral system was found to be as effective as a clinician. When errors did occur they were due to the system interpreting patients' exaggerated symptoms as genuine. There were no instances where the system missed a referral that a clinician would have made. P4, who has experience in the public and private sector, noted that these were particularly long waiting periods and that at most hospitals in the Western Cape, the referral waiting period is 24 hours.

In summary, we see that the synchronous model with audio-visual transmission is utilised most frequently and seen as ideal by experts consulted. The system often incorporates some form of videoconferencing and an internet connection is always required, although it need not be exceptionally fast. In most studies patients were still required to be at a healthcare facility to make use of the telepractice system, however some apps exist which allow the patient to utilise their own device in a location of their choice. While travelling to a healthcare facility may be challenging, it reduces the need for patients to have their own devices and own internet connection. However, it is important that healthcare facilities ensure their telepractice systems transmit and store confidential patient information securely. Videoconferencing software is available that encrypts calls when specialised software cannot be developed. Telepractice shows promising opportunities for adult dysphagia intervention with regards to screening, assessment, management and referral. Studies are still required to investigate the use of telepractice in prevention, health promotion and counselling pertaining to adult dysphagia.

How does the duration of adult dysphagia intervention sessions, delivered via telepractice, differ from those delivered face-to-face?

Ideally we would prefer telepractice interventions to be shorter in duration than face-to-face

interventions, as this would allow clinicians to provide services to a greater number of people. Unfortunately, not all of the studies explicitly commented on the duration of the telepractice interventions. The studies that did comment on the duration can be seen in Table 5. There is variation with regards to being longer or shorter than face-to-face intervention. Clinical swallow examination and management (unspecified) were slightly longer in duration (Burns et al., 2017 & Sharma et al., 2011). Screening was shorter (Ostrofsky & Seedat, 2016) and the duration of case history was not significantly affected (Kantarcigil & Malandraki, 2017). While referral via telepractice was combined with the screening system, a duration cannot be explicitly placed on it in person as it does not follow an independent procedure. One participant, P1 (public sector), expressed that the duration of sessions was unlikely to change if telepractice were utilised.

Table 5: *Duration of Telepractice Interventions when compared with Face-to-Face Intervention*

Area of intervention	Telepractice duration	In comparison to face-to-face intervention
Screening	5 minutes	shorter
Case History	15 minutes	equivalent
Clinical swallow examination	45 minutes	longer (slightly)
Management unspecified	60 minutes	longer

What billing procedures and adjustments are recommended when providing adult dysphagia intervention via telepractice?

Unfortunately, this question could not be answered using the selected studies. While many of the studies commented on the possibility of telepractice reducing the cost to patients, none commented on how clinicians were reimbursed. However, according to Lowman and Kleinert (2017) and the Australian Department of Human Services (2018) telepractice is covered by Medicaid/Medicare plans in the US and Australia, respectively. It appears however that coverage of telepractice is largely dependent on each country's policies, and even policies at a provincial/state level (Stevenson, 2014).

This is problematic as many South African patients rely on medical aid to cover their medical expenses. Telepractice is not feasible if patients accustomed to relying on medical aid are suddenly required to cover expenses out of pocket. Reimbursement was a key area discussed during consultation.

The question of cost was also raised. It is unclear whether telepractice should be billed for the same amount that face-to-face intervention is billed for. Based on the data in Table 5, intervention provided via telepractice could be shorter or longer than face-to-face intervention. It is possible billing is determined based on an hourly rate, irrespective of the medium in which intervention is provided. During consultation it was suggested that billing be based on content of the session rather than an hourly rate. Specifically, it was recommended that patients be billed at medical aid rates. Based on the information above, it is clear that energy needs to be directed towards creating legislature about how clinicians can be reimbursed. The sooner such legislature can be drawn up, the more likely telepractice will be implemented.

CHAPTER 6: CONSULTATION

This chapter briefly describes how the consultation stage was conducted, before addressing the final review sub-question: What challenges do South African SLTs from the Western Cape foresee regarding the implementation of the current conventions for adult dysphagia intervention, and how do they recommend overcoming these challenges?

This will be addressed by providing an in-depth discussion of the key themes identified from the interviews. The chapter will conclude by highlighting the clinical significance of the challenges and solutions to the implementation of adult dysphagia intervention via telepractice, in South Africa.

6.1. Consultation structure

Semi-structured interviews were held with five participants over the course of five weeks (See final page of Appendix N for interview questions). A semi-structured interview schedule was selected to ensure no relevant insights were excluded by a rigid format. This was essential as a main aim of the consultation stage was to increase the usefulness of the information collected. A rigid nature of a structured interview would also have hindered knowledge transfer, an objective of the consultation stage. All participants met the expert profile outlined in Table 3 and consented to participate in the study. The interviews were conducted at times and locations most convenient to each expert, and each interview lasted less than 60 minutes. One participant was from the private sector, two from the public sector, and two who were in both sectors. It should be noted that while an effort was made to include experts from both the public and private sectors, the goal was not to compare their experiences. The goal was rather to ensure a broader, although not necessarily representative, picture of the challenges and possibilities for telepractice in adult dysphagia intervention was realised.

6.2. Themes identified from interviews

6.2.1. Resources

During the interviews, it became apparent that the manner in which telepractice could be implemented in a South African context, was largely dependent on the resources available, not only to clinicians, but also to their clients. The key resources identified as influencing the implementation of telepractice were internet access and equipment, which are discussed in more detail below:

6.2.1.1. Internet Access

Based on the existing literature on telepractice in adult dysphagia intervention, an internet

connection is always required (See Appendix L). However, almost all of the consulted experts expressed their internet access being problematic. While one participant, P2, from the private sector, described her internet connection as being good and fast, other experts, especially those in the public sector, described their internet access as highly restricted. Most of these clinicians only had wired internet access at their desktop computers. Wireless internet (Wi-Fi) was not available. In addition to this, many websites, especially those with video content, such as Skype, were blocked for users in the public sector. The experts consulted acknowledged that they could motivate for access to such sites, but would likely be unsuccessful. The consensus was that changes would need to be initiated by government.

Several participants also expressed that even if they were to obtain adequate internet access, it was unlikely their clients would have access to adequate internet. The experts interviewed remarked that while most of their clients have cell phones, even smartphones, they seldom have data. This corresponds with current statistics which state that while more than 90% of South Africans have cell phones, less than half of these citizens have internet access through their cell phones (Statistics South Africa, 2016a). In the Western Cape however, just over 50% of residents have internet access through their cell phones (Statistics South Africa, 2016a). While this may seem encouraging, it is still unclear whether the internet capabilities of these devices correspond with their owner's ability to afford the required data. Especially since the provincial report of the Western Cape indicates that just less than 20% of people in the Western Cape have internet access (Statistics South Africa, 2016b). It is also not known whether people with internet access have experience using the internet for purposes other than accessing social media.

In addition to this, one participant, P1 (public sector), explained that the Western Cape government has started to implement a drive which provides free Wi-Fi in public spaces. She remarked that her place of work is one of the public areas with this Wi-Fi, but unfortunately it seems to only connect in the parking lot at this stage. While there are some Wi-Fi networks being used in the hospital, they have been privately organised by particular healthcare professionals and are not open for public use. Internet access in the Western Cape therefore still appears to be rather problematic.

In the meantime more focus could be put on developing screening protocols or case history forms that can be accessed and completed using unstructured supplementary service data (USSD) codes. As one participant, P4 (both sectors) clarified during consultation, these codes do not require data, or Wi-Fi, and work on both regular cell phones and smartphones. This is ideal for the South African population, where almost all people have access to a cell phone

(Statistics South Africa, 2016a). It is therefore extremely encouraging that similar programmes are already being developed in the field of mHealth. The participant who introduced the idea of using USSD codes to the researcher has a colleague developing such a programme. The concerns raised by many of the participants consulted, such as limited equipment and poor internet access could be overcome through the use of a USSD code. Two of the participants, P1 (public sector) and P5 (both sectors), also expressed that many of their patients struggle to attend sessions because of difficulty arranging wheelchair-appropriate transport. P5 (both sectors) highlighted that in addition to this, many of her patients struggle to attend sessions as a result of gang violence in the area. A programme like this removes the need for people in such situations to have smartphones and Wi-Fi or data. It would mean that they could complete a dysphagia screening protocol and/or case history form without the risking their lives or spending a large portion of their salary.

6.2.1.2. Equipment

With regards to acquiring the recommended equipment, specifically: laptops, tablets, additional cameras, lights and microphones, there was a clear divide between participants from the public and private sector. Those currently, or previously, in the private sector expressed that the equipment would be easy to acquire. However, one participant, P2 (private sector), expressed reservations about whether other staff members would accept such a change. Specifically she shared concerns that staff from an x-ray suite may question the validity of an assessment conducted without the clinician being physically present.

From the public sector, only one participant, P4 (both sectors), stated that all the required equipment was already present. The other participants expressed that while it would not be impossible to acquire the equipment, it would be difficult. They cited "red tape," depleted government budgets, and slow response rate as key difficulties. In addition to this one participant, P1 (public sector), mentioned that it was not only about acquiring the equipment, but also ensuring its safety after acquisition. Another participant, P5 (both sectors), highlighted that in addition to the equipment used in the studies clinicians may require webcameras, as the desktop computers at her place of work did not have built in cameras. Another clinician, P1 (public sector), expressed that while the hospital may be able to motivate for the equipment, clients at home may not be able to afford the equipment, specifically a laptop. According to Statistics South Africa (2016), less than 25% of South Africans have a computer/desktop/laptop at home. She recommended that it would be more suitable to use the equipment to interact with facilities where multiple clients were based, such as a home for chronically ill children, or to investigate whether clients could rather use their cell phones.

The general consensus was that equipment was more likely to be acquired if the decision was initiated from government. Unfortunately, as one of the participants, P3 (public sector), explained, it is not enough for telepractice to be supported by evidence, it would need to be supported by evidence within the South African context. If clinicians could show government the benefits to patients, then their request for such equipment would be more likely to be successful. At the moment, however, there is no South African evidence to support adult dysphagia intervention via telepractice. Participants felt that clinicians in the private sector would be better suited to implementing telepractice, as they have greater access to resources. Clinicians would then be able to use their cases as evidence to support the implementation of telepractice in the public sector.

6.2.1.3. Method of Telepractice

When discussing the medium of transmission and the telepractice model, most clinicians indicated that it would largely depend on whether equipment could be acquired and if a reliable, fast internet connection was available. In most cases the participants agreed that utilizing an audio-visual medium of transmission would be beneficial. Listening to the client's pre- and post-swallow voice quality was a key motivation for including an audio component. There were, however, certain areas of intervention that one participant, P4 (both sectors), noted could function using a purely visual medium, such as case history, screening, and referral.

All the experts who were consulted agreed that the synchronous telepractice model would be ideal, especially for assessment. Unfortunately, most of the participants also expressed that the synchronous model would not necessarily be feasible in the current South African context. As mentioned above, the equipment acquisition process, particularly in the public sector, could take years to be achieved, if it were achieved at all. In addition to this, a reliable, relatively fast internet connection would be required in all of the telepractice methods discussed. As mentioned earlier, internet access in the Western Cape is largely problematic.

Another point raised by one of the participants, P2 (private sector), was that of scheduling. It was questioned whether clinicians would be able to coordinate their online times, especially for instrumental assessments, with patient transport times and testing of equipment, to minimise time wastage. Another clinician, P3 (public sector), on the other hand, recommended that telepractice blocks be built into a clinician's schedule, the same way one would set aside time for outreach. She spoke about how at her place of employment they have a particular day allocated to instrumental assessment, and that similarly a particular day could be allocated to telepractice assessments.

While most participants were receptive to the concept of providing adult dysphagia intervention via telepractice, there was one participant, P2 (private sector), who expressed concerns about the use of telepractice with dysphagia. Specifically, she said,

> with dysphagia, especially if it's subacute or acute, yoh I don't know. It's like that is really, that can determine whether their organs actually fail, in the sense that okay their nutrition and their actual way of swallowing, method of swallowing is so deteriorated that their organs… at the end they die from it. That's why patients can also die so I'm very icky about this whole telepractice with dysphagia like, let's do the /r/ and the /t/ and the /s/ for speech and any language, aphasia, apraxia, let's do that but dysphagia is something that you continuously, yoh (P2, private sector, line 402)

6.2.2. Recommendations from Expert Panel

Some participants had actually been exposed to telepractice in dysphagia prior to the interview, and felt that these methods could be potentially implemented in South Africa. The first method was a clinical swallow examination involving speech-language and hearing therapy students. During one participant's (P4, both sectors) community rotation, patients would be brought to the campus and videoconference with an experienced clinician. The students would act as assistants under the instruction of the experienced clinician. While the campus was not ideally designed for such a procedure, it saved the patient from travelling all the way to the hospital.

The second method was experienced by a participant (P2, private sector) during her community service year. She had been placed in a rural area and was unfamiliar with conducting instrumental assessment. She consulted with the experienced clinician at the time and they reviewed the VFSS footage together in real-time. Unfortunately, the real-time connection was established by the experienced clinician and the participant is not aware of the specifics of how it was set up. She did remark, however, that the experience was effective and beneficial to her.

Another method already in use, was actually initiated by one of the participants (P1, public sector). She recognised that many of her patients struggled to get to their follow-up appointments, and started scheduling telephonic follow-up appointments. During these telephonic appointments she would listen to the patient's voice quality and ask about adherence to recommendations, chest infections and weight loss. If any of the patient's responses indicated risk of negative outcomes, she would schedule a face-to-face appointment. If the patient seemed to be healthy, she would schedule another telephonic appointment a month

later. The participant remarked, however, that if she could include a visual component it would definitely be beneficial, and that she would probably even observe the patient swallowing.

The final method in use involved consultation. One participant, P2 (private sector), explained that if a patient, from another province, required an instrumental assessment while in the Western Cape, she would send their results to the clinician in the patient's home town. They would both review the footage in their own time and then discuss the results and agree on a management plan together.

When explicitly asked which telepractice methods would be feasible in the South African context, screening and referral, management, and assessment were recommended. With regards to screening and referral, one participant, P4 (both sectors), mentioned the programme a colleague of hers has been developing. The programme technically falls under the category "M-health" (mobile health) which forms part of the larger category "E-health" (electronic health), but could easily be tailored to identify people in need of dysphagia-related services. The programme aims to make use of a USSD code, similar to those used to buy airtime, to obtain case histories from patients. The idea is that the information would be analysed using an algorithm and details of patients in need of dysphagia-related services would be sent to their home-based carers. These home-based carers would then contact the patients and set up appointments for them. The purpose of the home-based carer calling the patient and setting up the appointments is to ensure the patients does need to use their own airtime. The participant was particularly excited about this development, as she explained that USSD codes can be used on most, if not all cell phones. This eliminated any need for patients to have smartphones or access to the internet. She also felt it would reduce the number of inappropriate referrals and thereby reduce time wasted by clinicians.

Management was seen as especially suitable for patients requiring less active management, such as patients with percutaneous endoscopic gastrostomies (PEGs) or nasogastric tubes (NGTs). It was mentioned that patients in wheelchairs struggle to organise affordable, appropriate transport to the hospital. Telepractice seemed especially suitable for these patients. P3 (public sector) and P5 (both sectors) even remarked that it would likely be cheaper to purchase data for the telepractice session than pay for transport. In addition to this, one participant, P5 (both sectors), expressed frustration that her patients often have to postpone or cancel their appointments because of gang violence in the area. She explained that it was not always safe for her patients to leave home, as bullets would literally be flying in their streets. This participant expressed how beneficial it would be if she could conduct sessions with these patients via telepractice, instead of them delaying or cancelling sessions.

52

Some participants felt that monthly teleconferences and consultations could be effectively implemented. However, one participant, P2 (private sector), raised concerns about whether cases presented at such teleconferences would ever be followed-up at the teleconferences. She emphasised how, in her experience, most dysphagia cases are complex cases, and the number of patients that require dysphagia intervention is extremely high. She therefore expressed strong doubts as to whether there would ever be a chance to revisit a previously presented patient's case. Some participants also expressed that they felt smartphone-based management, through apps, would be better suited to the South African population than laptop-based management. The participants felt that most households, even in rural areas, had access to a smartphones, and one participant felt that using a family member's phone would be a way to facilitate or enhance family involvement. One participant, P5 (both sectors), expressed a willingness to conduct management via videoconferencing after the patient had had at least two face-to-face management sessions.

Instrumental assessment was seen as more feasible in the South African context than clinical swallow examinations. Surprisingly, the participants were open to synchronous and asynchronous instrumental assessment methods. With regards to the asynchronous method, participants felt the method outlined by Malandraki and colleagues (2013) was suitable to the South African context, especially in rural settings where newly graduated clinicians would be conducting the assessments. Some participants expressed that telepractice was a promising method to provide mentorship and support to such clinicians. In fact, one of the participants, P3 (public sector), felt this support would ultimately result in more clinicians being competent and confident in dysphagia intervention.

The synchronous method, was also described as well suited to environments where clinicians were completing their community service. One participant, P4 (both sectors), explained that because as South African SLTs are trained as generalists, it is not uncommon for qualified SLTs to be cautious of providing dysphagia intervention. Another participant, P3 (public sector), remarked that this method could be a form of outreach and would ultimately create an environment where more SLTs were dysphagia "experts" able to support and develop competence in new clinicians. One participant, P2 (private sector), however, was extremely hesitant to engage in dysphagia assessment via telepractice, is she felt that a lack of daily follow-up could result in sudden deteriorations, such as chest infections after assessment being poorly managed. She was also concerned that overburdened nurses may hastily feed patients if the clinician was not physically present and checking on the patients.

Finally, one participant, P2 (private sector), explained that many hospitals in rural areas, even

in the Western Cape, may have the equipment to conduct the assessment, but no clinician. In such situations P3, from the public sector, felt it would be especially beneficial to train the staff and conduct assessments via telepractice. This was seen as easier than trying to acquire equipment for facilities that did not have it. She did recognise, however, that training would need to be continuous, as many staff rotate to different facilities, but felt that it would be worth the effort.

Despite none of the studies involving counselling, many participants felt this would be suitable to the South African context. Participants felt that making personalised videos or voice notes, which could be sent to patients would help patients process the information being presented. One participant, P4 (both sectors), emphasised that all people reach a point where they can no longer take in information. She elaborated that sending the information to patients in shorter "chunks" would be especially helpful. It was also seen as beneficial that patients would be able to listen to the information numerous times, rather than trying to remember what their clinician had said during the session. In addition to this, conducting counselling with family members was seen as a way to maximise contact time for active intervention during sessions, as well as reduce costs to patients. One participant, P2 (private sector), had reservations, about whether these videos would carry the same sincerity as face-to-face counselling, especially for elderly patients who may not be as comfortable with technology.

It was also suggested that health promotion sessions could be conducted via telepractice. The concern raised was that both healthcare facilities would need to have videoconferencing equipment, and this would not be feasible in rural areas. On the complete other side of the equipment spectrum, one participant, P4 (both sectors), expressed that there may actually be more modern equipment already available. She described a portable inspection endoscope being used at her place of work which allowed healthcare professionals to view scoping results in real-time on their cell phones with the use of an app. Upon investigation of the device, during the interview, it was learned that these "USB inspection endoscopes" can connect directly to Android and Apple devices, as well as being able to connect wirelessly. She went on to explain that a colleague of hers is actually in the process of developing a training course so that SLTs can be trained to use such devices independently. She emphasised how encouraging it was that such a device was being used in the public sector, despite their being expensive.

6.2.3. Reimbursement

As none of the studies explicitly stated how clinicians were reimbursed for their services, the researcher was particularly interested in how South African SLTs felt clinicians could be fairly reimbursed. All the participants agreed that clinicians providing dysphagia intervention via

54

telepractice should be reimbursed. Participants from the public sector were not as concerned about reimbursement as they explained that many of their clients receive free medical treatment at government hospitals, as they cannot afford to be billed. They recommend that telepractice simply be marked as "indirect contact" on their statistics forms and if the hospital felt the person should be billed, the hospital would send the bill.

Participants with experience in the private sector, however, were more concerned. They were especially concerned about telepractice methods which involved two clinicians, as this would result in "double billing". Specifically, the VFSS assessments involving a novice and experienced clinician were problematic. Both clinicians would have contributed to the patient's care and should therefore be reimbursed. However, participants were certain that medical aids would not be willing to pay out both clinicians. One participant, P2 (private sector), recommended that patients sign a clause beforehand agreeing to privately reimburse the second clinician. She recommended that reimbursement occur at medical aid rates. Another participant, P1 (public sector), noted that reimbursement rates should consider the cost to the patient. For example, if the patient needed to use their own data for the session, the cost of that data should be considered when billing the patient.

Another participant, P4 (both sectors), recommended that the experienced clinician be viewed as providing a specialist service. This would create a relationship between the clinicians similar to that of one between a general practitioner and an ear-nose and throat specialist. The participant hoped that by separating the roles, medical aid would be able to reimburse both clinicians. She however noted that there may be an additional issue, as both clinicians would be claiming for the same time-slot.

Two participants, P1 (public sector) and P2 (private sector), raised concerns about medical aid fraud. They felt that medical aids would require some form of proof that sessions were conducted and that the content of sessions was of an appropriate nature. As one of the participants said, "I could chat with Anisha about fashion trends for 2019 for half an hour and say that actually, 'No, that was a dysphagia consult. Pay me.' " (P1, public sector, line 163) She recommended that the Health Professions Council of South Africa (HPCSA) produce standardised criteria of what constitutes a telepractice session, and which services are billable.

With regards to telepractice sessions that involved only one clinician, there were still concerns that the medical aid would not pay out, as the clinician was not physically present with the client. Multiple participants mentioned that presently medical aids seldom even cover face-to-face out-of-hospital services, so it is unlikely they would cover services provided via telepractice. One participant, P4 (both sectors), suggested an integrated system be developed,

that would record the time clinicians spend arranging appointments, setting up equipment, conducting intervention, and any time lost as a result of technical difficulties. Participants who had been exposed to dysphagia intervention via telepractice were unsure how the clinicians involved were reimbursed, or were in the public sector at the time and did not bill their clients.

In summary, clinicians in the public sector did not need to concern themselves with reimbursement. They would not need to navigate the intricacies of double billing and medical aid fraud, however they lacked the resources to obtain the relevant equipment. Motivations towards acquiring the equipment would likely only be approved if clinicians could show evidence that South African patients were benefiting from telepractice. This is where clinicians in the private sector would be integral. Participants from the private sector expressed having easier access to equipment and reliable internet, making them ideal candidates to provide the evidence-based research required by those in the public sector. However, participants expressed that clinicians in the private sector would not be willing to implement telepractice with such uncertainty surrounding reimbursement.

6.2.4. Confidentiality

All the participants were aware of the importance of maintaining patient confidentiality, however only one participant, P4 (both sectors), was aware of a telecommunication application which utilised encryption, namely: Telegram. She described this application as being similar to WhatsApp, but with a more stable connection and more security protocols in place. Upon further research, it was revealed that while Telegram supports instant messaging and voice calls, it does not support videocalls (Chenze, 2017). This participant also raised concerns that despite the content being encrypted when sent, it would still be stored on the clinician's phone or in their cloud. In her opinion this would a risk to patient confidentiality, as the phone could be stolen or viewed by someone other than the clinician.

The other participants were not aware of any telecommunication apps which utilised encryption. They were however, all familiar with using Skype and WhatsApp for videocalling. The participants were pleased to hear that both apps utilise encryption (Deahl, 2018; Skype Support, 2018; WhatsApp Inc., 2018). One participant, P1 (public sector), highlighted how wonderful this was considering that both apps are free. The participants expressed that WhatsApp would be more suitable than Skype, as WhatsApp was seen as being more smartphone-based than laptop-based. One of the participants, P5 (both sectors), also emphasised that Skype would not be appropriate at her place of work, as her desktop computer does not have a webcamera and Skype has been blocked. Another clinician, P3 (public sector), expressed that WhatsApp would be more suitable, as in her experience clients seldom have a

laptop, but generally someone in the household has a smartphone. She remarked that even if this person was the grandchild, it would be an excellent way to get the family involved.

6.3. Clinical Implications

While experts felt that providing adult dysphagia intervention via telepractice could have a hugely beneficial impact in the South African context, the high-tech manner in which it is currently being applied is not feasible here. Before adult dysphagia intervention via telepractice can be implemented across South Africa, an evidence-base supporting its use in this context needs to be built. The biggest challenges to building this evidence-base are: accessing equipment, internet and reimbursement.

The experts consulted explained that acquiring equipment, such as laptops, tablets, microphones, webcameras and additional lighting and free-standing cameras would place a great demand on government. If government approved such a request, it would still likely take years to be received by the respective departments. One participant, P4 (both sectors), commented that at some facilities one could wait up to a year for basic supplies, such as nasogastric tubes. Another participant, P2 (Private sector), therefore recommended utilising equipment that was already available, such as x-ray suites suitable for VFSSs, that are not being utilised because no SLT is at the facility. Clinicians would need to be willing to continuously train rotating doctors and radiography staff.

With regards to internet access, clinicians in the public sector would need to acquire permission to access Skype or WhatsApp, and ensure their patients also had access to these platforms. Unfortunately, South Africa has a particularly high internet cost, specifically, Cape Town and Johannesburg have some of the highest data costs globally (Chutel, 2018). This is problematic because it makes the internet less accessible to clients, and less likely for telepractice to be successfully implemented. Suggestions to overcome the data struggle included making use of free Wi-Fi provided at public areas, and developing dysphagia-related services which can be run through mHealth, using USSD codes. The latter is especially promising, as similar programmes are already in development, and the free Wi-Fi being supplied by the Western Cape Government, is not yet active in all public areas.

While the uncertainty around reimbursement only directly affects the private sector, it indirectly affects the public sector. South Africa does not currently have laws prescribing how clinicians should be reimbursed for dysphagia-related services provided via telepractice. Participants expressed that the lack of legislature around reimbursement would discourage clinicians in the private sector from using the resources at their disposal. This in turn delays

evidence that clinicians in the public sector could use, to support their requests for the necessary equipment and internet access.

To overcome this challenge, it was suggested that the HPCSA set out guidelines of what constitutes telepractice, specifically what needs to happen during a session for it to be billable. It was also recommended that all telepractice services be billed at medical aid rates, rather than each clinician prescribing their own rate.

In summary, while SLTs are compelled to utilise evidence-based practices, they are also required to initiate the development of evidence. At each challenge identified, implementation of the possible solutions rely on SLTs. Clinicians need to engage with policy making to ensure fair reimbursement. Clinicians in the private sector need to utilise the resources at their disposal, so that clinicians in the public sector can motivate for such resources from government. The responsibility lies with South African SLTs to do the groundwork that needs to be done, so that adult dysphagia intervention can be successfully implemented via telepractice, in South Africa.

CHAPTER 7: CONCLUSION

Dysphagia is a life-threatening condition affecting an increasing number of people, especially in developing countries (Boutayeb, 2010; Rofes et al., 2013, Thrift et al*., 2014*). There are a limited number of SLTs available to provide dysphagia intervention and patients are often required to spend great deals of time and money travelling far distances to be seen (ASHA, 2016; Georges et al., 2006; Kathard & Pillay, 2013). Current literature shows that telepractice offers a feasible alternative to face-to-face adult dysphagia intervention in the areas of: screening, case history, assessment (clinical swallow examination and instrumental assessment), and management (compensatory and rehabilitative). However, this is not necessarily the case in South Africa. After consulting with experts it was determined that limited resources, poor internet accessibility and lack of legislature pose key barriers to the implementation of telepractice for adult dysphagia intervention, in South Africa. Most experts believe telepractice could successfully be implemented in the areas of screening, case history, counselling, instrumental assessment, management of low-risk clients, and referral.

Of the telepractice models outlined by ASHA (2018), the synchronous model is most commonly utilised. It often incorporates audio-visual transmission through some form of videoconferencing. An internet connection is always required, although it need not be exceptionally fast. A 4-6 Mbit/s line is sufficient for optimal image quality. Experts explained that this would be problematic in the South African context, as internet is often unreliable and unaffordable to many people. In most cases, patients were still required to be at a healthcare facility, however some apps exist which allow the patient to utilise their own device in a location of their choice. Some experts believed smartphone-based intervention would be better suited to the South African context, as in their experience, most people have smartphones. The cost of travelling to a healthcare facility can, however, be offset by eliminating the need for patients to have their own devices and own internet connection. It is important that healthcare facilities ensure their telepractice systems transmit and store confidential patient information securely. Experts agreed that maintaining confidentiality was essential, and were pleased to hear that encrypted, free apps are easily available in South Africa.

Current evidence shows that telepractice sessions are generally slightly longer than face-to-face sessions, however variations are present. There is no clear, universal stance on how clinicians should be reimbursed for adult dysphagia services provided via telepractice. The experts consulted expressed great concern that medical aids would not cover telepractice, as

many do not cover face-to-face, out-of-hospital dysphagia intervention. In addition to this, telepractice methods involving two clinicians pose a dilemma of double billing. The South African experts consulted were confident that clinicians in the private sector would not be willing to commence providing adult dysphagia intervention via telepractice, until concrete legislature exists.

The literature shows that telepractice can be utilised to address adult dysphagia intervention with regards to screening, assessment, management and referral. South African researchers need to devote energy into investigating telepractice methods which function without internet and expensive equipment, such as USSD programmes. Time needs to be invested into developing legislature about reimbursement. This will allow clinicians in the private sector to utilise their advantageous access to resources, and build a base of evidence to support the use of telepractice in adult dysphagia intervention, in South Africa. It is on this foundation that clinicians in the public sector will be able to motivate for the equipment and internet access required to ultimately provide dysphagia-related telepractice services to those who need it most.

References

American Occupational Therapy Association. (2017). Advisory Opinion for the Ethics Commission: Telehealth. Retrieved from https://www.aota.org/~/media/Corporate/Files/Practice/Ethics/Advisory/telehealth-advisory.pdf

American Occupational Therapy Association. (2018). Specialty Certification in Feeding, Eating and Swallowing. Retrieved from https://www.aota.org/Education-Careers/Advance-Career/Board-Specialty-Certifications/Feeding.aspx

American Speech-Language-Hearing Association. (2016). *Scope of practice in speech-language pathology* [Scope of Practice]. Available from www.asha.org/policy/.

American Speech-language-hearing Association. (2018). Telepractice. Retrieved from https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589934956&section=Overview

Apple Inc. (2018). Privacy. Retrieved from https://www.apple.com/lae/privacy/approach-to-privacy/

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International journal of social research methodology*, *8*(1), 19-32.

Australian Department of Human Services. (2018). MBS and Telehealth. Retrieved from https://www.humanservices.gov.au/organisations/health-professionals/services/medicare/mbs-and-telehealth#group-210

Bless, C., Higson-Smith, C., & Sithole, S.L. (2013). Fundamentals of Social Research Methods: An African Perspective (5th ed.). Cape Town, South Africa: Juta and Company Ltd.

Boutayeb, A. (2010). The burden of communicable and non-communicable diseases in developing countries. In V.R. Preedy & R.R. Watson (eds) *Handbook of disease burdens and quality of life measures* (pp. 531-546). Springer New York.

Bray, B. D., Smith, C. J., Cloud, G. C., Enderby, P., James, M., Paley, L., ... & Rudd, A. G. (2016). The association between delays in screening for and assessing dysphagia after acute stroke, and the risk of stroke-associated pneumonia. Journal of Neurology, Neurosurgery and Psychiatry, DOI: 10.1136/jnnp-2016-313356

Burns, C. L., Keir, B., Ward, E. C., Hill, A. J., Farrell, A., Phillips, N., & Porter, L. (2015). A dynamic image quality evaluation of videofluoroscopy images: considerations for telepractice applications. *Dysphagia, 30*(4), 473-481.

Burns, C. L., Ward, E. C., Hill, A. J., Kularatna, S., Byrnes, J., & Kenny, L. M. (2017). Randomized controlled trial of a multisite speech pathology telepractice service providing swallowing and communication intervention to patients with head and neck cancer: Evaluation of service outcomes. *Head & neck, 39*(5), 932-939. DOI 10.1002/hed.24706

Burns, C. L., Ward, E. C., Hill, A. J., Phillips, N., & Porter, L. (2016). Conducting real-time videofluoroscopic swallow study via telepractice: a preliminary feasibility and reliability study. *Dysphagia, 31*(3), 473-483. DOI 10.1007/s00455-016-9701-2

Canadian Institutes of Health Research. (2016). Knowledge Translation. Retrieved from http://www.cihr-irsc.gc.ca/e/29418.html#2

Carey, B., & Onslow, M. (2012). The promise of web-based stuttering treatment. *The ASHA Leader*, *17*(12), 18-19.

Cassel, S. G. (2016). Case Reports: Trial Dysphagia Interventions conducted via Telehealth. *International Journal of Telerehabilitation, 8*(2), 71-76.

Chenze, E. (2017). Telegram gets one step closer to video calling with video messages. Retrieved from https://androidkenya.com/2017/05/telegram-version-4/

Chutel, L. (2018). Connecting to the internet costs more in Cape Town and Johannesburg than in New York and Zurich. Retrieved from https://qz.com/africa/1304520/data-costs-south-africans-in-cape-town-and-johannesburg-pay-more-for-internet-usage-than-new-yorkers/

Colquhoun, H. L., Levac, D., O'Brien, K. K., Straus, S., Tricco, A. C., Perrier, L., ... & Moher, D. (2014). Scoping reviews: time for clarity in definition, methods, and reporting. *Journal of clinical epidemiology*, *67*(12), 1291-1294.

Daudt, H. M., van Mossel, C., & Scott, S. J. (2013). Enhancing the scoping study methodology: a large, inter-professional team's experience with Arksey and O'Malley's framework. *BMC medical research methodology*, *13*(1), 48.

Deahl, D. (2018). Skype now offers end-to-end encrypted conversations. Retrieved from https://www.theverge.com/2018/8/20/17725226/skype-private-conversation-end-to-end-encrypted-opt-in

Farneti, D., Fattori, B., & Bastiani, L. (2017). The endoscopic evaluation of the oral phase of swallowing (Oral-FEES, O-FEES): a pilot study of the clinical use of a new procedure. *Acta Otorhinolaryngologica Italica*, *37*(3), 201.

Franco, A., Malhotra, N., & Simonovits, G. (2014). Publication bias in the social sciences: Unlocking the file drawer. *Science*, *345*(6203), 1502-1505.

Fu, S., Theodoros, D. G., & Ward, E. C. (2015). Delivery of intensive voice therapy for vocal fold nodules via telepractice: A pilot feasibility and efficacy study. *Journal of Voice*, *29*(6), 696-706.

Gelberg, L., Andersen, R. M., & Leake, B. D. (2000). The Behavioral Model for Vulnerable Populations: application to medical care use and outcomes for homeless people. *Health services research*, *34*(6), 1273.

Georges, J., Belz, N., & Potter, K. (2006). Telepractice program for dysphagia: Urban and rural perspectives from Kansas: Third in an occasional series of articles highlighting telepractice programs or services provided by speech-language pathologists. (Trends in Telepractice). *ASHA Leader, 11*(15), 12.

Grogan-Johnson, S., Alvares, R., Rowan, L., & Creaghead, N. (2010). A pilot study comparing the effectiveness of speech language therapy provided by telemedicine with conventional on-site therapy. *Journal of Telemedicine and Telecare*, *16*(3), 134-139.

Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, *26*(2), 91-108.

Groher, M. E., & Crary, M. A. (2016). Dysphagia: Clinical Management in Adults and Children (2nd Ed.). USA: Elsevier.

Haddaway, N. R., Collins, A. M., Coughlin, D., & Kirk, S. (2015). The role of Google Scholar in evidence reviews and its applicability to grey literature searching. *PloS one*, *10*(9), e0138237.

Hill, A. J., & Breslin, H. M. (2018). Asynchronous telepractice in aphasia rehabilitation: outcomes from a pilot study. *Aphasiology*, 1-3.

Joanna Briggs Institute. Joanna Briggs Institute Reviewers' Manual: 2015 Edition, methodology for JBI scoping reviews. 2015.

Kabia, E., Mbau, R., Muraya, K. W., Morgan, R., Molyneux, S., & Barasa, E. (2018). How do gender and disability influence the ability of the poor to benefit from pro-poor health financing policies in Kenya? An intersectional analysis. *International journal for equity in health*, *17*(1), 149.

Kantarcigil, C., & Malandraki, G. A. (2017). First step in telehealth assessment: A randomized controlled trial to investigate the effectiveness of an electronic Case history form for dysphagia. *Dysphagia, 32*(4), 548-558.

Kathard, H., & Pillay, M. (2013). Promoting change through political consciousness: A South African speech-language pathology response to the World Report on Disability. *International journal of speech-language pathology*, *15*(1), 84-89.

Klynveld Peat Marwick Goerdeler. (2018). Global Technology Innovation Report. USA: Tim Zanni.

La Touche, R., Paris-Alemany, A., Gil-Martínez, A., Pardo-Montero, J., Angulo-Díaz-Parreño, S., & Fernández-Carnero, J. (2015). Masticatory sensory-motor changes after an experimental chewing test influenced by pain catastrophizing and neck-pain-related disability in patients with headache attributed to temporomandibular disorders. *The journal of headache and pain*, *16*(1), 20.

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: advancing the methodology. *Implementation science*, *5*(1), 69.

Lieberman, E. S. (2002). How South African citizens evaluate their economic obligations to the state. *Journal of Development Studies*, *38*(3), 37-62.

Lowman, J. J., & Kleinert, H. L. (2017). Adoption of Telepractice for Speech-Language Services: A Statewide Perspective. *Rural Special Education Quarterly, 36*(2), 92-100.

Malandraki, G. A., Markaki, V., Georgopoulos, V. C., Bauer, J. L., Kalogeropoulos, I., & Nanas, S. (2013). An international pilot study of asynchronous teleconsultation for oropharyngeal dysphagia. *Journal of Telemedicine and Telecare, 19*(2), 75-79.

Malandraki, G. A., McCullough, G., He, X., McWeeny, E., & Perlman, A. L. (2011). Teledynamic evaluation of oropharyngeal swallowing. *Journal of Speech, Language, and Hearing Research*, *54*(6), 1497-1505.

Malandraki, G., McCullough, G., & Perlman, A. (2012). Dysphagia assessment at a distance. *ASHA Leader, 17*(5), 26-28.

Malandraki, G. A., Roth, M., & Sheppard, J. J. (2014). Telepractice for pediatric dysphagia: A case study. *International journal of telerehabilitation*, *6*(1), 3.

Mashima, P. A., & Doarn, C. R. (2008). Overview of telehealth activities in speech-language pathology. *Telemedicine and e-Health*, *14*(10), 1101-1117.

Mayadevi, M., Thankappan, K., Limbachiya, S. V., Vidhyadharan, S., Villegas, B., Ouyoung, M., ... & Iyer, S. (2018). Interdisciplinary Telemedicine in the Management of Dysphagia in Head and Neck. *Dysphagia,* 1-7.

Moulin, T., Joubert, J., Chopard, J. L., Joubert, L. B., & de Bustos, E. M. (2011). Telemedicine in stroke: potentials, limitations and ongoing issues. In *Advances in Telemedicine:*

Applications in Various Medical Disciplines and Geographical Regions. InTech.

Munthali, A. C., Swartz, L., Mannan, H., MacLachlan, M., Chilimampunga, C., & Makupe, C. (2017). "This one will delay us": barriers to accessing health care services among persons with disabilities in Malawi. *Disability and rehabilitation*, 1-8.

National Treasury. (2018). *Budget Review 2018*. National Treasury, Pretoria: Dondo Mogajane.

Naudé, A. & Bornman, J. (2018). Help! I Can't Find a Measuring Instrument for My Research: Designing Measuring Instruments from Scratch. *Science in a Competitive and Globalizing World,* New York: Nova Science Publishers.

Ostrofsky, C., & Seedat, J. (2016). The South African dysphagia screening tool (SADS): A screening tool for a developing context. *South African Journal of Communication Disorders, 63*(1), 1-9. http://dx.doi.org/10.4102/ sajcd.v63i1.117

Pappas, C., & Williams, I. (2011). Grey literature: its emerging importance. *Journal of Hospital Librarianship*, *11*(3), 228-234.

Perlman, A. L., & Witthawaskul, W. (2002). Perlman, A., & Witthawaskul, W. (2002). Real-Time Remote Telefluoroscopic Assessment of Patients with Dysphagia. Dysphagia, 17(2), 162-167.

Pretorius, C., & Steadman, J. (2018). Barriers and Facilitators to Caring for a Child with Cerebral Palsy in Rural Communities of the Western Cape, South Africa. *Child Care in Practice*, *24*(4), 413-430.

Rofes, L., Vilardell, N., & Clavé, P. (2013). Post-stroke dysphagia: progress at last. *Neurogastroenterology & Motility*, *25*(4), 278-282.

Schriver, B., Meagley, K., Norris, S., Geary, R., & Stein, A. D. (2014). Young people's perceptions of youth-oriented health services in urban Soweto, South Africa: a qualitative investigation. *BMC health services research*, *14*(1), 625.

Sharma, S., Ward, E. C., Burns, C., Theodoros, D., & Russell, T. (2011). Assessing swallowing disorders online: a pilot telerehabilitation study. *Telemedicine and e-Health, 17*(9), 688-695.

Shea, B. J., Reeves, B. C., Wells, G., Thuku, M., Hamel, C., Moran, J., ... & Henry, D. A. (2017). AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. *bmj*, *358*, j4008.

Simo-Kengne, B. D. (2018). Population aging, unemployment and house prices in South Africa. *Journal of Housing and the Built Environment*, 1-22.

Skype Support. (2018). Does Skype use encryption? Retrieved from https://support.skype.com/en/faq/FA31/does-skype-use-encryption

Statistics South Africa. (2016a). *Community Survey 2016 In Brief.* Statistics South Africa, Pretoria: Lehohla, P.

Statistics South Africa. (2017). *Poverty Trends in South Africa: An examination of absolute poverty between 2006 and 2015.* Statistics South Africa, Pretoria: Lehohla, P.

Statistics South Africa. (2016b). *Provincial Profile: Western Cape.* Statistics South Africa, Pretoria: Maluleke, R.

Stevenson, M. D. (2014). Stuttering Therapy Via Telepractice in Kenya: An Overview. *WWU Honors Program Senior Projects. 18.*

The New York Times. (2016). Explaining Greece's Debt Crisis. Retrieved from https://www.nytimes.com/interactive/2016/business/international/greece-debt-crisis-euro.html

Thrift, A. G., Cadilhac, D. A., Thayabaranathan, T., Howard, G., Howard, V. J., Rothwell, P. M., & Donnan, G. A. (2014). Global stroke statistics. *International Journal of Stroke*, *9*(1), 6-18.

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., ... & Hempel, S. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Annals of internal medicine*.

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K., Colquhoun, H., Kastner, M., ... & Kenny, M. (2016). A scoping review on the conduct and reporting of scoping reviews. *BMC medical research methodology*, *16*(1), 15.

United Nations. (2014). *World Economic Situation and Prospects.* New York: United Nations.

Wall, Cartmill, Ward, Hill, Isenring, Byrnes, . . . Porceddu. (2016). "ScreenIT": Computerized screening of swallowing, nutrition and distress in head and neck cancer patients during (chemo)radiotherapy. Oral Oncology, 54, 47-53. http://dx.doi.org/10.1016/j.oraloncology.2016.01.004

Wall, L. R., Ward, E. C., Cartmill, B., Hill, A. J., & Porceddu, S. V. (2015). Examining user perceptions of SwallowIT: a pilot study of a new telepractice application for delivering intensive swallowing therapy to head and neck cancer patients. Journal of telemedicine and telecare, 1-7. DOI: 10.1177/1357633X15617887

Ward, E. C., & Burns, C. L. (2014). Dysphagia management via telerehabilitation: A review of the current evidence. *Journal of Gastroenterology and Hepatology Research, 3*(5).

Ward, E. C., Burns, C. L., Theodoros, D. G., & Russell, T. G. (2013). Evaluation of a clinical service model for dysphagia assessment via telerehabilitation. *International journal of telemedicine and applications*, 2013 (10), 1-7.

Ward, E. C., Burns, C. L., Theodoros, D. G., & Russell, T. G. (2014). Impact of dysphagia severity on clinical decision making via telerehabilitation. *Telemedicine and e-Health, 20*(4), 296-303. DOI: 10.1089/tmj.2013.0198

Ward, E. C., Sharma, S., Burns, C., Theodoros, D., & Russell, T. (2012b). Managing patient factors in the assessment of swallowing via telerehabilitation. *International journal of telemedicine and applications, 2012*(7), 1-6. doi:10.1155/2012/132719

Ward, E. C., Sharma, S., Burns, C., Theodoros, D., & Russell, T. (2012a). Validity of conducting clinical dysphagia assessments for patients with normal to mild cognitive impairment via telerehabilitation. *Dysphagia, 27*(4), 460-472. DOI 10.1007/s00455-011-9390-9

Ward, E. C., Wall, L. R., Burns, C. L., Cartmill, B., & Hill, A. J. (2017). Application of telepractice for head and neck cancer management: a review of speech language pathology service models. *Current opinion in otolaryngology & head and neck surgery, 25*(3), 169-174.

Ward, E., Crombie, J., Trickey, M., Hill, A., Theodoros, D., & Russell, T. (2009). Assessment of communication and swallowing post-laryngectomy: a telerehabilitation trial. *Journal of Telemedicine and Telecare, 15*(5), 232-237. DOI: 10.1258/jtt.2009.081204

Ward, L., White, J., Russell, T., Theodoros, D., Kuhl, M., Nelson, K., & Peters, I. (2007). Assessment of communication and swallowing function post laryngectomy: A telerehabilitation trial. *Journal of Telemedicine and Telecare, 13*(3_suppl), 88-91.

Watzlaf, V. J. M., Moeini, S., & Firouzan, P. (2010). VOIP for Telerehabilitation: A Risk Analysis for Privacy, Security, and HIPAA Compliance. *International Journal of Telerehabilitation*, *2*(2), 3–14. http://doi.org/10.5195/ijt.2010.6056

WhatsApp Inc. (2018). WhatsApp Security. Retrieved from https://www.whatsapp.com/security/

Zarin, W., Veroniki, A. A., Nincic, V., Vafaei, A., Reynen, E., Motiwala, S. S., ... & Ewusie, J. (2017). Characteristics and knowledge synthesis approach for 456 network meta-analyses: a scoping review. *BMC medicine*, *15*(1), 3.

APPENDIX A: LITERATURE SEARCH PROTOCOL

1. Open your internet browser
2. Go to Stellenbosch University's library website, by entering "library.sun.ac.za" or clicking this link.
3. Move your mouse to the top left corner and hover over the word FIND. A drop-down menu will appear. Click on, "E-databases," from the drop-down menu
4. A page with databases arranged according to letter will load. If the "A" section is not open, click the triangle to the left of the letter, "A"
5. Click on "Academic Search Premier – EBSCOhost."
6. At this point you may be prompted to login with your Stellenbosch username and password.
7. After successfully logging in the EBSCOhost advanced search page will load, with three search bars in the top left area of the screen.
8. Click, "Choose Databases," just above the search bars.
9. Select the following 17 databases and click OK

    9.1. Academic Search Premier

    9.2. Africa-wide information

    9.3. AHFS Consumer medication information

    9.4. Audiobook collection (EBSCOhost)

    9.5. CINAHL

    9.6. eBook collection (EBSCOhost)

    9.7. EconLit

    9.8. E-journals

    9.9. ERIC

    9.10.   Health source – Consumer edition

    9.11.   Health source – nursing/academic edition

    9.12.   Index to legal periodicals and books (H.W. Wilson)

    9.13.   Library, information science and technology abstracts

    9.14.   MasterFILE premier

    9.15.   MEDLINE

    9.16.   Military and government collection

    9.17.   Newspaper source

10. Enter the following, exactly, into the top search bar:

(Telehealth OR Telecare OR Telemedicine OR Telepractice OR Teletherapy OR Telerehabilitation OR Telestroke OR Tele-dysphagia OR Tele-intervention OR "Telephone intervention" OR "Video conferencing")

11. Use the drop-down list on the right of the search bar to select "abstract." This will ensure the search terms are present in the abstract.

12. Ensure that the word AND appears next to the middle search bar. Enter the following, exactly, into the middle search bar:

(Dysphagia OR Swallow* OR Feeding OR Deglutition)

13. Use the drop-down list on the right of the search bar to select "abstract." This will ensure the search terms are present in the abstract.

14. Ensure that the word NOT appears next to the bottom search bar. Enter the following, exactly, into the bottom search bar:

(child* OR paediatric OR pediatric OR adolescent OR infant)

15. Use the drop-down list on the right of the search bar to select "full text." This will ensure the search terms are not present anywhere in the full text.

16. In the section below the search bars, ensure that, "Boolean/Phrase," is selected. Click, "Search."

17. On the left side of the screen you will see a section titled, "Refine Results." Under the, "Limit to," subsection select, "Full Text."

18. In the same subsection, move the slider towards the right until the start year changes from to 2000.

19. Scroll further down the, "Refine Results," section and click on, "Language." Select English.

20. Individually download the first 30 results as they appear on page 1, before moving to page 2.

21. When page 2 loads, you will note that the total number of results has decreased because "exact duplicates have been removed". Note that some results may still be duplicates.

70

22. Download the results.

23. Manually remove duplicates.

24. Open your internet browser

25. Go to Google Scholar's website, by entering "scholar.google.com" or clicking this <u>link.</u>

26. Click the menu icon (three horizontal lines) in the top left corner.

27. Click "Advanced Search"

28. In the search bar which reads, "with all of the words" enter the following exactly:

adult dysphagia tele

29. In the search bar which reads, "with at least one of the words" enter the following exactly:

Telepractice telecare telemedicine teletherapy telerehabilitation telestroke tele-dysphagia tele-intervention "telephone intervention" videoconferencing dysphagia swallowing feeding

30. In the search bar which read, "without the words" enter the following exactly:

Child paediatric pediatric adolescent infant

31. Select the "anywhere in the article" condition

32. Set the date from 2000 – 2018.

33. Click search

34. Click the menu icon in the top left corner.

35. Click "Setting" and go to the "Languages" section.

36. Search only for pages written in English.

37. Click save

38. Download all articles for which full text is available.

39. Manually remove duplicates.

40. Combine the results from the Google Scholar search with those from the University library website search.

41. Read the titles of the downloaded results to exclude clearly irrelevant content.

42. Read the abstracts of the remaining downloaded results and use Appendix C to exclude irrelevant content.

43. Read the full text of the remaining results and use Appendix E to exclude irrelevant content.

44. Individually check each article's reference list, if the reference list is available, for any English titles that sound potentially relevant and were published in or after the year 2000.

45. Find and download the selected articles using Google scholar, Google, or the Stellenbosch University website, where possible.

46. Keep a list of any articles for which full text cannot be obtained due to payment being required.

47. Read the abstracts of the articles able to be downloaded and exclude those which are not relevant, using Appendix C.

48. Read the full text of the remaining articles and exclude irrelevant literature using Appendix E.

49. Repeat steps 44-48 until the literature is exhausted.

50. The remaining articles constitute the set of selected studies.

APPENDIX B: INACCESSIBLE ARTICLE

Collins, A., Burns, C. L., Ward, E. C., Comans, T., Blake, C., Kenny, L., ... & Best, D. (2017). Home-based telehealth service for swallowing and nutrition management following head and neck cancer treatment. *Journal of Telemedicine and Telecare*, *23*(10), 866-872.

APPENDIX C: ARTICLES EXCLUDED BY TITLE

Ambrosino, N., & Vitacca, M. (2018). The patient needing prolonged mechanical ventilation: a narrative review. *Multidisciplinary respiratory medicine*, *13*(1), 6.

Ameen, D. (2015). Telegnathic Surgery for Obstructive Sleep Apnea. In *A Textbook of Advanced Oral and Maxillofacial Surgery Volume 2*. InTech.

American Physical Therapy Association. (2017, February 15-18). APTA Combined Sections Meeting 2017: (Re) Design Care and Outcomes for Success in a Value-based purchasing Environment. Retrieved from http://www.apta.org/CSM/

American Speech-Language-Hearing Association. (2002). Scope of Practice in Speech-Language Pathology. *Communication Disorders Quarterly, 23*(2), 77-83.

Asghar, I., Cang, S., & Yu, H. (2015, December). A systematic mapping study on assistive technologies for people with dementia. In *Software, Knowledge, Information Management and Applications (SKIMA), 2015 9th International Conference on* (pp. 1-8). IEEE.

Betka, J., Hörmann, K., Bernal-Sprekelsen, M., & Plzák, J. (2015). Endoscopic/external approaches in otorhinolaryngology and head and neck surgery. *BioMed research international*, *2015*.

Beuhler, M. C., Wittler, M. A., Ford, M., & Dulaney, A. R. (2011). A controlled evaluation of case clinical effect coding by poison center specialists for detection of WMD scenarios. *Clinical toxicology, 49*(7), 684-690.

Bhalla, R. K., Jones, A. S., & Roland, N. J. (2008). Prevalence of pharyngeal and laryngeal complications in adult asthmatics using inhaled corticosteroids. *The Journal of Laryngology & Otology*, *122*(10), 1078-1083.

Bickford, J. (2010). Voice… and the Digital Age. *VOICEPRINT, 39*(1), 7-10.

Brar, A., Mattoo, K. A., Singh, Y., Singh, M., Khurana P. R. S., & Singh, M. (2014), Clinical Reliability of Different Facial Measurements in Determining Vertical Dimension of Occlusion in Dentulous and Edentulous Subjects. *International Journal of Prosthodontics and Restorative Dentistry, 4*(3), 68-77.

Butler, S., Kellett, J., Bacon, R., & Byron, A. (2017). Survey of disability-related content in Australian dietetics programs. *Nutrition & Dietetics*.

Cammaroto, G., Montevecchi, F., D'Agostino, G., Zeccardo, E., Bellini, C., Galletti, B., ... & Vicini, C. (2017). Tongue reduction for OSAHS: TORSs vs coblations, technologies vs techniques, apples vs oranges. *European Archives of Oto-Rhino-Laryngology*, *274*(2),

637-645.

Caruso, A. A., Del Prete, S., & Ferrara, L. Relationship Between Allergic Rhinitis Pathology and Gastro-Esophageal Reflux: A Simple Outpatient Method For Adults. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) e-ISSN*, 2279-0853.

Ciccone, M. M., Dentamaro, I., Masi, F., Carbonara, S., & Ricci, G. (2016). Advances in the diagnosis of acute aortic syndromes: Role of imaging techniques. *Vascular Medicine*, *21*(3), 239-250.

Cook, P. F., Emiliozzi, S., & McCabe, M. M. (2007). Telephone counselling to improve osteoporosis treatment adherence: an effectiveness study in community practice settings. *American Journal of Medical Quality*, *22*(6), 445-456.

Davison, C., Speed, E., & Gunell, C. (2013). Understanding patient and professional conceptions of "trust". Lessons from the PEBL project, an experiment in anonymous micro-blogging for the continuous assessment of patient experience. *International Journal of Integrated Care*, (7).

Day, P., & Rasmussen, P. (2004). What is the evidence for the effectiveness of specialist geriatric services in acute, post-acute and sub-acute settings? *New Zealand Health Technology Assessment*, *7*(3), 1-149.

Delaney, B. C., Qume, M., Moayyedi, P., Logan, R. F., Ford, A. C., Elliott, C., ... & Hobbs, F. R. (2008). Helicobacter pylori test and treat versus proton pump inhibitor in initial management of dyspepsia in primary care: multicentre randomised controlled trial (MRC-CUBE trial). *Bmj*, *336*(7645), 651-654.

Editorial Office. (2005). Abstracts from the First Latin-American Symposium of IFSO, Held in Iguassu Falls, Brazil, March 8-12, 2005. *Obesity Surgery*, *15*, 723-751.

Elumala, G., & Mdletshe, M. B. (2016). "Arteria Lusoria"-Aberrant Right Subclavian Artery Embryological Basis and its Clinical Significance.

Feltl, D., Vítek, P., & Zámečník, J. (2006). Hodgkin's lymphoma in the elderly: The results of 10 years of follow-up. *Leukemia & lymphoma*, *47*(8), 1518-1522.

Fioravanti, M., Nakashima, T., Xu, J., & Garg, A. (2014). A systematic review and meta-analysis assessing adverse event profile and tolerability of nicergoline. *BMJ open*, *4*(7), e005090.

Gatto, A. R., Cola, P. C., Silva, R. G. D., Spadotto, A. A., Ribeiro, P. W., Schelp, A. O., ... & Henry, M. A. C. D. A. (2013). Sour taste and cold temperature in the oral phase of swallowing in patients after stroke. In *CoDAS* (Vol. 25, No. 2, pp. 163-167). Sociedade

Brasileira de Fonoaudiologia.

Geggie, C. (2003). Voice control of environmental control systems. *ACNR*, *3*(4).

Glurich, I., Acharya, A., Brilliant, M. H., & Shukla, S. K. (2015). Progress in oral personalized medicine: contribution of 'omics'. *Journal of oral microbiology*, *7*(1), 28223.

Gonçalves, T. D. S., & Crenitte, P. A. P. (2011). Development of a CD-ROM on written language for the continuing education of elementary school teachers. *Journal of Applied Oral Science*, *19*(6), 560-566.

Guthrie, S., Lancaster, J., & Stansfield, J. (2017). Consensus-building on developing dysphagia competence: a North West of England perspective. *International journal of language & communication disorders*, *52*(6), 854-869.

Hogden, A., Foley, G., Henderson, R. D., James, N., & Aoun, S. M. (2017). Amyotrophic lateral sclerosis: improving care with a multidisciplinary approach. *Journal of multidisciplinary healthcare*, *10*, 205.

Huitink, J. M., & Teoh, W. H. (2013). Current cancer therapies–A guide for perioperative physicians. *Best Practice & Research Clinical Anaesthesiology*, *27*(4), 481-492.

Jagannathan, N., Sohn, L. E., Sawardekar, A., Chang, E., Langen, K. E., & Anderson, K. (2012). A randomised trial comparing the laryngeal mask airway Supreme™ with the laryngeal mask airway Unique™ in children. *Anaesthesia*, *67*(2), 139-144.

Jha, A. K., & Gurung, D. (2014). Teledermatology in Nepal: A model providing sustainable healthcare and educational services helping overall community development. *Community Dermatology Journal, 10*(1), 3-5.

Jiménez Fandiño, L. H., Mantilla Tarazona, N., & Ospina Díaz, J. A. (2011). Reflux laryngitis: an Otolaryngologist's perspective. *Revista Colombiana de Gastroenterologia*, *26*(3), 198-206.

Josephs, K. A., Boeve, B. F., Duffy, J. R., Smith, G. E., Knopman, D. S., Parisi, J. E., ... & Dickson, D. W. (2005). Atypical progressive supranuclear palsy underlying progressive apraxia of speech and nonfluent aphasia. *Neurocase*, *11*(4), 283-296.

Kayser-Jones, J. (2002). Malnutrition, dehydration, and starvation in the midst of plenty: the political impact of qualitative inquiry. *Qualitative Health Research*, *12*(10), 1391-1405.

Keyword index

Koran, L. M., Abujaoude, E., Large, M. D., & Serpe, R. T. (2008). The prevalence of body dysmorphic disorder in the United States adult population. *CNS spectrums*, *13*(4), 316-

322.

Lefaucheur, J. P., Antal, A., Ayache, S. S., Benninger, D. H., Brunelin, J., Cogiamanian, F., ... & Marangolo, P. (2017). Evidence-based guidelines on the therapeutic use of transcranial direct current stimulation (tDCS). *Clinical Neurophysiology*, *128*(1), 56-92.

Ludlow, D., Thibodeaux, J., & Nathan, C. A. (2010). Pyogenic granuloma of the esophagus: a cause of dysphagia. *Otolaryngology–Head and Neck Surgery*, *143*(2_suppl), P171-P171.

Manalo, M. O. U., & Fernando, G. Y. Primary Mediastinal Liposarcoma of the Superior, Middle, and Anterior Mediastinum. *Acta Medica Phillipina, 49*(2), 81-83.

McAllister, L. (2005). Issues and innovations in clinical education. *Advances in Speech Language Pathology*, *7*(3), 138-148.

McCall, F., Marková, I., Murphy, J., Moodie, E., & Collins, S. (1997). Perspectives on AAC systems by the users and by their communication partners. *European journal of disorders of communication*, *32*(sup1), 235-256.

Migliore, M., Alongi, G., Rampello, L., & Astuto, M. (2013). Video assisted trans-cervical thymectomy. *A minimally invasive approach to treat non-thymomatous myasthenia gravis*, 667-670.

Misra, D. P., Misra, M., Patro, P. S., Lawrence, A., Agarwal, V., & Aggarwal, A. (2012). Disease Activity and Damage in Takayasu Arteritis (TA) using ITAS, ITAS-ESR, ITAS-CRP and TADS. *Indian Journal of Rheumatology, 7*(supplement), S7-S56.

Miyazaki, M. (2007). Promoting global health through a telehealth initiative. *Occupational Therapy Now*, *9*(3), 24.

Mody, D. R. (2008). *The ASC Bulletin, XLV* (1), 1-29.

Moore, Marat. (2004). LC tackles full agenda at spring meeting. (Legislative Council)(American Speech-Language-Hearing Association). *ASHA Leader, 9*(8), 16, 18.

McEvoy, S. D., Lee, A., Poliakov, A., Friedman, S., Shaw, D., Browd, S. R., ... & Mac Donald, C. L. (2016). Longitudinal cerebellar diffusion tensor imaging changes in posterior fossa syndrome. *NeuroImage: Clinical*, *12*, 582-590.

Nelson, R. E., Carter, J. M., & Anand, A. G. (2014). Hypopharyngeal airway surgery for obstructive sleep apnea: morbidity in the early postoperative period. *Otolaryngology—Head and Neck Surgery*, *151*(1_suppl), P260-P261.

Nemes, R. M., Pop, C. S., Jantea, P., Dobrin, D., Calagiu, D., Tomescu, A., & Dantes, E. (2015). Pleural Empyema and Hepatic Abscess in an Immunosuppressed Patient with Hypopharyngeal Cancer. *Archives of the Balkan Medical Union*, *50*(4), 588-593.

Neundorfer, M. M., Camp, C. J., Lee, M. M., Skrajner, M. J., Malone, M. L., & Carr, J. R. (2004). Compensating for cognitive deficits in persons aged 50 and over with HIV/AIDS: A pilot study of a cognitive intervention. *Journal of HIV/AIDS & Social Services*, *3*(1), 79-97.

Nielen, A. L., Janss, L. L., & Knol, B. W. (2001). Heritability estimations for diseases, coat color, body weight, and height in a birth cohort of Boxers. *American journal of veterinary research*, *62*(8), 1198-1206.

Ohta, H., Izumi, S., & Yoshimoto, M. (2015, August). A more acceptable endoluminal implantation for remotely monitoring ingestible sensors anchored to the stomach wall. In *Engineering in Medicine and Biology Society (EMBC), 2015 37th Annual International Conference of the IEEE* (pp. 4089-4092). IEEE.

Okajima, K., Otsuka, K., Oinuma, S., Sasaki, J., Yamanaka, T., & Cornelissen, G. (2014). Aging and Within-and Between-Day Variability Assessed Using 7-Day/24-Hour Ambulatory Blood Pressure Monitoring. *Journal of the American Geriatrics Society*, *62*(12), 2440-2442.

Puspitasari, I. M., Abdulah, R., Yamazaki, C., Kameo, S., Nakano, T., & Koyama, H. (2014). Updates on clinical studies of selenium supplementation in radiotherapy. *Radiation Oncology*, *9*(1), 125.

Qublan, H. S., Malkawi, H. Y., Smadi, A. Z., & Fraywan, N. (2005). Gastric volvulus caused by paraesophageal hernia complicating mid-trimester pregnancy. *Indian Journal of Chest Diseases and Allied Sciences*, *47*(4), 285.

Raithel, M., Hagel, A., Albrecht, H., Zopf, Y., Naegel, A., Baenkler, H. W., ... & Konturek, P. (2015). Excretion of urinary histamine and N-tele methylhistamine in patients with gastrointestinal food allergy compared to non-allergic controls during an unrestricted diet and a hypoallergenic diet. *BMC gastroenterology*, *15*(1), 41. DOI 10.1186/s12876-015-0268-4

Rey, E., Rodríguez-Artalejo, F., Ángel Herraiz, M., Álvarez-Sánchez, Á., Escudero, M., & Díaz-Rubio, M. (2011). Atypical symptoms of gastro-esophageal reflux during pregnancy. *Revista Espanola de Enfermedades Digestivas*, *103*(3), 129.

Salazar, P., Traub-Dargatz, J. L., Morley, P. S., Wilmot, D. D., Steffen, D. J., Cunningham, W.

E., & Salman, M. D. (2004). Outcome of equids with clinical signs of West Nile virus infection and factors associated with death. *Journal of the American Veterinary Medical Association*, *225*(2), 267-274.

Sasdelli, A. D. (2011). *Patterns of speaking valve use during feeding and barriers to patient compliance*. University of Maryland, College Park.

Shock, L. A., Gallemore, B. C., Hinkel, C. J., Szewczyk, M. M., Hopewell, B. L., Allen, M. J., ... & Lever, T. E. (2015). Improving the utility of laryngeal adductor reflex testing: a translational tale of mice and men. *Otolaryngology–Head and Neck Surgery*, *153*(1), 94-101.

Stambolis, V., Brady, S., Klos, D., Wesling, M., Fatianov, T., & Hildner, C. (2003). The effects of cervical bracing upon swallowing in young, normal, healthy volunteers. *Dysphagia*, *18*(1), 39-45.

Stanford Hospital and Clinics, & Lucile Packard Children's Hospital Stanford. (2016). Trauma Guidelines [Handout]. Stanford, USA: Stanford Medical School: Trauma Training Program.

Stegemann, S., Baeyens, J. P., Cerreta, F., Chanie, E., Löfgren, A., Maio, M., ... & Thesing-Bleck, E. (2012). Adherence measurement systems and technology for medications in older patient populations. *European Geriatric Medicine*, *3*(4), 254-260.

Teo, K., & Slark, J. (2016). A systematic review of studies investigating the care of stroke survivors in long-term care facilities. *Disability and rehabilitation*, *38*(8), 715-723.

Theodoros, D., Hill, A., Russell, T., Ward, E., & Wootton, R. (2008). Assessing acquired language disorders in adults via the Internet. *Telemedicine and e-Health*, *14*(6), 552-559.

Thevasagayam, M. S., Willson, K., Jennings, C., & Pracy, P. (2006). Bilateral medialization thyroplasty: an effective approach to severe, chronic aspiration. *The Journal of Laryngology & Otology*, *120*(8), 698-701.

Tyler, R., Gergely, S., Abdelaziz, S., & Tyler, P. R. (2015). Association of Laparoscopic Surgeons of Great Britain and Ireland (ALSGBI), Annual Scientific Meeting, Aberdeen, United Kingdom, 27–28 November 2014. *Surg Endosc*, *29*, S297-S313.

University of Wisconsin-Madison. (2012). Newsletter of the Institute on Aging. *Aging News.* 1-8.

van Zundert, A., Al-Shaikh, B., Brimacombe, J., Koster, J., Koning, D., & Mortier, E. P. (2006). Comparison of Three Disposable Extraglottic Airway Devices in

Spontaneously Breathing Adults The LMA-Unique™, the Soft Seal Laryngeal Mask, and the Cobra Perilaryngeal Airway. *Anesthesiology: The Journal of the American Society of Anesthesiologists*, *104*(6), 1165-1169.

Waibel, K. H., Haney, B., Moore, M., Whisman, B., & Gomez, R. (2011). Safety of chitosan bandages in shellfish allergic patients. *Military medicine*, *176*(10), 1153-1156.

Wall, L. R., Ward, E. C., Cartmill, B., Hill, A. J., & Porceddu, S. V. (2017). Adherence to a prophylactic swallowing therapy program during (chemo) radiotherapy: impact of service-delivery model and patient factors. *Dysphagia*, *32*(2), 279-292.

Wallace, N. (2015). Examining the perspectives of patients, clinicians and product designers on the design of a tool for measurement and rehabilitation of swallowing.

Wang, S. (2017). *Development of a robotic trans-oesophageal ultrasound system and its application in automatic acquisition* (Doctoral dissertation, King's College London).

Wilson, J. A., & Vela, M. F. (2008). New esophageal function testing (impedance, Bravo pH monitoring, and high-resolution manometry): clinical relevance. *Current gastroenterology reports*, *10*(3), 222-230.

Young, L., Healey, K., Charlton, M., Schmid, K., Zabad, R., & Wester, R. (2015). A home-based comprehensive care model in patients with Multiple Sclerosis: A study pre-protocol. *F1000Research*, *4*.

Zaunmüller, L., Domahs, F., Dressel, K., Lonnemann, J., Klein, E., Ischebeck, A., & Willmes, K. (2009). Rehabilitation of arithmetic fact retrieval via extensive practice: a combined fMRI and behavioural case-study. *Neuropsychological rehabilitation*, *19*(3), 422-443.

APPENDIX D: EXCLUSION BY ABSTRACT SHEET

Article title				
Telehealth				
Telecare				
Telepractice				
Telemedicine				
Teletherapy				
Telerehabilitation				
Telestroke				
Tele-dysphagia				
Tele-intervention				
Telephone intervention				
Video-conferencing				
Additional?				
Dysphagia				
Swallow*				
Feeding				
Deglutition				
excludes child*				
excludes paediatric				
excludes pediatric				
excludes adolescent				
excludes infant				
excludes eating disorder				
excludes breastfeed*				
Include article?				
NOTE: The first page will be read in the case of literature that does not explicitly include an abstract.				
Total number included:				
Total number excluded:				
Cells in yellow indicate terms were not present in abstract, but present as a key word				

APPENDIX E: ARTICLES EXCLUDED ABSTRACT

Batchelor-Murphy, M., Amella, E. J., Zapka, J., Mueller, M., & Beck, C. (2015). Feasibility of a web-based dementia feeding skills training program for nursing home staff. *Geriatric Nursing*, *36*(3), 212-218.

Becker, C., Frishman, W. H., & Scurlock, C. (2016). Telemedicine and tele-ICU: the evolution and differentiation of a new medical field. *The American journal of medicine*, *129*(12), e333-e334.

Cameron, J. I., O'Connell, C., Foley, N., Salter, K., Booth, R., Boyle, R., ... & Dulude, A. (2016). Canadian stroke best practice recommendations: managing transitions of care following stroke, guidelines update 2016. *International Journal of Stroke*, *11*(7), 807-822.

Cocks, H., Ah-See, K., Capel, M., & Taylor, P. (2016). Palliative and supportive care in head and neck cancer: United Kingdom National Multidisciplinary Guidelines. *The Journal of Laryngology & Otology*, *130*(S2), S198-S207.

Ditchburn, J. L., & Marshall, A. (2016). The Cumbria Rural Health Forum: initiating change and moving forward with technology. *Rural and remote health*, *16*(3738).

Ferreira, C. F. R. (2013). Smartphone Based Tele-Rehabilitation. (Unpublished Masters Thesis). University of Porto, Porto, Portugal.

Goodini, A., Torabi, M., Goodarzi, M., Safdari, R., Darayi, M., Tavassoli, M., & Shabani, M. (2015). The simulation model of teleradiology in telemedicine project. *The health care manager*, *34*(1), 69-75.

Kim, S. S., Kim, E. J., Cheon, J. Y., Chung, S. K., Moon, S., & Moon, K. H. (2012). The effectiveness of home-based individual tele-care intervention for stroke caregivers in South Korea. *International nursing review*, *59*(3), 369-375.

Kwok, T., Lo, R. S., Wong, E., Wai-Kwong, T., Mok, V., & Kai-Sing, W. (2006). Quality of life of stroke survivors: a 1-year follow-up study. *Archives of physical medicine and rehabilitation*, *87*(9), 1177-1182.

Lo, R. S., & Woo, J. (2001). Palliative care in old age. *Reviews in Clinical Gerontology*, *11*(2), 149-157.

Low, S. G., Ng, L. C. L., Tan, J. S. W., & Vasanwala, F. F. (2016). How to care for homebound patients? *Proceedings of Singapore Healthcare*, *25*(3), 181-184.

Maddocks, I., Brew, B., Waddy, H., & Williams, I. (2005). *Palliative neurology*. USA:

Cambridge University Press.

Malandraki, G. A., Rajappa, A., Kantarcigil, C., Wagner, E., Ivey, C., & Youse, K. (2016). The intensive dysphagia rehabilitation approach applied to patients with neurogenic dysphagia: a case series design study. *Archives of physical medicine and rehabilitation*, *97*(4), 567-574.

Martino, R., Flowers, H. L., Shaw, S. M., & Diamant, N. E. (2013). A systematic review of current clinical and instrumental swallowing assessment methods. *Current Physical Medicine and Rehabilitation Reports*, *1*(4), 267-279.

Mohan, H. S., Anjum, A., & Rao, P. K. (2017). A Survey of Telepractice in Speech-Language Pathology and Audiology in India. *International journal of telerehabilitation*, *9*(2), 69.

 Pim de Graaf, M. D. (2009). Primary care and care for chronic cancer patients in Europe: position paper of the European Forum for Primary Care. *Quality in primary care*, *17*, 431-43.

Saywell, N. L. (2016). *Augmented Community Telerehabilitation Intervention to Improve Outcomes for People With Stroke. ACTIV: A Randomised Controlled Trial and Qualitative Enquiry* (Doctoral dissertation, Auckland University of Technology).

Stewart, K. J. (2014). Speech and swallowing rehabilitation in the home: A comparison of two service delivery models for stroke survivors.

Varindani, R. (2013). First Person on the Last Page: East Meets West: A journey that started in India finds purpose in the United States. And it isn't over yet. *The ASHA Leader*, *18*(11), 78-78.

Various Authors. (2014). Abstracts from the Fourth American Cough Conference. *Lung, 192*(1), 1-7.

Wall, L. R., Ward, E. C., Cartmill, B., & Hill, A. J. (2013). Technology-assisted screening of patient-reported functional outcomes in the head and neck cancer population: What's the evidence? *OA Cancer*, *1*(2).

Wansink, B. (2009) Measuring Food Intake in Field Studies, in D. B. Allison & M. L. Baskin (Eds.), *Handbook of Assessment Methods for Eating Behaviors and Weight- related Problems: Measures, Theories* (2nd ed., 327-345). Los Angeles, CA: Sage Publishing.

Ward, L. Managing Dysphagia via Telepractice: What's the evidence? SPA Webinar [PowerPoint slides] retrieved from https://www.cpdlive.com/speechpath/seminarNotes/HANDOUT_LizWard_July2014_PRE.pdf

Zielske, J., Bohne, S., Brunkhorst, F. M., Axer, H., & Guntinas-Lichius, O. (2014). Acute and long-term dysphagia in critically ill patients with severe sepsis: results of a prospective controlled observational study. *European Archives of Oto-Rhino-Laryngology*, *271*(11), 3085-3093.

APPENDIX F: EXCLUSION BY FULL TEXT SHEET

Search Key words for terms in the green and blue blocks. If no key words are explicitly indicated, the title should be searched for these terms.
Mark the area(s) in the yellow block that the article focuses on.
Proceed to red blocks and only include articles that answer YES to ALL 3 red blocks.

Article title			
Telehealth			
Telecare			
Telepractice			
Telemedicine			
Teletherapy			
Telerehabilitation			
Telestroke			
Tele-dysphagia			
Tele-intervention			
Telephone intervention			
Video-conferencing			
Dysphagia			
Swallow*			
Feeding			
Deglutition (disorders)			
Prevention			
Health promotion			
Screening			
Assessment			
Management (compensatory)			
Management (rehabilitative)			
Management (preventative)			
Counselling			
Referral			
Reimbursement			
Green/blue term present as key word?			
Significant focus given to 1 or more yellow terms?			
Telepractice procedure specific to Dysphagia, described in a replicable manner?			
Include article?			

APPENDIX G: EXCLUDED BY FULL TEXT

Bishop, L., & Bushnell, C. (2017). Post Hospital Discharge Care for Complex Chronic Conditions: the Unique Challenges Facing Stroke Patients in their Homes. *Current Cardiovascular Risk Reports*, *11*(12), 36.

Bloem, B. R., de Vries, N. M., & Ebersbach, G. (2015). Nonpharmacological treatments for patients with Parkinson's disease. *Movement Disorders*, *30*(11), 1504-1520.

Casiddu, N., & Porfirione, C. (2017). Design for Dysphagia: a new hardware-and-software mobile system to monitor patients' swallowing. *The Design Journal*, *20*(sup1), S2078-S2089.

Dunlop, S. R., Kent, V. P., Lashley, M., & Caruana, T. (2016). The Cure PSP Care Guide: a telephonic nursing intervention for individuals and families living with progressive supranuclear palsy. *Journal of Neuroscience Nursing*, *48*(2), 105-106.

Esteves, G. P., Junior, E. P. S., Nunes, L. G., Greco, C. S., & Melo, P. L. (2010, August). Configurable portable/ambulatory instrument for the analysis of the coordination between respiration and swallowing. In *Engineering in Medicine and Biology Society (EMBC), 2010 Annual International Conference of the IEEE* (pp. 90-93). IEEE.

Jin, W., Chen, J., Shi, F., Yang, W., Zhang, Y., Liu, Y., ... & Min, X. (2015). Home-based tele-supervising rehabilitation for brain infarction patients (HTRBIP): study protocol for a randomized controlled trial. *Trials*, *16*(1), 61.

Marshall, S., Agarwal, E., Young, A., & Isenring, E. (2017). Role of domiciliary and family carers in individualised nutrition support for older adults living in the community. *Maturitas*, *98*, 20-29.

Mashima, P. A., & Brown, J. E. (2011). Remote management of voice and swallowing disorders. *Otolaryngologic Clinics of North America*, *44*(6), 1305-1316.

Regina Molini-Avejonas, D., Rondon-Melo, S., de La Higuera Amato, C. A., & Samelli, A. G. (2015). A systematic review of the use of telehealth in speech, language and hearing sciences. *Journal of telemedicine and telecare*, *21*(7), 367-376.

Sharma, S., Ward, E. C., Burns, C., Theodoros, D., & Russell, T. (2012). Training the allied health assistant for the telerehabilitation assessment of dysphagia.

Smith, C. (2008). Technology and web-based support. *Journal of Social Work Education*, *44*(sup3), 75-82.

Yadollahi, A., & Moussavi, Z. (2008). Respiratory sounds compression. *IEEE Transactions on*

Biomedical Engineering, 55(4), 1336-1343.

APPENDIX H: ARTICLES IDENTIFIED FROM REFERENCE LISTS

Burns, C. L., Ward, E. C., Hill, A. J., Malcolme, K., Bassett, L., Kenny, L. M., & Greenup, P. (2012). A pilot trial of a speech pathology telehealth service for head and neck cancer patients. *Journal of Telemedicine and Telecare*, *18*(8), 443-446.

Burns, C. L., Ward, E. C., Hill, A. J., Phillips, N., & Porter, L. (2016). Conducting real-time videofluoroscopic swallow study via telepractice: a preliminary feasibility and reliability study. *Dysphagia*, *31*(3), 473-483.

Burns, C., & Hill, A. (2014). Telepractice in Speech Pathology Position Statement. Melbourne, Australia: The Speech Pathology Association of Australia Limited.

Cnossen, I. C., de Bree, R., Rinkel, R. N., Eerenstein, S. E., Rietveld, D. H., Doornaert, P., ... & Verdonck-de Leeuw, I. M. (2012). Computerized monitoring of patient-reported speech and swallowing problems in head and neck cancer patients in clinical practice. *Supportive Care in Cancer*, *20*(11), 2925-2931.

Cnossen, I. C., van Uden-Kraan, C. F., Rinkel, R. N., Aalders, I. J., de Goede, C. J., de Bree, R., ... & Leemans, C. R. (2014). Multimodal guided self-help exercise program to prevent speech, swallowing, and shoulder problems among head and neck cancer patients: a feasibility study. *Journal of medical Internet research*, *16*(3).

Coyle, J. (2012). Tele-dysphagia management: An opportunity for prevention, cost-savings and advanced training. *International Journal of Telerehabilitation*, *4*(1), 37.

Stronge, A. J., Rogers, W. A., & Fisk, A. D. (2007). Human factors considerations in implementing telemedicine systems to accommodate older adults. *Journal of telemedicine and telecare*, *13*(1), 1-3.

Towey, M. (2009). Maine Advocacy Wins Telepractice Coverage. *ASHA Leader, 14*(11), 9.

Wall, Cartmill, Ward, Hill, Isenring, Byrnes, . . . Porceddu. (2016). "ScreenIT": Computerized screening of swallowing, nutrition and distress in head and neck cancer patients during (chemo)radiotherapy. Oral Oncology, 54(C), 47-53.

Ward, E., Crombie, J., Trickey, M., Hill, A., Theodoros, D., & Russell, T. (2009). Assessment of communication and swallowing post-laryngectomy: a telerehabilitation trial. *Journal of Telemedicine and Telecare*, *15*(5), 232-237.

Ward, L., White, J., Russell, T., Theodoros, D., Kuhl, M., Nelson, K., & Peters, I. (2007). Assessment of communication and swallowing function post laryngectomy: A telerehabilitation trial. Journal of Telemedicine and Telecare, 13(3_suppl), 88-91.

Watanabe, S. M., Fairchild, A., Pituskin, E., Borgersen, P., Hanson, J., & Fassbender, K. (2013). Improving access to specialist multidisciplinary palliative care consultation for rural cancer patients by videoconferencing: report of a pilot project. *Supportive Care in Cancer*, *21*(4), 1201-1207.

APPENDIX I: REFERENCE LIST ARTICLES EXCLUDED BY ABSTRACT

Burns, C. L., Ward, E. C., Hill, A. J., Malcolme, K., Bassett, L., Kenny, L. M., & Greenup, P. (2012). A pilot trial of a speech pathology telehealth service for head and neck cancer patients. *Journal of Telemedicine and Telecare*, *18*(8), 443-446.

Burns, C., & Hill, A. (2014). Telepractice in Speech Pathology Position Statement. Melbourne, Australia: The Speech Pathology Association of Australia Limited.

Cnossen, I. C., van Uden-Kraan, C. F., Rinkel, R. N., Aalders, I. J., de Goede, C. J., de Bree, R., ... & Leemans, C. R. (2014). Multimodal guided self-help exercise program to prevent speech, swallowing, and shoulder problems among head and neck cancer patients: a feasibility study. *Journal of medical Internet research*, *16*(3).

Stronge, A. J., Rogers, W. A., & Fisk, A. D. (2007). Human factors considerations in implementing telemedicine systems to accommodate older adults. *Journal of telemedicine and telecare*, *13*(1), 1-3.

Towey, M. (2009). Maine Advocacy Wins Telepractice Coverage. *ASHA Leader, 14*(11), 9.

Watanabe, S. M., Fairchild, A., Pituskin, E., Borgersen, P., Hanson, J., & Fassbender, K. (2013). Improving access to specialist multidisciplinary palliative care consultation for rural cancer patients by videoconferencing: report of a pilot project. *Supportive Care in Cancer*, *21*(4), 1201-1207.

APPENDIX J: REFERENCE LIST ARTICLES EXCLUDED BY FULL TEXT

Cnossen, I. C., de Bree, R., Rinkel, R. N., Eerenstein, S. E., Rietveld, D. H., Doornaert, P., ... & Verdonck-de Leeuw, I. M. (2012). Computerized monitoring of patient-reported speech and swallowing problems in head and neck cancer patients in clinical practice. *Supportive Care in Cancer*, *20*(11), 2925-2931.

Coyle, J. (2012). Tele-dysphagia management: An opportunity for prevention, cost-savings and advanced training. *International Journal of Telerehabilitation*, *4*(1), 37.

APPENDIX K: FINAL LIST OF INCLUDED ARTICLES

Burns, C. L., Keir, B., Ward, E. C., Hill, A. J., Farrell, A., Phillips, N., & Porter, L. (2015). A dynamic image quality evaluation of videofluoroscopy images: considerations for telepractice applications. *Dysphagia, 30*(4), 473-481.

Burns, C. L., Ward, E. C., Hill, A. J., Kularatna, S., Byrnes, J., & Kenny, L. M. (2017). Randomized controlled trial of a multisite speech pathology telepractice service providing swallowing and communication intervention to patients with head and neck cancer: Evaluation of service outcomes. *Head & neck, 39*(5), 932-939. DOI 10.1002/hed.24706

Burns, C. L., Ward, E. C., Hill, A. J., Phillips, N., & Porter, L. (2016). Conducting real-time videofluoroscopic swallow study via telepractice: a preliminary feasibility and reliability study. *Dysphagia, 31*(3), 473-483. DOI 10.1007/s00455-016-9701-2

Cassel, S. G. (2016). Case Reports: Trial Dysphagia Interventions conducted via Telehealth. *International Journal of Telerehabilitation, 8*(2), 71-76.

Georges, J., Belz, N., & Potter, K. (2006). Telepractice program for dysphagia: Urban and rural perspectives from Kansas: Third in an occasional series of articles highlighting telepractice programs or services provided by speech-language pathologists. (Trends in Telepractice). *ASHA Leader, 11*(15), 12.

Kantarcigil, C., & Malandraki, G. A. (2017). First step in telehealth assessment: A randomized controlled trial to investigate the effectiveness of an electronic Case history form for dysphagia. *Dysphagia, 32*(4), 548-558.

Malandraki, G. A., Markaki, V., Georgopoulos, V. C., Bauer, J. L., Kalogeropoulos, I., & Nanas, S. (2013). An international pilot study of asynchronous teleconsultation for oropharyngeal dysphagia. *Journal of Telemedicine and Telecare, 19*(2), 75-79.

Malandraki, G. A., McCullough, G., He, X., McWeeny, E., & Perlman, A. L. (2011). Teledynamic evaluation of oropharyngeal swallowing. *Journal of Speech, Language, and Hearing Research*, *54*(6), 1497-1505.

Malandraki, G., McCullough, G., & Perlman, A. (2012). Dysphagia assessment at a distance. *ASHA Leader, 17*(5), 26-28.

Mayadevi, M., Thankappan, K., Limbachiya, S. V., Vidhyadharan, S., Villegas, B., Ouyoung, M., ... & Iyer, S. (2018). Interdisciplinary Telemedicine in the Management of Dysphagia in Head and Neck. *Dysphagia,* 1-7.

Perlman, A. L., & Witthawaskul, W. (2002). Perlman, A., & Witthawaskul, W. (2002). Real-

Time Remote Telefluoroscopic Assessment of Patients with Dysphagia. Dysphagia, 17(2), 162-167.

Sharma, S., Ward, E. C., Burns, C., Theodoros, D., & Russell, T. (2011). Assessing swallowing disorders online: a pilot telerehabilitation study. *Telemedicine and e-Health, 17*(9), 688-695.

Wall, Cartmill, Ward, Hill, Isenring, Byrnes, . . . Porceddu. (2016). "ScreenIT": Computerized screening of swallowing, nutrition and distress in head and neck cancer patients during (chemo)radiotherapy. Oral Oncology, 54, 47-53. http://dx.doi.org/10.1016/j.oraloncology.2016.01.004

Wall, L. R., Ward, E. C., Cartmill, B., Hill, A. J., & Porceddu, S. V. (2015). Examining user perceptions of SwallowIT: a pilot study of a new telepractice application for delivering intensive swallowing therapy to head and neck cancer patients. Journal of telemedicine and telecare, 1-7. DOI: 10.1177/1357633X15617887

Ward, E. C., & Burns, C. L. (2014). Dysphagia management via telerehabilitation: A review of the current evidence. *Journal of Gastroenterology and Hepatology Research, 3*(5).

Ward, E. C., Burns, C. L., Theodoros, D. G., & Russell, T. G. (2013). Evaluation of a clinical service model for dysphagia assessment via telerehabilitation. *International journal of telemedicine and applications*, 2013 (10), 1-7.

Ward, E. C., Burns, C. L., Theodoros, D. G., & Russell, T. G. (2014). Impact of dysphagia severity on clinical decision making via telerehabilitation. *Telemedicine and e-Health, 20*(4), 296-303. DOI: 10.1089/tmj.2013.0198

Ward, E. C., Sharma, S., Burns, C., Theodoros, D., & Russell, T. (2012b). Managing patient factors in the assessment of swallowing via telerehabilitation. *International journal of telemedicine and applications, 2012*(7), 1-6. doi:10.1155/2012/132719

Ward, E. C., Sharma, S., Burns, C., Theodoros, D., & Russell, T. (2012a). Validity of conducting clinical dysphagia assessments for patients with normal to mild cognitive impairment via telerehabilitation. *Dysphagia, 27*(4), 460-472. DOI 10.1007/s00455-011-9390-9

Ward, E. C., Wall, L. R., Burns, C. L., Cartmill, B., & Hill, A. J. (2017). Application of telepractice for head and neck cancer management: a review of speech language pathology service models. *Current opinion in otolaryngology & head and neck surgery, 25*(3), 169-174.

Ward, E., Crombie, J., Trickey, M., Hill, A., Theodoros, D., & Russell, T. (2009). Assessment of communication and swallowing post-laryngectomy: a telerehabilitation trial. *Journal of Telemedicine and Telecare, 15*(5), 232-237. DOI: 10.1258/jtt.2009.081204Ward, L., White, J., Russell, T., Theodoros, D., Kuhl, M., Nelson, K., & Peters, I. (2007). Assessment of communication and swallowing function post laryngectomy: A telerehabilitation trial. *Journal of Telemedicine and Telecare, 13*(3_suppl), 88-91

APPENDIX L: CHARTED DATA

Author(s), year	Location	Study Purpose	Area(s) of intervention	Method of telepractice	Key findings relating to dysphagia
Burns, Keir, Ward, Hill, Farrell, Phillips & Porter (2015)	Australia	To evaluate the extent of change in fluoroscopic image quality in real-time, during transmission through telepractice systems.	Instrumental assessment: videofluoroscopic swallow studies(VFSS)	The videofuoroscopy system connected to the local computer at a hospital. VFSS images transferred via the internet, in real-time, to a remote computer. Duration similar to face-to-face assessment. Devices provided by hospital. Synchronous, video-only model.	Telepractice systems can be configured to convey similar, if not better images than those displayed by the local computer. The most influential factor is the rate of data transmission (bandwidth). 4 and 6 Mbit/s produced the best results when using a C60 codec unit system.
Burns, Ward, Hill, Kularatna, Byrnes & Kenny (2017)	Australia	To examine service efficiency and participant satisfaction of the telepractice service model when compared to standard model of care.	Management	Synchronous model. Regional clinician at spoke site conducts therapy session of 1 hour while videoconferencing (requires internet) with specialist clinician at hub site.	The telepractice model provided greater efficiency (faster responses to referrals, fewer sessions required, more referrals to other healthcare professionals). Patients and clinicians displayed greater satisfaction with the telepractice model.
Burns, Ward, Hill, Phillips, Porter (2016)	Australia	To describe the configuration of a telepractice system designed to support remote real-time videofluoroscopic swallow study (VFSS) assessment. To evaluate the reliability of clinical decisions made via the telepractice service, compared to the traditional face-to-face VFSS model	Instrumental assessment: videofluoroscopic swallow studies(VFSS)	Synchronous model. 2 computers, one in fluoroscopy suite and the other in remote location. Patient and remote clinician used free-field echo-cancelling microphones and pan/tilt/zoom cameras. The patient had an additional lapel microphone. The remote clinician led the assessment using videoconferencing and was assisted by a feeder on the patient end. The computer in the fluoroscopy suite also transmitted images and audio data to the remote computer. A three way split screen was utilized to allow for both the patient/staff in the fluoroscopy suite, the telepractice clinician, and the fluoroscopy image to be visualized at all times.	The telepractice system described confirmed the potential to develop a VFSS telepractice clinical model which supports remote online dysphagia assessment that is comparable to standard care. Clinicians reports high levels of satisfaction with the described system.

Author(s), year	Location	Study Purpose	Area(s) of intervention	Method of telepractice	Key findings relating to dysphagia
Cassel (2016)	USA	To determine whether formal dysphagia goals could be met using online tele-dysphagia.	Management (Compensatory)	Synchronous model. Therapy was conducted in real-time using videoconferencing software (FaceTime or VSee) after two face-to-face sessions.	Tele-dysphagia seems to be a feasible manner of delivering dysphagia therapy.
Georges, Belz & Potter (2006)	USA	To provide videofluoroscopic swallow studies (VFSS) in remote areas, and to train clinicians in these areas to independently perform VFSS	Instrumental assessment: videofluoroscopic swallow studies(VFSS)	Synchronous model. A videoconferencing device (Polycom) at the rural site attached directly to the fluoroscope, allowing the clinician at the urban sight to view the VFSS in real-time. The clinician at the rural sight managed follow-up and therapy when necessary.	VFSS were successfully provided to people in a rural area. The clinician working in this area was able to expand her knowledge and develop mentor and peer relationships the clinicians at the urban site.
Kantarcigil & Malandraki (2017)	USA	To develop an electronic case History Tool/form for adults with dysphagia, and examine its effectiveness compared to a paper-based version.	Assessment: Case History	Asynchronous model. Patients completed form on provided laptop (with optional mouse) at medical facility. Form comprised of 70 questions that were dichotomous, rank order, multiple choice, or open-ended. Clinicians viewed the responses using a secure web-based electronic platform (REDCap) from a remote location.	The case history form was effective and patients expressed statistically significant positive perceptions and satisfaction in comparison with the paper-based version.
Malandraki, Markaki, Georgopoulos, Bauer, Kalogeropoulos & Nanas (2013)	Greece and USA	To investigate whether an expert's consultation provided via telemedicine could improve the quality of care for patients with dysphagia.	Instrumental assessment: videofluoroscopic swallow studies(VFSS)	Asynchronous model. VFSS was conducted in Greece and interpreted by a non-expert. Data was stored on a website. An expert in USA accessed data a day later via website and interpreted VFSS.	Asynchronous teleconsultation can improve the quality of care for patients with dysphagia, the expert was able to notice risks missed by the non-expert.
Malandraki, McCullough & Perlman (2012)	USA	To determine whether the results of a telefluoroscopic evaluation of swallowing conducted through remote transmission of images, would agree with results of a face-to-face examination.	Instrumental assessment: videofluoroscopic swallow studies(VFSS)	Synchronous model. Teledynamic Evaluation Software System (TESS). First computer (on site) captures, transmits and stores VFSS images. Second computer (remote) captures video in real-time.	Results from telefluoroscopic evaluation of swallowing agree with results of face-to-face examination.

Author(s), year	Location	Study Purpose	Area(s) of intervention	Method of telepractice	Key findings relating to dysphagia
Malandraki, McCullough, He, McWeeny & Perlman (2011)	USA	To test the feasibility and clinical utility of the Teledynamic Evaluation Software System (TESS)	Instrumental assessment: videofluoroscopic swallow studies(VFSS)	As outlined in Perlman and Witthawaskul (2002) with the addition of a web camera at the VFSS site to allow the remote clinician to view the patient's posture, level of alertness and method of ambulation. Clinician at remote site conducts VFSS via telephone.	Oropharyngeal swallowing function evaluated using TESS had an acceptable level of agreement with evaluations performed in the fluoroscopy suite using traditional videofluoroscopic methodology.
Mayadevi, Thankappan, Limbachiya, Vidhyadharan, Villegas, Ouyoung, Balasubramanian, Menon, Sinha & Iyer (2018)	India and USA	To determine the effectiveness of case discussions over videoconferencing by measuring the improvement in dietary intake of the subjects.	Management (Compensatory and rehabilitative)	Synchronous model. Once a month clinicians from the USA and India partook in a videoconference discussion of persistent dysphagia cases. The videoconference system consisted of a video monitor, high definition video camera, microphone, and speakers. 2 cases from each department were discussed monthly and a management plan was formulated.	Improved management of dysphagia was achieved through interdisciplinary telemedicine discussions, and interdepartmental collaboration was facilitated.
Perlman & Witthawaskul (2002)	USA	To develop a method by which high-quality assessment of swallowing can be performed remotely, in real-time, via the internet.	Instrumental assessment: videofluoroscopic swallow studies(VFSS)	Synchronous model. 1 computer, connected to the fluoroscope in the hospital, captures, converts, transmits and stores video signals. Second computer at remote location receives them in real-time, allowing the clinician to make clinical decisions. Clinician at remote site conducts VFSS via telephone.	The Teledynamic Evaluation Software System (TESS) developed permits evaluation of patients who live in underserved areas, who seldom receive adequate dysphagia intervention.

Author(s), year	Location	Study Purpose	Area(s) of intervention	Method of telepractice	Key findings relating to dysphagia
Sharma, Ward, Burns, Theodoros & Russell (2011)	Australia	To pilot a telerehabilitation assessment process with modifications to equipment, the assessment, and personnel required.	Assessment: Clinical swallow examination	Synchronous model. Clinical swallow examination conducted at healthcare facility by clinician at remote location using videoconferencing technology (requires internet). Assistance provided by additional healthcare worker, fixed and free-standing cameras, tape on patient's thyroid notch, free-field combined echo-cancelling microphone, web microphone, lapel microphone, and finger pulse oximeter. Additional healthcare worker was responsible for delivering boluses when necessary and providing tactile information. Duration approximately 45 minutes (slightly longer than face-to-face).	Remote dysphagia assessment, specifically clinical swallow examination, appears feasible.
Wall, Ward, Cartmill, Hill & Porceddu (2015)	Australia	To explore patients' perceptions of an asynchronous telerehabilitation application (SwallowIT)	Management (Rehabilitative)	Asynchronous model. App uses instructional videos, images and text to guide patient through exercises. Number of repetitions and effort exerted is recorded. Clinicians monitor remotely.	The system was perceived to be easy to use, provided flexibility, support and motivation to complete swallowing therapy at home.
Wall, Cartmill, Ward, Hill, Isenring, Byrnes, Chambers, Dunn, Nixon, Whelan & Porceddu (2016)	Australia	To evaluate the level of clinical agreement between the data collected through ScreenIT compared to face-to-face clinician assessment. To evaluate ScreenIT's ability to facilitate appropriate referrals.	Screening. Referral.	Asynchronous model. Patients access ScreenIT using electronic tablet provided by hospital, connected to the Wi-Fi. An algorithm in the application uses patients' answers to prioritize patients as high-, medium- or low-risk. High-risk patients were referred for face-to-face sessions within 4 days, medium-risk within 7 days and low-risk patients were instructed to continue with their usual follow-up appointments. ScreenIT took patients approximately 5 minutes to complete.	Clinically acceptable agreement was achieved between ScreenIT and clinician judgement in most domains. Disagreement was largely due to ScreenIT being more sensitive than clinician judgement. ScreenIT effectively detected patients requiring referrals to other healthcare professionals.

Author(s), year	Location	Study Purpose	Area(s) of intervention	Method of telepractice	Key findings relating to dysphagia
Ward & Burns (2014)	Australia	To review the current evidence base for conducting dysphagia intervention via telepractice	Assessment: Clinical swallow examination, Instrumental assessment: videofluoroscopic swallowing studies (VFSS), Management (unspecified)	Synchronous model for assessment, synchronous and asynchronous model for management.	Current evidence supports the use of telerehabilitation in the assessment and management of adult dysphagia.
Ward, Burns, Theodoros & Russell (2013)	Australia	To determine the scope of the strengths and challenges of implementing service provision of dysphagia assessment via telepractice	Assessment: Clinical swallow examination	As outlined in Sharma, Ward, Burns, Theodoros and Russell (2011).	Challenges relating to equipment were evident, but did not prevent successful completion of assessment. It is integral to have access to technical staff.
Ward, Burns, Theodoros & Russell (2014)	Australia	To examine whether dysphagia severity impacts on: clinical decisions regarding swallowing safety, clinician perceptions of developing rapport and performing clinical swallow examination via telepractice.	Assessment: Clinical swallow examination	As outlined in Sharma, Ward, Burns, Theodoros and Russell (2011).	An accurate evaluation of patient risk for oral intake can be obtained irrespective of dysphagia severity. However, assessing complex cases and patients with severe dysphagia required more input from the assistant. Clinicians were able to develop rapport.

Author(s), year	Location	Study Purpose	Area(s) of intervention	Method of telepractice	Key findings relating to dysphagia
Ward, Crombie, Trickey, Hill, Theodoros & Russell (2009)	Australia	To test an improved visibility for stoma and voice prosthesis examination. To examine the technical performance of a remotely delivered service. To measure patient and clinician satisfaction during a remote trial.	Assessment	Synchronous model. An online clinician conducted the assessment via the telerehabilitation system. The system consisted of two computers, with split screen view, a free standing camera and custom made light source. The system also captured still images, videos and audio recordings.	The use of a custom-built telerehabilitation system in the remote assessment of swallowing and communication function in patients, post-laryngectomy, was found to be clinically viable and acceptable. The full functionality of autofocus on a free-standing camera is required to improve visibility of the stoma and voice prosthesis. When technical difficulties arose, the online clinician was able to repair them in a way that did not disrupt the session. Patient and clinician satisfaction with remote assessment was high.
Ward, Sharma, Burns, Theodoros & Russell (2012a)	Australia	To determine the level of agreement between online and face-to-face clinicians regarding safety for oral feeding, and if on modified oral diet, the safe food/fluid recommendations. To assess the level of agreement for the other components of a clinical swallow examination.	Assessment: Clinical swallow examination	As outlined in Sharma, Ward, Burns, Theodoros and Russell (2011).	Sufficient agreement levels were displayed when using a purpose-built telerehabilitation system, with specific system modifications and an assistant at the patient end, during clinical assessment of dysphagia in patients with normal cognition or mild cognitive impairment.

100

Author(s), year	Location	Study Purpose	Area(s) of intervention	Method of telepractice	Key findings relating to dysphagia
Ward, Sharma, Burns, Theodoros & Russell (2012b)	Australia	To examine the issues which potentially impact on the service delivery of clinical dysphagia assessment via a telerehabilitation system.	Assessment: Clinical swallow examination	As outlined in Sharma, Ward, Burns, Theodoros and Russell (2011).	Four key patient factors were identified, specifically impact and management of: speech and voice disorders, hearing impairment, the presence of dyskinesia, and behavioural or emotional issues. These were compensated for by: adjusting the speaker volume and relying more on the assistant, adjusting the speaker volume and repeating instructions or modifying instructions, wide angle positioning of cameras and taking short breaks when necessary, and relying on the assistant to provide emotional support respectively.
Ward, Wall, Burns, Cartmill & Hill (2017)	Australia	To highlight the existing evidence for different telepractice models designed to help patients and services optimize management of swallowing and communication disorders arising from head and neck cancer (HNC).	Screening. Management (rehabilitative)	Screening systems reviewed were: Oncoquest, QUICATOUCH, and ScreenIT. All rely on self-reports from patients. All use synchronous telepractice models. Devices are provided by healthcare facilities. Oncoquest focuses on swallowing function and quality of life. QUICATOUCH on distress during HNC treatment, and ScreenIT on prioritising supportive care services based on symptom presence and severity. Management systems reviewed were: SwallowIT, and Head Matters. Both systems focus on personalised exercises and remote monitoring by clinicians. Both use an asynchronous model. Devices are patients' own devices and clinicians' devices.	Telepractice models are able to support the delivery of specialist services required by patients with HNC, in an ever-increasing manner.

Author(s), year	Location	Study Purpose	Area(s) of intervention	Method of telepractice	Key findings relating to dysphagia
Ward, White, Russell, Theodoros, Kuhl, Nelson & Peters (2007)	Australia	To determine the feasibility of assessing communication and swallowing function using a purpose-built telerehabilitation system for people who had undergone laryngectomies. To determine the level of satisfaction with the telepractice system.	Assessment	Synchronous model. The clinician and patient videoconferenced (using Wi-Fi) from two computers with headset microphones. The system allowed real-time objective evaluation of clients, captured high quality video and audio recordings independent of the videoconferencing tools, data sharing (allowing the clinician to display text and rating scales on the patient-end computer monitor) and web camera control. A separate light was positioned adjacent to the participant's computer to assist with visualization of the oral cavity and stoma. A mirror was mounted on the participant's computer to allow the participant visual access to their stoma if required.	An acceptable level of clinical agreement between the online and face-to-face assessment of oromotor function, swallowing capability and laryngeal communication for the group of laryngectomy patients was found. Both clinicians and patients expressed high levels of satisfaction with the system.

APPENDIX M: LETTER OF ETHICAL CLEARANCE

Approved with Stipulations

New Application

21/08/2018

Project ID: 7815

HREC Reference #: S18/08/155

Title: Adult Dysphagia Intervention through Telepractice: A Scoping Review

Dear Miss Anisha Dhaya

The **New Application** received on 03/08/2018 12:07 was reviewed by members of the **Health Research Ethics Committee** via Minimal Risk Review procedures on 21/08/2018 and was approved with stipulations.

Please note the following information about your approved research protocol:

Protocol Approval Period: **21 August 2018 – 20 August 2019**

The stipulations of your ethics approval are as follows:

1. Review reference list for spelling mistakes and/or citation information

Please remember to use your project ID 7815 and ethics reference number S18/08/155 on any documents or correspondence with the HREC concerning your research protocol.

Translation of the consent document(s) to the language(s) applicable to your study participants should now be submitted to the HREC.

Please note that this decision will be ratified at the next HREC full committee meeting. HREC reserves the right to suspend approval and to request changes or clarifications from applicants. The coordinator will notify the applicant (and if applicable, the supervisor) of the changes or suspension within 1 day of receiving the notice of suspension from HREC. HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review:

Please note you can submit your progress report through the online ethics application process, available at: https://apply.ethics.sun.ac.za and the application should be submitted to the Committee before the year has expired. Please see Forms and Instructions on our HREC website for guidance on how to submit a progress report.

The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Please consult the Western Cape Government website for access to the online Health Research Approval Process, see: https://www.westerncape.gov.za/general-publication/health-research-approval-process. Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and instructions, please visit: Forms and Instructions on our HREC website (www.sun.ac.za/healthresearchethics)

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Yours sincerely,

Mrs. Ashleen Fortuin

HREC Administrator

Health Research Ethics Committee 1 (HREC1)

National Health Research Ethics Council (NHREC) Registration Number:

REC-130408-012 (HREC1)•REC-230208-010 (HREC2)

Federal Wide Assurance Number: 00001372
Office of Human Research Protections (OHRP) Institutional Review Board (IRB) Number:
IRB0005240 (HREC1)•IRB0005239 (HREC2)

The Health Research Ethics Committee (HREC) complies with the SA National Health Act No. 61 of 2003 as it pertains to health research. The HREC abides by the ethical norms and principles for research, established by the World Medical Association (2013). Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects;the South African Department of Health (2006). Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa (2nd edition); as well as the Department of Health (2015). Ethics in Health Research: Principles, Processes and Structures (2nd edition).

The Health Research Ethics Committee reviews research involving human subjects conducted or supported by the Department of Health and Human Services, or other federal departments or agencies that apply the Federal Policy for the Protection of Human Subjects to such research (United States Code of Federal Regulations Title 45 Part 46); and/or clinical investigations regulated by the Food and Drug Administration (FDA) of the Department of Health and Human Services.

104

APPENDIX N: INFORMATION PACK FOR PARTICIPANTS

Interviews with experts:

Adult Dysphagia Intervention through Telepractice: A Scoping Review

Conducted by Anisha Dhaya

INFORMATION PACK:

This information pack is being provided in preparation of the interview. It is not to be shared with the public. If you have received this attachment accidentally, please inform the sender and disregard this e-mail.

BACKGROUND

Dysphagia is a serious, life-endangering disorder, experienced by an increasing number of people. Worldwide, there are a limited number of SLTs and OTs to provide face-to-face dysphagia intervention. While telepractice has been suggested as a solution, little research exists specifically relating to dysphagia intervention via telepractice. Telepractice is defined as, "the application of telecommunications technology to the delivery of speech language pathology and audiology professional services at a distance by linking clinician to client or clinician to clinician for assessment, intervention, and/or consultation" (ASHA, 2018). Unfortunately, little research has been conducted about telepractice in adult dysphagia intervention, and none has been conducted in South Africa.

This research project involved conducting a scoping review which aimed to explore the application of telepractice to adult dysphagia, at a national and international level. The research question posed was: How is telepractice applied to adult dysphagia intervention? The results of this investigation are outlined in the pages to follow. The interviews with experts aim to identify the challenges South African SLTs from the Western Cape foresee regarding the implementation the current conventions for adult dysphagia intervention, and how they can be overcome.

RESULTS

Twenty-two articles were included. It should be noted that some articles covered numerous areas of intervention. The manner in which each area was addressed is briefly outlined below.
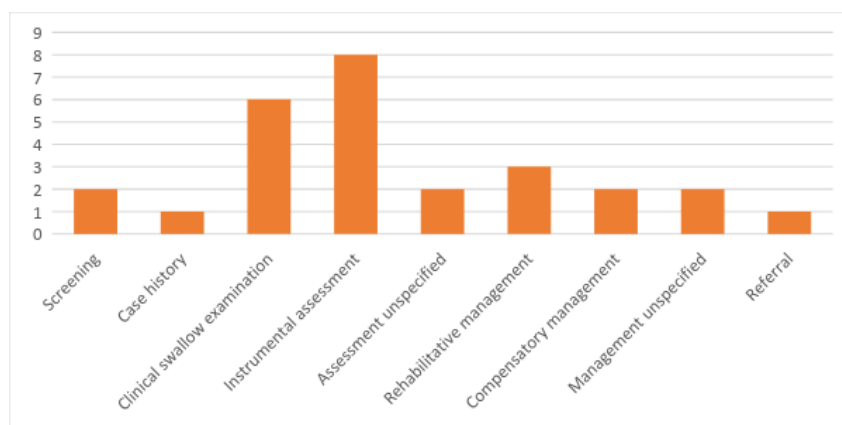

Figure 1: Areas of adult dysphagia addressed by selected studies

Screening and referral

Patients used an electronic tablet at a hospital to indicate their symptoms. The tablet was connected to wireless internet and used an algorithm to prioritize patients as high-, medium- or low-risk. High-risk patients were referred for face-to-face sessions within 4 days, medium-risk within 7 days and low-risk patients were instructed to continue with their usual follow-up appointments.

Case history

Patients completed a form on provided laptop (with optional mouse) at a medical facility. The form comprised of 70 questions that were dichotomous, rank order, multiple choice, or open-ended. Clinicians viewed the responses using a secure web-based electronic platform from a remote location.

Clinical swallow examination

A clinical swallow examination was conducted in real-time at a healthcare facility by clinician at remote location using videoconferencing technology (requires internet). The system consisted of two computers, with split screen view or mirror on the patient end, a free standing camera and in the case of patients with tracheostomies, a custom made light source. The system also captured still images, videos and audio recordings. Assistance was provided by additional healthcare worker, fixed and free-standing cameras, tape on patient's thyroid notch, free-field combined echo-cancelling microphone, web microphone, lapel microphone, and finger pulse oximeter. The additional healthcare worker was responsible for delivering boluses when necessary and providing tactile information. Duration approximately 45 minutes (slightly longer than face-to-face).

Instrumental assessment: videofluoroscopic swallow study (VFSS)

Method one:

One computer, connected to the fluoroscope in the hospital, captures, converts, transmits and stores video signals. A second computer at remote location receives them in real-time, allowing a remote clinician to make clinical decisions. Optional addition of a web camera, at the VFSS site to allow the remote clinician to view the patient's posture, level of alertness and method of ambulation, as well as: free-field echo-cancelling microphones, pan/tilt/zoom cameras and a lapel microphone. The remote clinician led the assessment using videoconferencing and was assisted by a feeder on the patient end. The computer in the fluoroscopy suite also transmitted images and audio data to the remote computer. A three way split screen was utilized to allow

for both the patient/staff in the fluoroscopy suite, the telepractice clinician, and the fluoroscopy image to be visualized at all times

Method two:

VFSS was conducted in Greece and interpreted by a non-expert. Data was stored on a secure website. An expert in USA accessed data a day later via website and interpreted VFSS.

Management (compensatory and rehabilitative)

Method one:

Patients made use of an app that uses instructional videos, images and text to guide the patient through exercises. Number of repetitions and effort exerted is recorded. Clinicians can monitor the patient's progress remotely through the app.

Method two:

Therapy was conducted in real-time using videoconferencing software after two face-to-face sessions.

Method three:

A regional clinician at a spoke site conducts a therapy session of 1 hour while videoconferencing with a specialist clinician at the hub site.

Method four:

Once a month clinicians from the USA and India partook in a videoconference discussion of persistent dysphagia cases. The videoconference system consisted of a video monitor, high definition video camera, microphone, and speakers. 2 cases from each department were discussed monthly and a management plan was formulated.

Table 1: Duration of telepractice interventions when compared with face-to-face intervention

Area of intervention	Telepractice duration	In comparison to face-to-face intervention
Screening	5 minutes	shorter
Case History	15 minutes	equivalent
Clinical swallow examination	45 minutes	longer (slightly)
Management unspecified	60 minutes	longer

The studies that did comment on the duration can be seen in table 1. Coverage of telepractice

is largely dependent on each country's policies, and even policies at a provincial/state level (Stevenson, 2014). It is also unclear whether telepractice should be billed for the same amount that face-to-face intervention is billed for.

CONCLUSION

Telepractice offers a feasible alternative to face-to-face adult dysphagia intervention in the areas of: screening, case history, assessment (clinical swallow examination and instrumental assessment), and management (compensatory and rehabilitative). Of the telepractice models outlined by ASHA (2018), the synchronous (real-time) model is most commonly utilised. It often incorporates audio-visual transmission through some form of videoconferencing. An internet connection is always required, although it need not be exceptionally fast. A 4-6 Mbit/s line is sufficient for optimal image quality. In most cases, patients were still required to be at a healthcare facility, however some apps exist which allow the patient to utilise their own device in a location of their choice.

Current evidence shows that telepractice sessions are generally slightly longer than face-to-face sessions, however variations are present. There is no clear, universal stance on how clinicians should be reimbursed for adult dysphagia services provided via telepractice. At present it is therefore necessary that clinicians consult the policies of their respective regions.

References

American Speech-language-hearing Association. (2018). Telepractice. Retrieved from https://www.asha.org/PRPSpecificTopic.aspx?folderid=8589934956&section=Overview

Stevenson, M. D. (2014). Stuttering Therapy Via Telepractice in Kenya: An Overview. *WWU Honors Program Senior Projects. 18.*

INTERVIEW QUESTIONS

1. Apart from the applications of telepractice described in the scoping review, are you aware of any other ways telepractice is being applied to adult dysphagia intervention?

2. The results showed that the audio-visual medium was most commonly used. Do you think it is essential to see AND hear the patient? Why/Why not?

3. Most of the studies also employed the synchronous model of telepractice. Do you think this model is well suited to the South African context? Why/why not?

4. At your current place of employment, would you be able to acquire/access the equipment described? (two laptops, lights, microphones, white tape, transparent cups and spoons) If not, why not?

5. How would you describe the internet at your place of employment?

6. Does your current place of employment have sufficient internet support? (1MB/s)

7. Would it be possible to upgrade the internet speed, if necessary?

8. Do you know of any videoconferencing apps are encrypted to ensure confidentiality?

9. Are you familiar with how to use Skype/WhatsApp video call?

10. At the moment, South Africa does not have explicit laws on how clinicians should be reimbursed for dysphagia services provided via telepractice. What are your experiences with reimbursement and telepractice?

11. What do you think is the most feasible way to ensure that clinicians are fairly paid for their services?

12. Of the studies outlined, which study stood out to you as particularly relevant to South Africa, and why?

13. Why do you think telepractice has not been applied to the areas of prevention, health promotion, preventative management, and counselling?

APPENDIX O: INFORMATION LEAFLET AND CONSENT FORM

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

TITLE OF THE RESEARCH PROJECT:

ADULT DYSPHAGIA INTERVENTION THROUGH TELEPRACTICE: A SCOPING REVIEW

REFERENCE NUMBER: 8715

PRINCIPAL INVESTIGATOR: **Miss Anisha Dhaya**

ADDRESS:

Division of Speech-Language and Hearing Therapy

Faculty of Medicine and Health Sciences

Stellenbosch University

Tygerberg

CONTACT NUMBER:

E-mail 18249469@sun.ac.za; Telephone during office hours: 021 938 9494

_____

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please contact the principal investigator about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

What is this research study all about?

This study is about how telepractice is applied to adult dysphagia intervention. Telepractice refers to getting a service, in this case dysphagia intervention, online instead of face-to-face (e.g. phonecall or videocall). The study aims to explore the application of telepractice to adult dysphagia intervention through a scoping review. The insight gleaned from this scoping review will then be discussed in an interview with an expert (you) to identify potential challenges to implementation in the South African context, as well as suggest solutions.

The study is being conducted by a Masters student in the field of Speech-Language and Hearing Therapy at the University of Stellenbosch. You are being invited to participate as an

expert to be interviewed, along with seven other Speech-language therapists from the Western Cape.

The interview will focus on how each area of adult dysphagia intervention is currently being addressed using telepractice, potential challenges with implementation, and suggestions to overcome the identified challenges. The goal of the interview is to find out how to make adult dysphagia intervention via telepractice as implementable as possible in the South African context.

The discussion will be hosted at a mutually agreed location, at a time suitable to you. It will not exceed one hour in duration.

Why have you been invited to participate?

You have been invited because you are registered as a speech-language therapist in the Western Cape, and meet the criteria below:

- Has provided adult dysphagia intervention on a weekly basis for the last five years
- Participating in the interview is not a conflict of interest.

If you feel that you do not meet any of the criteria above, please inform the principal investigator.

What will your responsibilities be?

If you choose to participate you will be required to read the attached information pack, and participate in an interview of no more than one hour, the questions for which are included in the information pack.

Will you benefit from taking part in this research?

You will directly benefit by participating, as you will have access to the latest research on adult dysphagia intervention via telepractice. Indirectly, future patients may benefit from your participating, as the interview aims to troubleshoot how telepractice can be implemented in South Africa to provide adult dysphagia intervention.

Are there any risks involved in your taking part in this research?

There are no risks involved in taking part.

Will you be paid to take part in this study and are there any costs involved?

No, you will not be paid to take part in the study. The only potential cost to you is transportation, depending on the agreed location for the interview.

Is there anything else that you should know or do?

You can contact the Health Research Ethics Committee at 021-938 9207 or the supervisor, Dr Daleen Klop at 021-938 9494, if you have any concerns or complaints that have not been adequately addressed by the principal investigator.

Declaration by participant

By signing below, I ……………………………………………. agree to take part in a research study entitled *Adult Dysphagia Intervention through Telepractice: A Scoping Review*.

I declare that:

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.

- I have had a chance to ask questions and all my questions have been adequately answered.

- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.

- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.

Signed at (*place*) ....……………. on (*date*) …………................... 2018.

……………………………………….

Signature of participant

APPENDIX P: TRANSCRIBED INTERVIEWS

Interview 1 (R=Researcher, P1=Participant 1)

R: Apart from the telepractice that was described in the info packs, is there any other way of telepractice that you've been exposed to with dysphagia?

P1: Yes, I didn't see it described, and I don't know if you would class this as telepractice, but what I've been doing with my patients that struggle to come, is instead of doing a dysphagia follow up routinely, booking another appointment for them. I will first book a telephonic appointment with them. So, "I need to see you in two weeks to make sure whatever plan I gave you is working and you're not getting sick or whatever. So but you said it's difficult to come in, so in my diary I'll make an appointment for you, but it's a telephonic appointment." So then I'll phone them on the day, hear how it's going, ask specific questions that I would've asked and if I don't think it's sounding healthy on that side, I'll book them an appointment as soon as possible, and if it sounds like, no, they're adhering to the plan, no chest infections, no weight loss, nothing funny has happened then I'll say, "Okay so either I'm going to phone you again in a month or you must come in in a month or when is your next appointment when you're coming in to ENT or neuro or wherever…"

R: Okay-

P1: -to try and save them a trip.

R: Yeah that's great and that definitely counts as telepractice. So they basically say anything where you use technology instead of face-to-face-

P1: -Is a phone as technology?

R: Yeah, I think so. I think it's great. Okay, which also kind of links with the next question because the research that's been done generally involves both audio and visual and I'm guessing like from you doing telephone calls -

P1: -it's only audio.

R: Yeah, do you feel like it's still as effective?   or do you think you'd benefit more if there was a visual component?

P1: I think I would benefit more if there was a visual component. I would, my first choice is to see them face-to-face, but because of our clientele and their difficulties with transport, especially the wheelchair populations… that's why I started thinking maybe I can try this and if I don't kill patients then maybe it works. If patients don't make it, then maybe it's not a good idea.

P: Okay… okay that's great. , and then most of the studies also involved the synchronous model, so seeing your patients using technology in real-time.   do you think that would work well in South Africa? Why or why not?

P1: Sho, I think if we had improved internet access and if it was accessible to people then I would definitely be WhatsApp videocalling them. Seeing what my patient looks like, asking them to do certain things with their voice, , maybe even asking them to take sips and watching what happens. I would definitely be using that rather than just audio or a phonecall.

R: Okay-

P1:-but at the moment that's not an option.

R: Yeah, okay, , which also leads in with the next one sort of, so where you're currently based here, do you think it would be easy to have access to the equipment- so in some of the studies they described using like a laptop at the bedside and a laptop in the clinician's office, having extra lighting and extra little mics. Is that the kind of stuff that, stuff that would be easily accessible here, or…?

P1: I think if you were doing a teleconference call to an institution, like [named home for chronically ill children], say for example, you could make it work, because they've got enough patients and a steady stream of patients needing dysphagia that you can say it's maybe worth your while getting that equipment there and us having the equipment here, but if it's a once-off patient and it's a home visit that you're trying to set up. I don't know if it's justifiable to say to the family, "Look, you never needed a laptop before, hey [laughing] but now you're gonna have to go buy a laptop." , or "now you're gonna have to upgrade your blokia to a phone - a smartphone that can do videocalling." So I don't know how that's going to work, but if it's in an institution, I think it's a possibility.

R: Okay, that makes a lot of a lot of sense. , okay and like you said, the internet isn't always accessible, so here at the moment, how would you describe the current internet that's available?

P1: So for our desktop PCs we have internet, the Speech therapists. It's not a universal   access thing. So   for example, we had to apply for internet access and the audiologists still don't have any internet access, because they haven't applied for it. And they have to approve you to get internet services and they want a good motivation as to why you need the internet. So that's obviously the hospital's way of cutting costs. They can ensure that people aren't sitting on Facebook and doing other things on the internet. So I can understand that, but it's accessible because we now have access to it on our desktop PCs. We don't have Wi-Fi, even though there are various Wi-Fi systems running at the moment at the hospital, it's usually closed systems.

115

The other thing that the Western Cape government has rolled out is free Wi-Fi at public institutions and [name of P1's hospital (Hospital A)] is one of the institutions. But when we tested it we found that you have to be in the parking lot of [Hospital A] to catch the Wi-Fi, to be able to pick up the signal. I think maybe the antenna is attached to the outside of the building, I don't know, because we were in the news about how we're providing free Wi-Fi access, but now it's outside, in the parking lot, and there's a cap of I think 100 megabytes a day. It's a very small amount. It's not sufficient for videocalling at all…

R: Okay so-

P1: -but in theory, if they able to provide Wi-Fi at a public institution, and if they able to to increase your data limit. The infrastructure is actually here already. For example, another public place, [names a close by library] has Wi-Fi inside the library. And I think their data cap per person that accesses it, is more than what it is here at [Hospital A]. So and that's a government initiative. That's not privately funded, that is government that did that. So, if it's existing we just need to tweak it to make it so that patients inside the hospital can get Wi-Fi, people inside the hospital can access the Wi-Fi and , and then even if your patient doesn't have Wi-Fi in their home, doesn't have data in their home, if they are able to get to a public space nearby that has this government funded Wi-Fi, that's a possibility.

R: That makes sense, yeah that's quite cool. I didn't realise there was anything like that-

P1: -You must look it up! There's a couple of primary schools as well-

R: Okay

P1: with that rolled out free Wi-Fi, government funded Wi-Fi let me say.

R: 'Cause I know, one of them , one of the studies looked at like where you're doing your VFS and instead of it displaying just on that screen in the X-ray suite they'd Wi-Fi link it in real-time to let's say you in your office, maybe at a different hospital. , so that would be great, if the Wi-Fi there was functional then something like that could actually work, . Okay so at least there is Wi-Fi. The Wi-Fi on your desktop, is it like a normal speed?

P1: It's a landline. It's not Wi-Fi.

R: Oh yeah yeah sorry.

P1: [points at desktop computer] This one is a landline.

R: but speed wise, is it like normal? Or would you-does it feel slow?

P1: It doesn't feel slow.

R: Okay

P1: but then again I'm not accessing high-def. sites.

R: Okay

116

P1: I'm accessing google and scholarly articles, and … .. So I don't know. We don't really watch videos with our computers because YouTube content is blocked.

R: Okay

P1: because they don't want people sitting and watching YouTube all day. So it's difficult for me to say if the connection is fast enough for us to easily access video, because even at home, it buffers, a lot. So I don't know how it would work here.

R: okay , let's see , if let's say they got the internet or the Wi-Fi in the hospital to be functional and it was just that the internet in the offices was too slow. Do you know if there's a way that you could motivate for it to be upgraded or if something like that would be worth trying?

P1: I think if it was upgraded it would have to be a hospital-wide initiative. They wouldn't just upgrade speech therapy's Wi-Fi speeds. , and for that to happen on a hospital-wide level, I think it would have to come from head office down. I don't think us saying it's important is good enough that they would do anything about it.

R: Okay, okay, so this is the fun part, with regards to like videoconferencing apps, do you know if any of the ones are encrypted, because obviously we want to protect…

P1: -the information.

R: yeah.

P1: I don't know. I think, I don't I… I don't have experience with videoconferencing apps. I've used skype maybe once or twice… I use WhatsApp videocalling a lot…

R: okay

P1: I know WhatsApp chats are encrypted, but I don't know if WhatsApp videocalling is encrypted.

R: Okay, so that's the good- I'm glad to hear you're familiar with skype and WhatsApp, because the good news is both of those are encrypted-

P1: Okay-

R: and I mean we have access to them here, so if we wanted to use them at least we know those are two safe apps-

P1: -and they are free apps

R: Yeah, so both of them are free, provided you have an internet connection. but yeah, they're free, they're encrypted so at least those are like good accessible-ish choices.

P1: Most of our patients have WhatsApp as well, I don't know about Skype.

R: Yeah. I think Skype is more computer-based, but WhatsApp, definitely, , which is quite nice. Then, , so from what I've seen, at the moment, South Africa doesn't have any specific laws on how clinicians should be reimbursed for dysphagia intervention that's given through telepractice, , have you had any experience with how to get reimbursed for any telepractice services, or ?

P1: I don't know what they do at private, because I haven't worked in private. In government I'm trying to think now if we bill our patients for contacting them. I think generally if it's a quick call, we won't even put it on our stats. I think if it was a more standardised and formalised procedure, we would probably put down their sticker and say I spent half an hour with this person on a teleconference call, or videoconference call, and whether or not they get billed is not our issue. It depends on their financial status, their H1 or H0 status and then they would get billed. On our stats form we have a place where you mark indirect care. On this stats form [fetches form]. So I think that would count as indirect care.   I don't know.

R: Okay, because obviously in government you don't get paid per patient, you kind of… it doesn't really make that big of a difference here?

P1: No, but the patients do get billed for your time. So if I see patients in the ward, , for however many minutes I see them, it goes on to my stats and that patient gets a bill. So if, , and the amount of the bill is dependent on their ability to pay. SO if it's a private patient that's at [Hospital A] because this is where all the specialists are, it can get pricey every time I go see the patient, or every time I phone the patient.

R: Yeah, okay, that makes sense, , okay so the next question would link then probably more to private, but   what do you think would be the best way to ensure that clinicians are fairly paid for their services?

P1: … I think you probably would have to prove that the time was spent with the patient. So for example, I want to submit to the medical aid, that Anisha was seen between 13:30 and 14:00 for a dysphagia consult via telemedicine. I would have to probably keep video records to show I was there, Anisha was there [phone ringing in background], this is what happened. , there would probably have to be some form of standardisation, before medical aids would pay for that. because I could chat with Anisha about   fashion trends for 2019 for half an hour and say that actually, "No, that was a dysphagia consult. Pay me." There would have to be some kind of standardisation, probably from HPCSA level, where we say this is what constitutes a telepractice consultation. There must be assessment or there must be some guidelines with regards to how we going to say this is billable or not billable.

R: Okay, , and then of the different telepractice methods that were outlined, was there any one that stood out to you as being particularly relevant to South Africa?

P1: All of them seemed possible, but having said that, you know how the priorities are with healthcare in South Africa, with [cell phone ringing]

R: If you need to answer, I can …

[recording paused while P1 stepped out to take call]

R: So we were just talking about   what could work in South Africa, basically.

P1: hmmmm… all of them could work, given the proper infrastructure and the thing is that most of the infrastructure exists, it's not that they have to … drastically change things, it's just data prices in South Africa are still prohibitive, , in other places data is a lot cheaper than what it is here.   most households in South Africa have access to a cell phone, and these days people don't buy cell phones that aren't smartphones anymore. So, a lot of our patients have access to smartphones. So I don't know about the computer based studies,   and how easy that would be to achieve, but if there are any things or applications that are smartphone-based then that is more of a possibility and I think that is going to be easier to achieve because   what you need to achieve that is much less. You need much less effort, in terms of access and coverage and data speeds and things like that. , the other thing that I want to say is that it's just doesn't seem very… when you do any research or any things with different cell phones, it's difficult to generalise findings, and it's difficult to … make things as standardised, as if you have a laptop. So, I have one laptop here and one laptop at [names home for chronically ill children], I know that the quality of video is going to be the same every time I do it. Whereas if there are ten different cell phones that I'm working with that have ten different video qualities and ten different sound recording qualities, it's difficult for me to say it's going to be good enough, until I've gone through each of the ten cell phones. So it's difficult to say how it will work, until like try it out - like most things. You'll know if it's working once you try it out. But I think it's cheaper to try, than trying to get people laptops.

R: Oh yeah-

P1: Then deciding, no this isn't working. This isn't culturally appropriate. People don't want a laptop anymore. I don't know.

R: Okay,   and then, some of the studies use the telepractice more for consultation, so let's say you have a particularly difficult case, you've tried a lot, nothing seems to be helping. , do you think it's something that would get used? Like if you have a really…. You know of someone who's also really qualified with dysphagia intervention, maybe having like a monthly

119

conference with them where they can discuss cases with you. Do you know if anything like that happens already?

P1: I don't know of anything like that in Speech therapy, I think I've heard about something like that happening in ENT, but I haven't heard of anything like that happening in Speech therapy. , especially not with a live patient, like this is the patient I'm struggling with [gestures next to imaginary patient] and then I contact the guru in dysphagia and while I'm here with the patient I consult with him and say, "this is what I've tried and whatever" and this lady tells me, "now try this" and I try it on the patient and then we see what happens. I haven't heard of anything like that. It's a very interesting model.

R: yeah they I think they call it the hub and spoke, so they did with some in like therapy where - it also took me a while to figure out exactly what they were explaining -where they'd basically have, let's say I'm your patient and you're giving me therapy and then on this side [gestures at computer] would be the expert from the main clinic who'd kind of be like sitting in and assisting here and there,   but yeah also, very different.

P1: It is a very different model. , I don't know. I haven't thought that much about how it would work because I can't think of any gurus that would give up their time like that, at this point in time.   for them it would be, "No, it's easier to give the patient to me"

R: Okay, yeah.

P1: Not that this isn't a good model, I just can't think of anybody right now that would be open to engaging in that type of model.   if somebody had to ask me… to consult live with them on a case… Sho, I'm trying to think now, what would I say, if somebody phoned and said, "[P1] I'm getting in this hectic laryngectomy patient, help me. I'm going to phone at 12 on Friday." Mmmmm… Can't see why not. Probably if it was cell phone-based, I would be using my cell phone and the other speech therapist would be using their cell phone and we'd videoconference and if I needed to see the patient she would point the camera at the patient… It could work! I don't know if any of the gurus that I'm thinking of would agree to it, but they are a little bit older than I am, like maybe twenty years, so maybe I guess it depends on what you've been exposed to.

R: But I mean I could also see it maybe working nicely in the case of maybe a new comserve therapist who's now in the middle of nowhere, handling dysphagia on their own for the first time, if they wanted to call in-

P1: mm yes-

R: - then something like that could be useful.

P1: I think this,   topic, is going to be very differently interpreted by cli - by private vs public, also, because they have issues of billing and   how to sell it to the medical aid that we don't

120

really have. Our time is ours to use as we want. Whether it's seeing ten patients in an hour or doing one videocall in that hour. Our time is our own, to an extent.   if we motivate for it properly enough.

R: Okay

P1:   so I think it's going to probably go in very different directions in private vs public. It's a very interesting thing to think of, as a as a possible solution to our workforce issues. At Hospital A we have quite a crisis in terms of numbers of speech therapists, there's only four of us and according to the number of patients in the hospital there's supposed to be between seven and eight speech therapists. So…

R: yeah, I know when I was researching, they say that in South Africa the ratio of therapist to patient is 1: 25000

P1: Sho!

R: That's crazy, I mean there's no way that that can be realistically achieved, so we're looking for all kinds of ways we can-

P1: -yes, extend our reach and share our expertise and support the comserves and the newly qualified people.

R: and then,   I have one more question. So the telepractice studies I looked at, had only focused mainly on assessment and management, but they didn't really follow up on anything relating to prevention or like health promotion or counselling   do you think there's a particular reason that they haven't used telepractice in those areas?

P1: I'm not sure, why they haven't used it, because I think that would be our first port of call! If we had to implement telepractice, that would be our first, our starting point. If we can get it right in those kinds of services, then yes, why not try assessment? Why not try then management? I was actually speaking to one of the physios in the ward that was saying she's thinking of making a couple of videos that she can send to her patients' phones when they are discharged, of the common exercises that they need to do for hemiplegia, limb hemiplegia after a stroke. So "These are the exercises you must do" she demonstrates it on the video, same things that she did with them in the ward and she sends the video off to them and it's a form of telepractice.

R: Yeah!

P1: Because it's, you would have had to come in for your next session, now you can do a couple of sessions on your own at home before you have to come in again. So I think that would be great, even things like explaining to family members what is aphasia, what uh what problems is this person going to face, what can family members do to overcome it, that is something that can take you half an hour of talking in your session. Whereas if you had sent that to the patient,

pre-session, it saves you half an hour and you can do half an hour more of therapy-therapy, rather than explaining and counselling.

R: yeah, okay and then lastly, do you have any questions for me? Anything you're intrigued by or…

P1:   which hospitals are you looking at or is it hospitals and educational settings or where are you interviewing?

R: So at the moment, I'm kind of just looking broadly at the Western Cape.   I didn't want to zone in on a particular hospital   we tried to get a mix of public and private.   I did try and get one education, but turns out she doesn't actually work with adults, so yeah, but it's just eight people. So, the bulk of the research was literature-based and now it's kind of just taking, okay , "this is what's currently being done, what do South African therapists feel is doable and not" so if you have any recommendations of people I could interview, because I'm still waiting on some responses I would gladly…

P1: [names potential participants] I think the answers people give may vary based on their setting. So I think tertiary level people may say, "Yes, we need it" and primary healthcare level people might say, "No! People live around the corner. Why must we do telehealthcare? They must just come in and see me" So, I don't know, your responses might differ depending on the level of healthcare that you are looking at.

R: That would be great to get all the variety and see where it's most likely to work. Thank you.

Interview 2 (R=Researcher, P2=Participant 2)

R: Okay,   so I don't know if you had a chance to look through the actual results?

P2: Yeah I did.

R: Okay that's good, so from what you saw in there, is there any other form of telepractice that you have been exposed to?

P2: You mean other than dysphagia?

R: or no, still with dysphagia but   maybe a different way of doing it that wasn't -

P2: -to be honest, , from what, in the private practice we do some telepractice with speech but not a lot with dysphagia to be very honest. I've never actually had telepractice - I prefer one-to-one or getting a speech therapist there asap to - so no, no telepractice different telepractice… experience.

R: Okay, -

P2: - The only thing, sorry,   -

R: No please,

P2: It's nothing directly with a patient, so not working directly with a patient, but we have done some speech therapy telepractice with the other speech therapist and interpreting the results etc., so discussing the case and drawing up a management plan but not directly managing or diagnosing - diagnosing (altered pronunciation). The patient telepractic wise, so not in that way.

R: Okay, but that, I mean that still counts. So they say that telepractice can be used for consultation between clinicians.

P2: Okay so between clinicians too. That I have done, yes.

R: Okay and would you normally do it just telephonically or…?

P2: So with dysphagia, if there's any diagnostic results, like a … nearly said a PMB,   like a swallow study or any pH- depends if it's a paed or adult, we would share that, those results. Especially if it's a patient that lives, for example in Pretoria and he was here on holiday and he was admitted to - I'm only talking about for [named private hospital (Hospital B)]- so he was admitted to [Hospital B] but his actual speech therapist who will be treating him when he returns for rehab is in Pretoria, so then I do transfer the results of the swallow studies- bariums whatever your study was, MBSs and then we would discuss that, but not sitting with the results showing picture-by-picture. She would have already gone through it and then we would just discuss it.

R: Okay,   then a lot of the… a lot of the studies used both audio and visual so kind of videoconferencing. Do you think that would be beneficial as opposed to just one?

123

P2: Definitely, I think visual is your strongest point at this point. Obviously you need the audio because you need to communicate but when it comes to dysphagia, watching, interpreting those results, it's easy to say, oh you saw at 3 seconds, but each of us sits with our tablet in front of us watching the study as it goes and we speak about it, but it's extremely quick. So we would say, "Okay pause at 10 seconds." So we would watch till 10 seconds, "okay what did you see? What did I see?" So definitely visual for us, or I would say videoconferencing then in essence then one can show the video and we can both interpret that. So definitely visu- both methods are better than only using one method, definitely.

R: and then   most of them also did everything in real-time. So let's say you're doing the VFS and then while it's happening-

P2: That's the thing-

R: -You have someone somewhere else interpreting. How do you feel about that?

P2: , so just to clarify that… when I read through that, it sounds great and like a new thing to start. I've never been exposed to that. I've never done that, in real time.

R: yeah

P2: So just to clarify that, will a speech therapist be doing the MBS and the other person be interpreting it, or how does that work? Who will be administering the boluses etc.?

R: So in   some of the studies they've done it differently. Sometimes they have like a new speech therapist, maybe like a comserve administering the boluses and then you have someone more qualified on the other end. Let's say imagine I've now been placed in the middle of nowhere for my comserve and now I need help because you know it's scary, but then the other situation they did was where they did training course with the   the radiographer and the people who are usually in that suite and trained them with how to deliver the boluses and then you'd have   your qualified speech therapist on the phone, on loudspeaker watching, telling them whether it was safe or not to continue with the next bolus

P2: So if you say "on the phone, that's videoconferencing, that's not only telephonically, because how will she see the results?

R: So what they do is they almost link… what you would usually -

P2: So it's the linking one that she can see exactly what the radiographer is doing.

R: Yeah.

P2: So I've never done that myself, but I have called a more qualified person in adult dysphagia scope, to assist me with that and they linked up the live thing. I don't know how to do it. So we don't do that a lot in private from what my experience is, but I have done it from when I was in comserve, in the middle of nowhere-

R: Okay

P2: I actually did that. We flew to Kimberly and I called someone, I think the lady was still situated in Jo'burg,   and I called her to assist with us. So yes, I've done it, but it's not the norm that we do here.

R: Okay and how did you find that it worked? Was it effective? …

P2: It was a strange- okay her advice definitely helped, but certain circumstances with regard to the patient like the patient's physical ability, the patient's posture etc. okay she can see the swallowing ability, but oral-wise the tone or weakness or whatever she couldn't see that and certain, the management thereof, it's easy to say no do a chin-tuck, but if the patient had a head or a neck injury, spine injury chin-tuck would be a difficult one, so the case history needs to be very very… comprehensive before I think you start to do the actual assessment and real-time film, but to me it was helpful because it was a straight forward stroke case. Paralysis on the… I think the left side, I can't remember the case exactly, but it wasn't a difficult case with more medical comorbidities or any other comorbidities, so it was a more straightforward one and it definitely guided me to the right way. It wasn't the right answer - if I can say that - or the right suggestion, only that exclusively, but it definitely guided me

R: Okay, that's good,   … and then okay so your current place of employment… are you in private and public?

P2:   okay so I am in private. I have my own practice at the [Hospital B]. I do serve schools, old-age homes and then obviously the apraxia school. I see a few people here [Hospital A (public hospital)]. I would say I'm private. I don't see other patients in [Hospital A], it's only the schools. So if that counts as public? Not all of them are government schools, some of them are private, so I would say I'm private then.

R: Okay, so from like the private side, if you wanted to do something like this and you needed to get some of the equipment, they describe having like laptops and mics and extra lighting, how easy would it be for you to organise that kind of stuff?

P2: I think the organising wouldn't be too difficult but not everyone in the team that actually does the screening and the scanning, for example, our radiographers, they actually want standoff time to do all these setting- okay it will be set up obviously and we only have one suite to do these screening etc. or these tests   I don't know how receptive they will be of it, to be very frank. I don't know how they will see the validity and the … I can't get to the word now, sorry I've done speech therapy the whole morning.

R: Ah no, it's fine.

P2: I don't think they will when they look at it, ag is this actually going to work? So, they prefer the person who's there to do the interpret everything then manage the patient etc. so I can't speak on their behalf. It will be easy getting that laptop etc. the lighting etc., but I don't know how receptive our actual screening department will be about that.

R: Okay, … oh, how would you describe the internet at your current place of work?

P2: Actually, funny enough, it's not too bad. The the speed is good. We don't have any power outages at our hospital at our practice sorry because we run on the [names institution] emergency line, basically the backup, the generating system. So our power's never off. We don't have that problem. The speed is good, the transmission is good. I don't have any, it's actually better than at my house, so internet is not a problem.

R: Okay, that's encouraging because I mean most people in public say, you know the sucky thing is…

P2: I can I can imagine that but yeah, I'm lucky I think in that case I haven't had any problems with that.

R: Okay, so obviously if you're going to do a videoconference, you'd wanna make sure that all the information about your patients is kept confidential and it's not just all over the internet somehow.

P2: Mmmm [nods]

R: Do you know of any kind of like applications or sites that you would use that are encrypted?

P2: hmn [shakes head] no, not at this stage. For videoconferencing, no.

R: Have you … how familiar are you with using Skype?

P2: Mmm [nods]

R: Okay so you you -

P2: Is that encrypted?

R: Skype is encrypted.

P2: Oh sorry, I didn't know.

R: yeah.

P2: Skype is like the go-to here.

R: Okay and have you used the WhatsApp videocall?

P2: yes, sorry is that, I didn't know it's encrypted.

R: Yeah so that what, I had to look that up as well because I was like "What do we have in South Africa that's actually-

P2: -because I was thinking medical programmes now that's something, yeah Skype, that's the only two routes we go, Skype and videocall WhatsApp calls, sorry WhatsApp videocall, because that's the easiest access for everyone. Most of the people, especially in healthcare have those two apps and that's what we use.

R: Yeah-

P2: Okay that's encrypted so-

R: -good news

P2: -good news, so yeah.

R: I also thought it was encouraging because they're both free and I mean they're encrypted so it's just a matter of having-

P2: It's just that you need a good internet line for that.

R: Yes.

P2: You can also have an internet line, but if you have a poor connection or a slow speed it not going to…

R: So that's whether it comes in to whether your patients will have, or if they're coming to you and you're consulting then that helps, but yeah, , huh this is good for you because you're actually in private. So, at the moment South Africa doesn't actually have any laws on how speech therapists should be reimbursed for telepractice, and I know not for dysphagia. So what do you think the best way would be to ensure that you actually get paid for your services?

P2: Well the thing is when we work with in hospital patients - because that's how I pick up most of my if it's dysphagia cases, it's in hospital, okay?

R: Yeah

P2: So the law or the way we go there, you bill them for what you did in hospital. So if this is in hospital because we don't we rarely see anyone out of hospital for an MBS. That doesn't happen a lot because it's very expensive. So they must be admitted and then have an MBS usually. So in that that case, definitely I think it needs to be the person needs to be reimbursed and it can count - I would do it as an assessment or treatment session, but the trick there comes in it will have a double billing because I will see someone and for example you will sit in Durban and interpret the video for me or assist me with that, how are you going to get paid? So that is a glitch. I don't know how that will happen. Then the patient's family must maybe sign a form that states this person will be assisting with this case. They must make direct payment to them because the medical aid won't make a double payment for that. And they cap us on 60 minutes daily too, so you can't charge for 30-30 minutes both, because that's actually unethical. I do not know whether the medical aid will also see this as the person in Durban, the

interpreter actually or the consultant whatever, actually seeing that person. Because they not physically there so how could they see the person, so that's another thing that I'm not sure about. Good question because I mean definitely there would definitely be a glitch but as the from the point of whether they should be reimbursed? Definitely, it's their time, it's their knowledge, they just as part of it as I am, in real-time for example or whoever does real-time and interpreting what way it goes in any case, but I think both parties should be reimbursed for their time and their actual treatment and management of the patient. But that will be a big stumbling block for us in private, if I think about it now.

R: Yeah because how do you guys usually do it in private?

P2: Okay so… you see that's the thing, I only did this in comserve while I was still public so the reimbursement wasn't something I was worried about. I did it once, like I said, once in my life.   do you mean how would we do it in private if it ought to be teleph-telepractice?

R: Yeah, or just maybe outline the general -

P2: -okay, so when we consult with someone else for advice etc. it's usually free. So you give a person a call and say, "I've got a problem with this." We help each other out, especially in private, but m if it comes to a thing where they need to interpret or analyse a swallowing study, it's going to take some time, even if it's real-t, real-life or real-time, they still need to draw away from their clinical environment and actually focus and do it. So at this stage I'm saying we haven't used, I haven't used it personally so I can't give you feedback on that, but definitely there should be reimbursement to them, but I think there should be a clause that the patient's family would sign pri-or   separately sorry, to say that "listen here this and this person will be interpreting the video or assisting. You need to make direct payments to them" on medical aid rates, I feel, because then it's a fair game, so not private rates because then someone can ask R600 for a half an hour, for example.   medical aid rates, stipulated that they need to reimburse that party, the interpreter or consultant privately and personally, so that's the only way I can think about it in private, but honestly I don't know Anisha, I haven't done it in private.

R: Yeah, I know because there's actually, there's literally no research on the reimbursement side of it… so it's tricky, ,

P2: And with medical aids they become, and I understand their point too because there's a lot of medical aid fraud - A LOT of medical aid fraud- so they very careful about who was that person because we need to, just remember the whole, sorry, just to explain to you in private, if you see a patient, you Anisha, I'm [P2]. They call me [P2] to see the patient, they must upload my practice number on to the whole system for it to actually be paid out when the patient is discharged, so if Anisha, if you the consultant, you sitting in Durban, you not going to be

128

uploaded onto the case. So it's going to be this external person who made all this time and effort and really assisted with the case but you won't receive re- the medical aid will say you were never involved, [P2] was involved. So they will only pay me out and then it's going to be a fight between yourself and I. So I honestly don't know how that will work in private, Anisha. I can't say.

R: Yeah okay   and then of the st- the results that were in the information pack, in the studies there, was there any particular one that stood out to you as it could work really well in South Africa?

P2: I'm not sure whether I just read it through the article - I'm saying article, but the study, or whether it was in the findings, but the I think where it can work really well is where people are situated in rural and then they must actually, for example where I was in [names rural location] for comserve, we didn't have MBSs or any diagnostic, we had to fly to Kimberley. The patient had to go there, get the test done, come back, but I definitely feel if we can make for example let's use… the Northern Cape. We only have one site that does it and it's in Kimberley, for the whole of the Northern Cape, so if we could maybe get a subsite, like, I know it's very expensive the equipment but like Springbok or something like that, even, I wouldn't say the middle of nowhere but in a tertiary hospital, that will really help someone to speak to the Kimberley, for example now, to contact, to telepractice with the Kimberly speech therapist that's qualified and that does it every single day. That's her work. So myself who's sitting in the middle of nowhere, I'm 80kms away from the closest… anything anything around me, it's not even the closest city, it's like the closest anything around me. If I had the access to MBSs or any type of whatever and I mean any type of diagnostic swallow study, I would definitely find it beneficial to contact the person that's that's usually the head, I wouldn't say the head, but that works with it every single day. Because if they transfer and they split the workload it will also be much faster for everyone, but you need experienced persons to work with that. So in that case, if it's a rural situation, you don't have any, you've got this machine and everyone can work, like the radiographers etc. can work it, you've got the system up and running, but who can interpret that? That will definitely beneficial, be beneficial, like I say, if it's a rural situation, obviously internet we use, that's where the bummer can come in sometimes,   but if you in the middle of nowhere and you yourself just qualified or you don't have any experience with doing adult dysphagia, you only did paeds for example, now you consider this someone that's close to you, in your province- I'm just specifically talking about South Africa- that has worked with it for years and is willing to take the time off to contact you or to be in contact with you that will be very beneficial. So in the rural settings, especially like the current rural settings, let's use

129

Eastern Cape. That's already they've set up, they have their department going, but how confident are those speech therapists that for example just graduated, or they maybe worked four years but they have never practised dysphagia, especially diagnostic level, only clinical bedsides, I would definitely recommend someone that has more experience and that usually did all these screenings at one centre, now it's maybe split to more centres to do the interpretation thereof or to assist them at least.

R: I know one of the studies that stood out to me was a similar situation like that where let's say you have the Eastern Cape, you've got all the equipment, there's a young clinician who's like not used to it, and they do the assessment and they make their recommendation, but then they have that videofile loaded on a database and then you [P2] here review it a day later and you give your recommendations.

P2: Exactly, sorry that was exactly what I'm referring to, so that was it in outcomes, a result or was it a study that-?

R: yes, yeah it was one of the studies-

P2: - I can remember that, that's why I'm referring to-

R: -because that was the one that stood out to me because I found it interesting that they actually found that waiting that day longer for the recommendations from the expert-

P2: -is actually safer

R: Yeah yeah

P2: Mismanaging a patient, or just tubing him and actually losing the oral… or any sort. So definitely I think because I was also situated in rural…

R: Yes.

P2: situation, definitely, that would have been a major help, but just remember it's easy to say they can pitch up all these, I won't say tents, but they can pitch up these departments for radiography or MBS swallows or whatever swallows or test that we want done for paeds and adults, but if those clinicians have never worked with that, if that hospital has never worked with that it's going to be training from the beginning, get go, so… no, I definitely think, especially rural-wise, that is the way. That's the reason why I would use that, or recommend that, but not in private, like we are here for example, bunched up a lot of us in the same environment.

R: It's not as needed.

P2: Yeah, I don't think we can say we all experts, definitely not, but I don't think the the the…. die aanvraag daarna is so groot [the demand for it is as great]. It's not required because each of us, if you are if you are the MBS or the adult dysphagia clinician at the one hospital or you are

130

the adult dysphagia clinician at Netcare, they rely on you so you've got a lot of liability too and responsibility, but it's your work to be done, it's not a "let's quickly call someone." It's different when you call someone on your cell phone like I, like a video-ag a voice call and you tell them "listen here, these were the results. Can you just assist me with the management thereof?" but unable to interpret that and requiring help with that, it's not, I won't say it's not valid in practice, in private because we are many times mismanaging patients, I've seen that a lot of times because people are too proud to ask for help, but in our situation I haven't seen that personally. Maybe it's thousands going on around me, but I haven't seen that or even made knowledge of that in any way shape or form.

R: Okay, .. And then lastly the studies only focused on assessment and management, there was nothing to do with prevention or counselling   do you think there's a reason maybe they haven't tried using telepractice for those things?

P2; I think, especially that's the thing, the other thing that I was thinking about when it comes to counselling or just informing let's call it, I don't know, that's not prevention that's more promotion. Informing the patient's family or direct spouse, whoever lives with them or is invested in their lives are invested in their lives, I think the reason why telepractice isn't used at this stage it's a emotional thing. So it's easy to say to someone over the screen with your speech therapist standing next to you and directly consult, so the consultant in Durban for example will be directly consulting with the family over telepractice and this speech therapist - that's the idea I have, I don't know if that's correct, but if she ought to convey the message to the family and educate them, I just feel, what I've experienced with education, with promotion, with prevention, with families is it's more, I'm calling it emotional thing, but it's a… it's a conversation you have, a face-to-face conversation, because they have got a lot of questions about stuff - Can you imagine a 80-year-old man, sitting in front of the screen getting the news. He doesn't know technology that well. They not used to videocalls, they not used to -okay now they will be, but they didn't grow up like that. So they want the person who's actually in charge of their father, ,mother, sister, brother to convey that news, so I think when they two therapists   liaise with each other and she, you tell me for example, you in Durban, you tell me, "[P2], this is what you how you educate the family on." Even if it's a document I need to send you, exactly what to say, exactly what to highlight, I would prefer face-to-face and if there are any questions I can't answer, I can contact you again, but I think the whole if- I'm saying emotional, but the real -the authenticity of it, it's a bit difficult over screen. That's just my take on it so…

131

R: No, that makes sense. And then lastly, do you have any questions or anything that was intriguing that you'd like to know more about?

P2: Yeah actually, I think it's a rhetorical question because I was thinking about it quite a bit working with dysphagia regularly. This telepractice sounds, I think it's a great method for people who don't have any, I won't say they don't have any knowledge because if you qualify as a speech therapist you have had some exposure, not all the exposure in the world, but if you still getting used to or you still learning it or 20 years on you've never done dysphagia and you want to learn or acquire knowledge about it now, I think that's a great mentoring thing, to have someone not to mentor you but to steer you in the right direction to manage the patient, but the thing that's concerning me… let me use my own setting, when I come into that hospital, firstly we won't do an MBS on a comatose patient okay, that's not even feasible, but what about patients that have, acquire infections directly after an MBS not due to the MBS but due to the situation, the environmental factors and things change alright. The MBS shows us these results, so I can go "Okay this patient he's definitely aspirating. I mean we've got the results thereof, okay so for now let's only put in -" because some people only put in a NGT for aspiration, okay "- short-term NGT" then he gets a really bad infection or he gets Guillain Barre syndrome which has happened to me and the paralysis goes like this [clicks fingers]. It takes a bit of time, it's a progressive one, but let's say after three days it's where, he's still aspirating now he has an inability to trigger a swallow. How does it work again, will we do and MBS again and liaise with that- I can call you and say "Listen here, this guy has MBS, guy has Guillain Barre Syndrome or has MS or whatever and his physical structure has just gone [clicks fingers] like this." It weakens flippen fast. Then what would you say to me? "Okay, let's insert a PEG" You see we can't, must we rescreen again? So to me what I've seen a lot with stroke patients especially, there are some comorbidities that happen that so that's why we go in daily to assess them and to treat them, manage them daily. Not assess them every day, but you need to keep your eye on it. You can't do an assessment, okay maybe if the rule for telepractice was twice a week or three times a week depending on whether we can triage the patient as a red, orange or green patient, that could maybe work, but my concern is what if something happens directly the day after? Yes, I phone you and I tell you, "Anisha, he's got Guillain Barre, we suspect Guillain Barre or he's got this or this or this and his laryngeal function has just weakened like this [clicks fingers]"

R: yeah -

P2: Then what would you tell me? "Okay explain to me how?" I will say "Oh there's a bit of weakness on the left side or oh he can't trigger a swallow" and obviously the immediate thing

132

we would do is insert a PEG, that's the long-term solution, but is that the correct solution? So we can PEG him for safety and then he will regain strength again-

R: yeah-

P2: -but the person who's advising you. They didn't see the patient physically. So must I stand and take a video of the patient to, so that is the place where I'm at. Certain things can go they can deteriorate [clicks fingers] very quickly, certain things can improve with management extremely fast, but that deterioration part of a patient, one day he's like this, the next day he's comatose for example, that really happens. Depending on certain viruses they acquire or pick up or whatever. So that's my concern about the whole telepractice thing, like we can have a management plan now for today but do we need to do that then every day because that's my question. I don't know how regularly this will be followed up.

R: I think the way the way I see it   is that it would be up to you, so   you wouldn't necessarily consult every single step of the way.

P2: Okay

R: So maybe if you know that you need help with the MBS, you consult for the MBS and if you're comfortable with the rest then you manage from there onwards by yourself,   so if you see the sudden deterioration and you're comfortable making a decision then you can continue and you wouldn't have to consult every day   yeah so I think it also would work, I think where it would get tricky with consulting every day would be   in your in your situations where there isn't necessarily a speech therapist at the facility.

P2: Yeah I understand.

R: so like some of them where they had the radiographers doing the MBS and there speech therapist sitting here in Cape Town-

P2: Yes yes

R: because then the next day-

P2: That's optimal, that's optimal in the sense that even if there's not even a speech therapist you're number one-

R: -

P2: -but for me for example let's take… you can't do an MBS every single day, the medical aid will never, personally what do you want to see further on? But there can be certain deteriorations literally I'm saying overnight. It does happen. So my question is if you gave me a manoeuvre for example the let's just say a chin-tuck, a very basic chin-tuck okay?

R: yeah…

P2: or a head tilt, okay? And the next day that patient's head is so stiff that the physio says that he's not able to move his head anymore or he's starting with meningitis for example. Must I

consult with you again? Do you understand what I'm saying? So you made recommendations and I will follow that therapy step by step by step by step on obviously seeing the patient is safe and it's working, but what happens as soon as there's like a -

R: -big change.

P2: - a spanner in the wheel?

R: Then I think you would have to consult again.

P2: But that will become costly -

R: yeah, especially with the double billing

P2: Yeah and that's the other thing, the billing is the greatest thing to me. So yeah, I don't know in that case. I just think that the spanner in the wheel, it happens very regularly and that's the only like [gasps] thing I have, but if we don't have a speech therapist situated in a certain location and the radiographer can videocall with or skype with the speech therapist, I think that's amazing, but if there's a speech therapist and there's a speech therapist here, so you're consulting between speech therapists, I think that's becoming that's gonna become a bit….

R: yeah

P2: To be very honest…

R: Yeah…

P2: In private now currently, I'm not very keen on telepractice. Not because I won't - I would rather get someone in that's available to see the patient, but the telepractice thing, I just think for dysphagia it's a high risk thing to telepractice.

R: Yeah, I, that is -

P2: It makes me a bit [tenses up], I want to …

R: [laughs]

P2: just please don't do it. I think for speech and hearing and language and voice

R: Yeah

P2: Voice especially, it works amazing. There's one lady [names speech therapist] that does telepractice voice therapy. I wouldn't say the risk isn't as high, you can still injure your vocal cords, I mean you can still damage them, not injure them, damage them, but with dysphagia, especially if it's subacute or acute, yoh I don't know. It's like that is really, that can determine whether their organs actually fail, in the sense that okay their nutrition and their actual way of swallowing, method of swallowing is so deteriorated that their organs… at the end they die from it. That's why patients can also die so I'm very icky about this whole telepractice with dysphagia like, let's do the /r/ and the /t/ and the /s/ for speech and any language, aphasia, apraxia, let's do that but dysphagia is something that you continuously, yoh I'm ….

R: That's why I was actually, I expected -

P2: It's a very good subject because-

R: -yeah, 'cause we need more research. There's no South African research-

P2: I actually checked and I was like, "What?! For dysphagia? Are you freaking kidding?"

R: [laughing] and I was so surprised because I thought "Okay, they're probably going to focus on management, you know, like apps-"

P2: Bang! Let's do it.

R: - all assessment. Or most of it was assessment, I was like "But guys, surely you have to be there in case something goes wrong?"

P2: That's the thing.

R: , but yeah they seem to be doing it here and there overseas but it's not, it's just America and Australia.

P2: Is it? And are they doing it in rehab facilities or in actual hospital- private hospitals or public?

R: It seems to be mostly a rehab kind of setting

P2: Oh okay.

R: yeah not so much private, so they were all like big facilities where-

P2: -where a speech therapist is?

R: So some of them it was. I know there was one where it was like rural and they didn't have a speech therapist and they trained the radiographer to do the MBS

P2: okay

R: but most of them were a speech therapist and it was more where like. SO let's s say you're doing your bedside swallow evaluation, right?

P2: So it wasn't diagnostic? Well MBSs were actually, so it was diagnostic

R: Yeah so a lot of them were, but then some of them were your bedside eval and then they'd have an assistance come and position the laptop on the bench, have the extra lighting, the extra little mic and then you would let's say maybe uh be out of town or at a different hospital and you'd be sitting with your laptop. So you're giving the instructions to the patient and you're watching them take their swallow- they used um… transparent cups and spoons and they would put like a white tape on the notch.

P2: That's quite cool. This sounds very fancy and airy fairy and it is very fancy and it doesn't happen in private or in practice let's call it in practice that way. How we, even when we studied years ago, and very recently, we learn that this is the way that the sister or the nurse will feed them and this is the way the doctor will advise this or this. It doesn't happen in private at all in public either. Yeah   it's reality out there and sometimes they just shove the food and for your evaluation it will be very subtle and perfect "Okay, this guy can swallow" but when feeding

times come [claps top or right hand into palm of left hand three times] or when feeding time comes they've got 38 to 60 patients per ward to feed. It doesn't work like that, Anisha. That's why-

R: -yeah I can-

P2: That's also the other thing with telepractice, if I'm not there to actually follow up at least every second day after the assessment or daily but at least two days after the assessment, I'm very worried to just give a nurse the- you do get some of them that are fabulous with feeding, but then you get some of them- and I understand they very limited to a great extent of feeding people, but it's not as showed in the videos. Let's put it that way. Definitely not. It's how fast with a teaspoon, tablespoon, whatever you get-spoon can you go. And that's so that's the other thing on telepractice with the assessment and what continues in reality is two different things, management wise.

R: Yes.

P2: That also makes me a bit like - I don't know, this whole telepractice with dysphagia, like oh my Lord, have mercy on me! Just interpreting results and giving advice thereof that's great, fine, but yoh, I don't know just doing management and therapy over…

R: And do you think it would be beneficial to do, so the one case I also thought was quite cool, it was a collaboration between India and America,

P2: Okay…

R: and every month they would have a teleconference and each side would present two patients, well not the actual patients but their cases who had persistent dysphagia. You know, they're trying everything, nothing's working and so then the American and the Indian consultants would all kind of come up with a management plan together and they would do that on like a monthly basis. Do you think-

P2: Okay, on the same patients or….?

R: Different patients each month I think or if they were still struggling with the same patient you could probably -

P2: -okay because that's also the thing, that's actually a great idea but then just to rotate through all because you've got so many dysphagia patients, just to rotate through all of them, but do we actually revisit the one of the previous month, are we going to say "listen here, all eight measures didn't work for him, what's the differ-" You understand what I'm saying?

R: Yeah

P2; So that's a very good idea and way to actually combine scopes and combine countries to actually do the same thing, but you've got so many patients that you will need to discuss because you've got a lot of patients that are tricky patients. So how regularly will they be

revisited or are they just sorted out after eight options? Are we going to do all eight? "Okay, you do the Mendelson, I do this one, you do this one, you do this one, you do PEG. Okay let's see which one works." You understand? And I know it won't be that vast like that far apart but I want to know whether they actually come back to that patient. They won't have the time , so yeah at this stage it's great for time, it's great time-wise and also I think it's great for the patients if he can get the right treatment, and we aren't all perfect beings. We do make mistakes, but I'm very iffy about, at this stage, I think if it wasn't so unreal. We can do speech, voice, hearing, or hearing I don't know. Speech, voice, language over telepractice, but dysphagia one-to-one. That's my opinion.

R: Okay, no, but that's great. Thank you very very much.

P2: Pleasure

R: It has been great.

Interview 3 (R=Researcher, P3=Participant 3)

R: I don't know if you had a chance to look through the actual info pack?

P3: I did.

R: Okay, Yay! So , apart from what's mentioned in there any kind of telepractice in dysphagia that you've come across?

P3: No, not that I know of… not in terms of dysphagia.

R okay so you've seen other…

P3: I remember seeing something related to therapy being done in Australia… via   yeah because it's quite remote, but it was such a long time ago but it just, when I read this, that came to mind. I just don't know…

R: Okay –

P3: … specifics about it.

R: And then the results that are in there, mainly showed that people who were using telepractice preferred to do audio and visual. Do you think that would work better than just one?

P3: Yes, I actually think that's necessary for dysphagia. If you think about that we don't only rely on what we see but also you have to listen for voice quality, you have to listen for   person's even like post swallow voice, before you begin, , so I think it's quite important that you have both

R: Yeah, , and then a lot of them also did their like assessments and therapy in real-time,   so you think that that would work in South Africa? Why why, not maybe?

P3: What do you mean by   what specifically do you mean by like would it work in our context?

R: So one of the big concerns that has come up is the Wi-Fi internet kind of situation

P3: Okay so that's what you're referring to?

R: Yes.

P3: So my concern [laughing] when I read through these questions and when I read that I actually thought that we are going to have a lot of issues with cutting out with lagging with the

138

buffering [laughing] so I actually yeah, I agree one hundred percent,   … I think it would be fantastic, but I don't know… I think we need real-time, I think that that's a given I just don't know if it's as feasible here.

R: Okay, that makes sense 'cause   initially when I started as well that was my first thing like, "but how are we going to make it work?"   so that brings me to here, so at your current place of employment, uh the equipment described, so they spoke about having laptops and lights and extra mics , how easy would it be for you to acquire?

P3: No. [laughing] I can tell you off the bat that it won't be- [laughing]. When I was reading the list, I think it's, I don't think anything is impossible. I've started to look at things differently in terms of something may be really amazing and fantastic and would be so beneficial, but to actually implement it in our setting, I think is something that we often overlook at how effective it would be. So, for example, in government, our procurement system is quite tedious and it's not always reliable so we wait very long for our basic supplies, so for us, so I think if you ext– you get specific funding for something, specific that we need to get that these items, I think that may streamline it, a bit, but if I just think about how the red tape involved to get something fixed… to get   maybe even to procure something if something … and it's not just about the equipment. It's also about the security of the equipment…

R: Yeah,

P3: …which we don't often have control of in our settings.

R: Okay, so would you say that maybe if if a change was to be implemented, it would be easier if it was coming from government's side?

P3: It would need to.

R: Okay, there isn't, there wouldn't be like something that a department could motivate for, and hope for the best?

P3: I think that's sometimes very difficult because the need is so great.

R: Okay.

P3: So for example, we could motivate and ask for specific things but at the end of the day another department may trump our request.

R: Okay-

P3: Because their need may be greater in theatres than in say here, but having said that and putting that aside, as I said, "anything and everything is possible." Look, like we did stats and we could motivate for a specific AAC budget which we then got AAC equipment for. So, it's not to say that it's impossible. I just think the equipment that's needed… it's a lot of … like laptops, lights, microphones. I think if we get it, it's it's not impossible…I just think sometimes … the biggest hurdle will be getting it.

R: Okay, it does, it makes sense. I definitely does and that's why these are my concerns.

P3: As I say, it's not impossible. I think you just need to go through the right channels and you need to have the appropriate motivation and you need to mo- show government that, "this is why we need it and this is the benefit thereof"

R: Yeah

P3: , but as I say, I'm only speaking from a [gestures towards self]… my own perspective

R: And how would you describe the internet here?

P3:   we have Wi-Fi for patients.   and we also have internet access in our rooms, but it's quite limited.

R: Limited in what sense?

P3: So for example   it's limited that it's quite controlled as to what we can and can't do on the internet, just in terms of for example you can't go on to Facebook or YouTube or access certain things or download files that are too large and so forth. As I say, there is Wi-Fi, but you just have to go to the field.

R: Oh, that's-

P3: [laughing] yeah-

R: -little less convenient.

P3: [laughing] Yeah, there's a problem with Wi-Fi access, but there is Wi-Fi.   and I think Wi-Fi is something … and internet is something, I know the Western Cape government is changing slowly, because I know we've got Wi-Fi spots around Cape Town now, in Cape Town gardens and in some areas as well, so I think that's something that can… I know [Hospital A]'s trying to change… it's just not as   … fluid yet.

R: So in the actual hospital, there isn't Wi-Fi there?

P3: Not that we can access.

R: Okay-

P3: So the doctors will have their –

R: -Oh okay-

P3: like pri- closed things,   but … and some of the major projects like XX research have their hubs, but it's not open access.

R: Okay… okay

P3: I think that might be slightly private, as far as I know.

R: And … okay so the internet that you do have access to, is it relatively fast   or I know you said you can't download big files ?

P3: mmm but we wouldn't like for example, so what you can download is quite… it's limited if I remember correctly. So you can do like your PDFs, your journal articles and so forth but we don't, as far as I know we not really allowed to access things like YouTube or places that you can download so even if you are on a website when something's large you can't click on it to open it.

R: Okay… okay, … so let's say in this magical situation where the hospital has   they have Wi-Fi and it's great and you've got all the equipment and you have internet access here, but it's just too slow. If you needed to upgrade it, would that be something that could be motivated for or is likely to work out?

P3: … I'm not sure because where we work currently everything is quite streamlined. So it's not a situation, as far as I know that an exception can be made for one department over another. I think that will have to be a private arrangement with a private … where we sort of try to get our own Wi-Fi access, you know-

R: -yeah-

P3: -via sim rather than use the hospital's because I don't think you can change access, and access point for one area in the hospital. It'll have to be a generalised…

R: yeah, that makes sense   okay and then

P3: As far as I know. Perhaps IT would also be able to… explore. [laughing] I'm sure their internet isn't limited like ours.

R: Yeah, probably not [laughing] … so a lot of the studies made use of videoconferencing, but we also know that if you're gonna have a patient and let's say their assessment and you're doing it, you want to make sure that it's confidential and it's not just all leaking onto the internet somewhere , so do you know of any of the videoconferencing apps that are encrypted?

P3: hhmm [shakes head].

R: Have you ever used Skype?

P3: uh hmm [nods head]

R: okay so good news, Skype is encrypted, which is quite cool and I don't know if you've ever used WhatsApp's videocall?-

P3: [nods]

R: -also encrypted, so that's quite nice in the sense that they're two apps that are free and are encrypted, so you don't have to worry about anything getting lost here and there on the internet it's just a matter of having the internet connection and then you would be able to use those apps quite nicely.

P3: but then do we actually, sorry, just a side note, so if we have access to WhatsApp, would we need the laptops? Couldn't we take a portion of that, but the quality?

R: That's the thing. That is the only thing. So the laptops were mentioned because those studies, they used them for the bedside evaluations, which I mean obviously it's nicer to have a bigger screen and it puts less reliance on the patient 'cause then you can just put it on their table and it's there and you can see them whereas with a phone I imagine, either if the patient can hold it themself, they would need to hold it or you'd have to have an assistant – most of them did make use of an assistant –

P3: mmm I saw-

R: - the assistant would have to hold it   but I mean it's just they have the resources there so they haven't had to try it out with phones

142

P3: sorry

R: No, it's a it's a, I mean that's the big thing I want to figure out because all the studies have been done in first world areas, so we can't just copy-paste implement it here. We need to figure out how do we adapt it …

P3: This is veering slightly off topic. I think it's easier for me in government, we can find ways to fund, There are lots of avenues to go, until you're exhausted to find funding, especially if it's well motivated and and we can show the benefit to the patient. My only concern is that patients won't be able to-

R: yeah-

P3: -to access this.

R: Yeah and I think that's where like if, as far as I know, most people these days have WhatsApp, or they have a phone that can support WhatsApp, but I don't know if your experiences are different?

P3: This might be different. I find it varies a lot so majority of my patients have phones-

R: -okay

P3: -but the internet access is quite limited so that's something we've picked up, but what we also find is that many patients don't have money for data.

R: mmm that is and I mean South African data prices are very high-

P3: -they don't have money. They don't have money to come to hospital either… so it's a catch

R: mmmmm because I mean that was part of what motivated this kind of study because you have patients who can't get to the hospital, so how do we get the services to them?   but then also my key thing was internet, data, costs…

P3: Although, patients in wheelchairs, roughly so for example from Delft to [Hospital A] at the moment, we looking at, I just did a quick survey-

R: Yeah-

P3: - and with my patients and it's about R200 R250 for private transport from Delft to here, so if we think about it that way… data would be less than what the cost they would incur. Also private, a private taxi from Eersteriver to here   it's roughly about R80 now, so even then it's

143

also a way to compare cost, because data would be still, depending on how long the session is, because their sessions were roughly an hour…

R: Yeah, but   I mean obviously you would work with your patients and if you don't need to see them for that long then…

P3: I don't know, I'm just thinking, this may be very beneficial for our patients who are low-risk.

R: Yes

P3: low to medium,   also this would be very beneficial for patients who are not necessarily for active management yet, so for example where we need to keep an eye. Maybe they've been sent home with a PEG or NGT where we don't want them to come in if their GCS is still too low. So why can't the family WhatsApp and call us or videocall us to say, "We not going to come in. This is the situation X Y and Z" you can look, because then it's not as active.

R: The extra info is great! That's what we want   okay oh so this one is difficult , I don't know. Have you ever been in private?

P3: [shakes head]

R: Okay-

P3: When I read those I was kind of… I won't help you [laughing]

R: Okay yeah but at the moment, we don't have any laws for how to reimburse with regards to telepractice for dysphagia. Do you have any ideas on what would maybe work well, or what we might need?

P3: I don't actually know. I've never had to bill somebody. I also have never really taken into account how the hospital bills. I know we bill according to income so it's a very different practice. What I do think is important though is that I do think you need a clinician will need to take into consideration their resources. So if you have an hour session, what is the cost of that data   for that session? And I also think in terms of whether the patient is here or not, in front of you or not, face-to-face, I do think your time is the major factor. So I don't think we'd still need to. Each clinician would obviously have different they would bill their time differently, based on their experience and so forth   I think then the difference would then be internet instead of   facility and equipment used. So the equipment would change, but I think your time would remain the same. So for example I think for private, if they had to bill for a

syringe or bill for this they wouldn't necessarily. They'd need to then be specific about what they are billing for because it would be different and then medical aids would want to know.

R: Yeah that's the big thing. Was there a particular study that stood out to you as being relevant to South Africa?

P3: In terms of the method?

R: Yeah

P3: I really liked method one [points to method 1 under instrumental assessment section of info pack]. This was with the VFS?

R: Yes.

P3: The reason why I thought that was very very cool is because for example in the Western Cape, there are very few hospitals that do VFS so for example, Tygerberg, Grooteschuur, so what find is our platteland patients or our patients from district hospitals wait very long for VFs, because they will then need to come to us, they'll need to find an appointment and sometimes the equipment is there but sometimes for example Worcester has VFS services and then Karl Bremmer also has but it's sometimes getting that service going that is the greater issues   and so what I thought is pretty cool is that if there is a district hospital that has the x-ray services available we can then assist and do it via… teleconferencing, because especially with what they put in place and also when you have such hi-tech equipment at a secondary or at a hospital, the maintenance team and support as well as the.. structures are already there, so to add something, because there's already a set monitor there, which is connected, and they also would have   better infrastructure than at a different out-patient department who wasn't set up with that in mind. So what I was thinking of here… I said this would, I potentially possible because you'd reduce waiting times and also transport costs for hospitals and patients.

R: That's exciting, because that was also what caught me by surprise at first because with us obviously dysphagia is the one thing we learn that's like super risky, so I thought all the research would focus on like therapy and then I was surprised at how much of it focused on assessment   do you feel that it can be done without having- so if you had to train the radiographer or the assistant to assist doing the VFS and providing the boluses and do you think you'd be comfortable?

145

P3: Uh so I think it's a great idea but I think also a lot of planning. I don't think it will be a one-size-fits-all situation. 'cause for example even some of our doctors, they rotate.

R: Okay

P3: So many times they rotate to a secondary hospital that feeds to [Hospital A] with the skills that they obtained here and they there for a certain amount of time and so forth. So … I think even like with the doctors that would be a possibility but you don't know. So it would need to be and even with the equipment like what you need to get this started, a lot of it won't be dependent on us, it will actually be dependent on the hospital and the equipment that's already there. Then you would need to see about the services, you need to see about the staff, you need to see about what is possible and what's not possible. Because you need to remember even with a barium swallow, the radiographers give the barium and they give the amount and they give so I think-

R: -okay-

P3: -if they are open to it 'cause it's not their scope, I think the problem, but then, we would then just need guide very strictly as to this is what we starting with, the quantity because of X Y and Z. So I think it would involve initially quite a bit of input to get it up running and every trained and you'd need to consecutively, consecutively train   or sometimes what happens at the at the   hospitals where there are speech therapists they're comserves.

R: Yeah!

P3: So if we train the comserve, that would also because she may not or he may not have, feel comfortable to do the study because it's so limited when you're studying

R: [laughing]

P3: So then   that would also be us as a support and there and then she becomes an expert in it and she can pass it along.

R: yeah

P3: So there are ways around it.

R: okay 'cause I mean it is, it is very exciting   , [recording paused because guest entered room]….   yeah so that is very very exciting, the prospect of having people in remote areas still being able to do their assessments. It was quite exciting.

P3: Even just for support.

R: Yes, because a lot of us going into comserve, I mean you kind of… you know what you're doing, but you're not comfortable with what you're doing, so…

P3: and especially because often times there'll maybe be your you'll maybe have your physio as a rehab head, and you won't be able to … we often get calls and, "I need your just and extra head or opinion on this." But if we could see the patient with you and maybe say, "Oh, did you maybe try   supraglottic swallow? Maybe let's see if that works because of X Y and Z." So in the moment I think when somebody's with you, you pick up a lot, you learn a lot and you also aid the patient sometimes.

R: Yeah so that was actually one of the interesting things   the study with Greece… where they had the sort of let's say the comserve who did the VFS and they made their recommendations and then the next day someone more experienced in America looked at the video and they made recommendations and they actually found that   waiting that day longer for the more experienced clinician's recommendations, was more beneficial   to the patients, which I was like, "Oh!" 'Cause that could almost also be something that I felt could maybe help here, where you may not necessarily have   real-time internet access, but at least then you still getting that extra input. , how would you feel about… the sort of time management situation, because if we were to set up or start using the x-ray suites that are in these smaller hospitals where they haven't necessarily been used before, and you were to be now consulting via telepractice, … it would obviously mean that your time would have to be reshuffled. , do you think that's something that we can do, or would therapists already be too overloaded to fit it in?

P3: If I think about how things work here at the moment, in terms of we've got a set videofluoroscopy day. So Thursdays are our set   slots and emergencies can be squeezed in during the week, but that's not often the case because Thursdays are our allocated slot. So if you have the same approach, because even if a speech therapist, if we find that oh this hospital is able to provide the service we it's just about   the training with the radiologist as well as the speech therapist and the radiographer etc. Well the radiographer's would know [laughing] but …   how to do a modified barium instead of a barium. I think… they would also have to adapt a more structured approach where specific days, these are your slots. Or else even their time if they not at that hospital every day or if they've got out-patients, it doesn't work out necessarily. So I think, even when you starting out and you planning, you need a set day, so if that coincides… if you say, "On this day, this is our slot. What are you on?" It would be good.

R: Okay so it is something that kind of you could build it into your schedule?

147

P3: I think so.

R: Okay because that's also very exciting.

P3: I mean we would look at it as outreach.

R: Okay

P3: Which, as a tertiary hospital or as even as a senior therapist, even as any therapist, you'd want to support, because you're aiding a service in another area.

R: Okay, I like that.   and then lastly, so telepractice in the studies that I found, they haven't used it for prevention or promotion or counselling, why do you think that may be?

P3: … I actually… I've thought… and it came down to resources.

R: Okay

P3: 'Cause even if you think about it, a lot of times people make promotional videos and they'll play it on the TVs around… and that's something different but it comes sort of, it shares a theme, a common thread –

R: -yes-

P3: and I was wondering like… if it has to do with resources. It's not just about prevention, health promotion, it's also about the resources needed to do it.

R: okay…

P3: So for example, … the person or the place that you are wanting to … do health promotion with or… they also need the equipment that you have.

R: Okay, that makes sense.

P3: So even if we have, I do think, I speak under correction, but I do think at [Hospital A] we do have boardrooms that we can teleconference from… but to access those boardrooms, on a regular basis, it's I think there'd be quite a bit of red tape involved, until it's an official thing. … and I'm just thinking… at a clinic level…where you don't have basics… this is the last thing that you are going to want to acquire, and I think that is a problem. I think what I find is that we have evidence-based practice and we have these amazing studies, but when they're based on first world countries, it's sometimes difficult to take, it's not as effective, and I think that's what we sometimes don't realise, is that you can't copy and paste that into our setting because

148

there are too many loopholes and if we just … they're not the same, and I think people… and especially in health, strive so hard just to get a basic service, get the basics in place and then when we have that we can add these amazing interventions into place. So to me in my mind I would take this, and I think this is possible, and this should be implemented but how are we going to… tailor it? So for my mind I would do WhatsApp.

R: Okay

P3: I would focus on WhatsApp because even if my patient doesn't have a phone, there's a very good chance that their grandchild may. maybe then that is how we access it and that's also a way that we get the family involved… that the family has it be there and set up and, "Okay, I'll train you to do this" or initial assessment can be here and follow-up via telepractice.

R: I like that. I think that's very cool. yeah so that's kind of everything from my side. Lastly, do you have any, any questions, anything else that you're interested in?

P3: No, I just think it's, I think it's very good research and I think it's… I'm looking forward to… the results, because I think in government it's a very different setting and we sometimes very, we sometimes unexposed to the possibilities, because there's so much red tape and restriction in terms of what you can and can't do, but I think maybe private practitioners would be different because they have access to more resources than what we would necessarily have. So there're benefits both sides. We have different, we have MBS at our doorstep, any time, any place, easily done, specialists everywhere, but in terms, they would have a different set of skills and resources and it would, I think this may be… quite possible in private.

R: yeah

P3: I think it would just take longer to implement here. Yeah that's what I think.

R: Yeah, 'cause I'm thinking that could even maybe help where if you have your VFS out in the the different areas, and then them then collaborating with private practitioners, who would already have their high-speed internet and… that could … that could actually be doable. Because what I've found so far, I have spoken to a couple private people and it's interesting because public seems to have no issues with billing, but issues with equipment and internet and the setup, the infrastructure, whereas private seems to have easy access to all the infrastructure but there it's about, "How are we going to get the medical aid to pay for it?" and something like having the comserve doing the assessment and the experienced clinician consulting, then they have to deal with double billing and how how do you get a medical aid to pay for both therapists?

149

P3: Mmmmmm…. That's the last thing on our mind [laughing]

R: Yeah, it's been quite interesting-

P3: [laughing] I don't even think about that and that's why I think I love government, because I can do as much as I possibly can and I can provide you with the best that I possibly can, within the realms of state, but we… it's not our problem… and many times it's not the patient's either [laughing] because if you can't pay, you can't pay. If you H0, you H0. The government's not gonna bill you. I think we're quite spoilt in that way.

R: That's great.

P3: Yeah but no… I look forward to see how to take this and tailor-make it, so…

R: yeah-

P3: [paging through info pack] -sorry, I said, "Method one" I meant instrumental assessment.

R: Yes.

P3: No, this is cool….

R: Okay, thank you very much then.

Interview 4 (R=Researcher, P4=Participant 4)

R: I don't know if you had a chance to look through the actual info-

P4: I did-

R: -pack? Yay! That's great.

P4: -and I made comments on it.

R: Ooh lovely. Some from what was in there, was there anything else that you've come across in your experience with like telepractice and dysphagia?

P4: … I think the, the only variation, if we, are we going through the questions already?

R: Yeah, or unless you, do you want to go through-

P4: No, no I think the only variation I've seen is is uh with a clinical bedside evaluation.   the setup is the problem most of the time and the patients need to be transported to a place where you can have access to a thing and then the people that are doing it there are the ones that are not quite as trained but are like, "Yes, we give you access to the service and then there's uh uh an expert on the other end that is guiding the thing so…   I don't know of any facilities that have all the equipment that is needed. When we were in Worcester we took quite a few kids and adults to Ukwanda (university campus) itself, for that to happen, but uh…

R: Okay

P4: Yeah the infrastructure doesn't lend itself so nicely to implementing telepractice consistently.

R: Yeah.

P4: , one thing that has grown quite a bit is M-health,   so mobile health-

R: Oh okay

P4: -   services and I mean it, it's not focused on dysphagia specifically, but it's a way for healthcare professionals to reach   patients, community workers, whatever, using a cell phone and something simple like a USSD code.

R: I don't know what that is.

P4: Like when you put in airtime on your phone.

R: Oh okay yeah?

P4: you dial something with the hash at the end

R: Yes [laughs]

P4: And then it takes you to an option menu where you can select one, two, three, or four, your … and then giving your responses via that

R: Okay

P4: So that could be…. a way for people to access it because ...ugh… I've seen, even in the most rural parts of South Africa people have access to phone.

151

R: Yeah, this is true

P4: Not fancy phones, maybe not internet access also, but they   often do have phones...several [laughing]

R: [laughing] yeah

P4: and even the most basic one would have access to USSD, which is great

R: Okay, that's something I wasn't aware of, because that could be… incorporated into

P4: Mmmm, yeah

R: yeah

P4: So I was thinking particularly something like the case history

R: Yeah

P4: or the severity rating thing. If you had   options one to five, the person could just choose from -

R: - even to just like prioritise-

P4: -yeah-

R: -so they can see who needs to be seen-

P4: -put down a number and…. Because that could be a way to do it.

R: Okay, I like that … and then… so most of the studies incorporated both audio and visual…

P4: Mmmm

R: Do you feel that is the best way to go, or…

P4: I think it depends on which part of the evaluation you're talking about [laughs]. If you're talking about just the case history, 'cause you covered many components of it-

R: -yes, yeah.

P4: So… there are some where it is essential for you to have audio and visual   obviously if you're going to do an instrumental evaluation… then the audio isn't so important unless it's with a FEES, but uh visual definitely like if, if uh if you're talking about a bedside evaluation you can't just have someone else, a naive person interpret the results or what they're seeing on the screen for you, but even educated professionals do that badly…

R: Yeah

P4: So… I think it is important for you to have both audio and visual especially for a bedside or a clinical examination where you need to uh look at the exact quality of their voice. I mean you   you must remember talking to nursing staff and asking them, "How did this person do today?" and it was, "Oh, fine," and that is the kind of information you're going to get-

R: Yeah

P4: - from an untrained ear.

152

R: This is true.   and then also most of the studies were conducted in real-time…

P4:   hmmm.

R: So, do you think that's something that could work in the South African context?

P4:   again, depends on the type of thing that you want to do.   I … I have sent patients for videofluoroscopies before…

R: Okay

P4: thinking that there was a professional on the other end who knew how to do it, and then the thing you get back at the end of the day may be still images or … still x-rays of the person and then they're like, "swallowing anatomy is fine," like, "I didn't ask about the anatomy. I asked about the physiology," so   there are also many interpretations of the different assessments so I guess it is also dependent whether which thing you're doing, with the videofluoroscopy I think it is important because what the radiographer, radiologist looks for is not always the same as what the speech therapist looks for. And uh a trained or a   experienced speech therapist is going to see a lot more than   your naive uh-

R: -than your comserve

P4: yeah, average comserve or even entry-level, a junior therapist who doesn't work in that setting.

R: Yeah.

P4:   and the same thing with a FEES. ENT looks for very specific things and we generally use, work with ENT for FEES so, there's specific thing that they look out for and they depend on the speech therapist to say what they want extra…

R: Yeah-

P4: And uh if it was up to the ENT the person would just glug a class of something and off we go-

R: [laughs]

P4: -and that is about as sensitive as we need to be about the issue [laughing]. So   definitely if you going to put time, resource, money into this thing I think it would be ideal to have it happen in real-time. That said it logistically would be a nightmare because… I know how busy clinicians' days are and trying to coordinate the timing of the person arriving at the place where they will be,   set up with the stuff and making sure that all the technology works and… there's always a problem with the technology [laughs]

R: Yeah [laughs]

P4: so…

153

R: 'Cause that was one of the kind if concerns because a lot of this stuff relies on like a Wi-Fi, real-time kind of connection and I don't know necessarily how accessible…   Wi-Fi would be from the hospital or from the ….

P4:   most government institutions and uh private healthcare hospitals, they have internet access, good internet access but stuff is restricted so unless this kind of programme could be loaded onto the system that is accessible, like an ECM or a clinicom-

R: -okay

P4:   basis or the radiology I-site website, if it could be accessible via those, it would be great, but most video format things on the internet are blocked in the workplace-

R: - okay, yeah

P4: Not all workplaces, but especially in hospitals   any social networking things, even Drobox is blocked on a, on the government uh…..

R: okay-

P4: ...server, so I mean -

R: It's an interesting choice-

P4: -Why are we blocking Drobox, of all things? [laughs] So, I think anything that could lend itself to social networking, wasting time-

R: -okay-

P4: you have to have per- you have to have special permission to access all parts of the internet.

R: yeah… okay

P4: So, and that, I don't know any place that has good Wi-Fi, to be honest, but the internet connection could be good. You don't have to have Wi-Fi, you could have a good internet.

R: yeah…

P4: lined internet connection…

R: This is true -

P4: in the hospital, but … whether access is going to be there, I'm not sure. I think that, that is my biggest concern actually having access to the things.

R: yeah, this is very true,   also,   some of the equipment required, so like when they did the bedside… swallows, they used laptops and lights and mics … How easy do you think it would be in your kind of setting   to get that kind of stuff… to your patients?

P4: Mmmm if I'm thinking of [Hospital A], those things are available -

R: Hmm okay.

P4: All of those things are available… and in some cases even better technology is available now. Something that they brought in recently was ... Scopes, endoscopes, flexible scopes that

link or connect to   a phone, the doctor's phone, so you don't need to …. Yeah and you can also capture it there. It's a new application-

R: -okay

P4: that they've installed as well so it links up to the phone and and all the imaging happens through that.

R: That's pretty cool.

P4: Yes, so I mean that could lend itself to some really nice…

R: Yeah-

P4: Flexibility and reaching different people and with it being a portable scope and not something that has to stay, like a videofluoroscopy, it would be great and you could take it to different sites.

R: Do you know if it works just with phones or if it is something that could work like on a tablet.

P4: I am not sure if it would work on a tablet, but it probably could.

R: okay, 'cause I'm just, I'm just thinking about like some of the apps allow you-

P4: - you can get the name of it maybe-

R: Some of the like videoconferencing apps allow you to mirror your screen, so I'm thinking about is someone's in the hospital and on their tablet they can see what's happening and they'd have that screen being mirrored with their experienced clinician.

P4: Yeah

R: I mean that could be, that could be quite cool.

P4: [typing on laptop] yeah I saw one of the… one of the ENTs was using this [indicated picture on Google]

R: Was that here at [Hospital A]?

P4: hmm [affirmative]

R: Okay, that's interesting.

P4: USB inspection endoscope [laughs] weird

R: [laughs]

P4:   so I guess it depends… [enlarges image on screen] … there you go, even wireless ones now so   it would probably   link to   any device. So they've got Android ones and that would link via a micro-USB and if there was a lightning cable we could have it on Apple products, but if there's a wireless option then we could also-

R: Yeah

P4: - be very cool

R: Okay well that's that's interesting, like it's new tech,   …

P4: So basically [shows image]

R: Oh, okay. Hmmm.

P4: There you go, there's a iPad.

R: Okay. That's very cool. 'Cause I mean that would definitely … be something that could -

P4: -Yes and the exciting thing is that… [Names speech therapist] is I think developing courses for speech therapists to be trained to use something like this to actually be able to sue the scope themselves and have to depend on a ENT to do it for them… or a doctor or a other clinical professional-

R: [sneezes] excuse me.

P4: - which is great.

R: that is very awesome, yeah and ...good to know

P4: Not a cheap thing though.

R: Never -

P4: Yes

R: Technology is never cheap in the beginning   yeah

P4: Yeah so… to summarise we would have access to all of those things here, but I think the internet would be the…

R: Yeah because that kind of links to my next question which would be, at your current place of work - so you still work in the hospital, hey?

P4:   yes.

R: Okay, yeah.

P4: Not right at this moment, but

R: but, you are still, like you still, you practice still?

P4: Yes.

R: yeah, okay, , so where you practice, how would you describe the internet… quality/speed?

P4: … It is [Hospital A], where I do work, and it is… the internet is good and the nice thing is that all of the department of health is just linked together so I can access, if I have passwords, things from [names a Western Cape hospital], if I wanted to, if I needed to for some reason

R: Okay

P4: I could access their ECM, so department of health in the Western Cape is linked…

R: yeah…

P4: and so that is a nice thing but there are also restrictions to what you can access - can't even access Gmail [laughs]

R: Okay [laughs]

P4: If the technology, if the sites and things could be -

R: -So how would you go about something like that? Like, like would you have to request permission to use certain sites and then motivate?

P4: yes, and that would go into the abyss that is the department of health's planning.   and that is one of the things that I've noticed, you could do something about it but it would need to go into this   -

R: -okay, so it wouldn't just be like a write to [Hospital A] management and then they can untick the, unchain the locks and ….

P4: You could probably write to IT directly, and you know what I'm learning more more is that there are ways and means around things [laughs]

R: okay. No it's uh -

P4: like you've just got to know who the right people are, and you could get things done.   uh I don't know what the protocol is. There's something different for every ward and department and whatever.

R: Okay and …

P4: but I imagine if you wanted to do it legally, [laughs] you know-

R: Might take a while.

P4: -nn the books, it might take some time, yeah.

R: Yeah, I've heard some horror stories about waiting for ink to arrive for like a year

P4: Or just basic supplies like NG tubes.

R: That's quite scary.

P4: Not here, but…

R: Okay [laughs]

P4: [laughs]

R: Okay, so we've covered… internet speed and uh…

P4: upgrading internet speed-

R: -yeah

P4: XX probably.   yeah it could be motivated for, but I don't think internet speed is the problem.

R: Okay. It would just be the restrictions that are placed -

P4: -Yes.

R: Well that's, well I mean that's more on kind of like positive, … And then, so obviously if you were to videoconference with your patient, you wouldn't want there to be a risk of like anything leaking into the internet, or if you're uploading their case history to consult with uh someone else, you want that all to be secure   so do you know of any….?

P4: No.

157

R: , have you used Skype?

P4: Yes

R: Okay so good news, Skype is actually encrypted

P4: That is good

R: Yeah that was one of the things I looked up

P4: and WhatsApp videocalls also encrypted, no?

R: Yes. yeah   which is which is quite cool because obviously both of them are free   …

P4: What about Telegram?

R: I haven't heard of Telegram.

P4: Telegram is a uh messaging app, like WhatsApp-

R: -yeah-

P4: -but supports a lot more and the privacy is a lot… never thought of it that way,

R: okay

P4: but that could be an encrypted source. The only thing I would have a problem with, using Skype or WhatsApp or... is that information would be on your phone-

R: -oh-

P4: - and accessible to someone who might pick it up or it goes onto your cloud and lives there forever.

R: yeah

P4: That is, I mean   end-to-end encryption is one thing, but uh making sure that that that stays confidential… between you and your patient. That is what creeps me out little bit.

R: So what is this, is Telegram similar to Skype, or…

P4: Telegram is similar to WhatsApp.

R: Okay, does it have like a calling function… as well?

P4: Yeah, I imagine. It's more stable than WhatsApp… and it has more security functions, but again, easily accessible.

R: Okay hmm, I will definitely look into it   because yeah like those are the kind of things we're I think, would be more suited to a South African context where you know most people at least have WhatsApp or they have a phone that can get WhatsApp and they don't have to pay for a special app or programme, 'cause in the research overseas it doesn't seem like that side of it is an issue. It seems like everybody just has internet access and -

P4: -Oh but it is -

R: - everything is fun and dandy.

158

P$: It's the truth. There is, their internet, their accessibility is so much better in first world countries and here we pay way too much for internet and data usage and … especially mobile phone data, if you not connected to a Wi-Fi… source… it can chow away

R: Because that's the, the other thing, even if your patient has a phone that can get WhatsApp and do the WhatsApp calling,   whether or not your patient has data or money for data is the other complication, …

P4: Yeah, that's what I was thinking of, the … have a look into e-health-

R: Yes with the …

P4: M-health actually, it's mobile, it's a branch of e-health so electronic health, but specifically looking at targeting people using cell phones.

R: Okay, that's quite cool. I will definitely look into it.

P4: And   department of health and WHO's written up things about trends in young people using mobile phones and accessibility and even data usage and how you could minimise data usage - it's really cool actually-

R: -Okay, I'll definitely look into it-

P4: - have a look at that-

R: okay then, you have worked in private before?

P4: Hmm [affirmative]

R: Okay so then you might be able to help out with this section. South Africa doesn't really have any specific laws with how to reimburse for telepractice and dysphagia...so what do you think would be the best way to actually, or have you, yeah, have you had any experiences with telepractice and reimbursement at all?

P4: Not at all.   but I know that there are discrepancies even in face-to-face consultation

R: Okay

P4:   there are medical aid tariffs that are suggested, and that's across the board in private healthcare, the medical aid tariffs that are suggested and per practice you decide what you will charge , some practices go above medical aid rates some are below, I mean, I guess it's your business model that you have to follow… and it's really difficult to wrap your head around uh healthcare being a business.

R: yeah

P4:   quite a scary thing also, I mean obviously you want to be conscious about what you're using and doing and what the actual cost thereof is, but if it's someone's life at stake...and you're more concerned about the money or, it's really difficult. So there isn't even, there aren't even good guidelines about how you should be reimbursed for face-to-face contact and I know

159

a lot of medical aids don't even pay for out of hospital services and then … who has money lying around to access these? There are very few people that can afford to access outpatient speech therapy services, never mind telepractice, I mean it would be a way to reach someone where they are, but whether it would be covered… whether someone would have the funds to have it covered.

R: So, I mean if it were going to be done through a medical aid, what do you think we would need from our side, to like?

P4: mm.... Uh… something that would be able to keep record of all things, that take place. So it would be great if it was more like an integrated app that would be dedicated to … that service, where it would record even like time spent arranging the appointments and time lost because of technical difficulty, you know?

R: Yeah

P4: , because… at the end of the day that is still the clinician's time that's being used up, so maybe something that could keep that record for you in an easy way.

R; Okay, 'cause I know one of the of the other things that came up was in the situation where you have the novice clinician doing the assessment and you have the experienced clinician helping out -

P4: -who gets paid?

R: Yeah, 'cause the medical aid won't pay both -

P4: -nope.

R: And , kind of like a how do you prove that you've seen this person for dysphagia and not just you sat on the phone for with them for half an hour discussing… whatever?

P4: Yeah

R: Although I guess the same can be argued for a face-to-face session-

P4: hmmm… I, I guess if you look at it as if it is a specialist service that is being offered…

R: yeah

P4: … the rate that your GP is going to charge you and then your ENT is going to charge you is gonna be different, okay right?

R: yeah

P4: So the specialist is going to charge you more than the general practitioner-

R: yeah yeah-

P4: - and why shouldn't it be the same for that, but because it's happening simultaneously, I'm not sure-

R: -yeah yeah… hmmm it's an interesting way of way of….

160

P4: Because you can't even practice as an audiologist and a speech therapist at the same time, you have to split, you can't bill for the same thing at the same time, you have to split them, separate sessions, separate accounts

R: which could also, I'm sure that gets way costly

P4: Yeah

R: Okay   … and then, okay so of the studies that are outlined in the info pack, was there any one that stood out to you as being particularly relevant to South Africa?

P4: the the clinical examination, purely because I've seen it done and I've been part of having it done   as a, a student , but I I think I'd be interested in exploring the screening   component thereof… because there are many inappropriate referrals being made and many referrals not even being made. So if there was a more consistent screening measure, tool whatever for patients who are admitted to emergency units or uh clinics and   for it to kind of flag the one who are sort of huge aspiration risks, versus "these people are not at risk for aspiration, but will experience symptoms" I don't think a four-day wait period is a good one to have, like the…

R: Yeah they they [laughing]

P4: It is a very long wait. … most hospitals have a 24-hour maximum wait on the dysphagia referral [laughing] so four days is a bit ridiculous, also because it's a life-threatening thing, so that could be -

R: -yes, yeah-

P4: But that could help you prioritise your time and not spend so much time on attending to irrelevant cases and being able to spend more time on sort of managing the real stuff.

R: Yeah so they did theirs with the   tablets so I'm thinking what you spoke about earlier with the cell phones, if we were to do that instead it would probably be a lot more

P4: -yeah-

R: -accessible, uh-

P4: Yes, it could be something that's -

R: -and I mean that's -

P4: -also that's 70 questions! I want to know what these 70 questions were.

R: Oh yeah no, that was ridiculous, I was like, "Who's gonna sit…" and like one of the things in the … case history one well then at least they were like okay they gave like the option of a mouse for maybe like older people who aren't so good with … but I was still like you know this whole concept of technology for a lot of elderly people is very difficult   like the concept of you're moving it here [on table] and it's moving there [on screen] is still it's still something that may not translate very well … but I definitely think that that phone thing could really, and I mean then people don't even have to come into a facility to make use-

161

P4: -yeah-

R: -they can do it while they're home   to decide whether or not they actually need to come in, which is quite cool.

P4: A friend of mine's working on developing it alongside a healthcare, home-based healthcare workers so in the   community and then for them to make the make referrals from there using-

R: - okay, do you know if it's like a … an automated, based on the response they get categorised or does someone need to like interpret-

P4: There's a, I mean it's still in the development, and it has been for several years now, but there's an algorithm that makes sure that the things go to the right places.

R: That's good because I was thinking that would be… a light pitfall, if like you had to wait for a human component to interpret the answers, because -

P4: -yeah, one of the things that I noted was that it would be good to have an algorithm that already weeded out sort of the more serious risk   patients from …

R: Yeah

P4: the less , serious risk and then completely inappropriate referral as well [laughing]   and send them on to the right place -

R: -yeah-

P4: - and what they want to do with this is have the home-based carer , send the information…

R: yeah…

P4: and then it gets sent off to the hospital and the person on the other side then gets the details of the home-based care worker and phones tem back

R: okay

P4: So you don't have to sit in the community and use up all of your airtime-

R: -okay-

P4: - you send all the relevant information and then you get called back-

R: -yeah, which is-

P4: -based on that, from an expert on the other side which is an interesting idea. How it's going to be implemented is another

R: I don't think, I hope it gets implemented, because I think it could make a big difference-

P4: -yes-

R: - How did you feel about the rest of the studies? 'Cause I know you said you made, you made notes, I mean I'd love to hear… your feedback.

P4: … I… wanted to know, you mentioned a, right at the beginning the limited number of speech therapists and occupational therapists in dysphagia…

162

R: Yeah

P4: I was keen to hear sort of the occupational therapist's role, and I know   other countries, other systems work a little bit differently where it's the occupational therapist that looks at that. Some countries even have the dietician   being in charge of the dysphagia management so….

R: yeah so the main reason it came about was because of the literature searching. I had to decide whether I was going to restrict it to speech therapists and then I became aware that oh no in other countries it's the it's the OT that does it which is why we decided not to not to restrict, but I know with them, so on their OATA, the American occupational therapy…   they offer specific courses that allow OTs to become qualified to do dysphagia basically.   I know like from a… activities of daily living they definitely get incorporated, but yeah   from our side I didn't I didn't delve too deep into what exactly they do and how they address it, but I know that   they're also… I mean all the allieds are a limited resource so   yeah but definitely because of activities of daily living and then they do take full on course where they basically do what we do   yeah…

P4: Yeah… there probably is a lot more training in dysphagia that is needed.

R: Oh definitely. I know also   someone was telling me that, I think it's in America, or somewhere overseas, that even if you're a qualified speech therapist, they won't let you practice dysphagia. You need to do postgraduate course before they'll actually let you see people for dysphagia, which I think -

P4: - across the board in healthcare that is a phenomenon. South Africa, because of the the burden of disease uh our healthcare professionals are trained as generalists.

R: Yeah.

P4: You're not trained as a paediatrician or a… ear, nose and throat surgeon or whatever…

R: Yeah

P4: You are trained as a generalist,   and you should be able to do little bits of everything. And you'll find… especially going into comserve that a lot of comserves don't have many   skills in place, like uh they don't have a good grounding in one thing all the time -

R: -because they can just do little bits of everything

P4: -yes and -

R: -enough to pass each section

P4: - I think [laughs] that's the difficulty of I think, structuring an undergrad course, that you know that you must address all the aspects and how do you prioritise one over the other and there isn't enough time, resource for you to have exposure to everything in such detail, so you get exposure to language, plus plus [laughing] hope for the best at the end

163

R: yeah, no because I mean it would be, it would be lovely if we could have actually have like in-depth dysphagia knowledge, but I was about to say we, I mean if were to make it compulsory that you could only practice if you had done postgrad stuff in it, no-one would be practising. I mean I look at our our masters class and how we're maybe three or four people and it's the first year that so many of us even thought about doing postgrad,   so yeah I see I see the dilemma.

P4:   yeah and there other fields that you haven't even touched on, like   burns management, and I'm not experienced in burns management either. [laughs]

R: yeah, I know the OTs do a bit. They actually like -

P4: -but the speech and swallowing implications of burns-

R: -it would definitely affect-

P4: -and not just outward burns, but inhalation burns, those are the ones that do most of the damage, are significant-

R: -yeah-

P4: -and now you're dealing with skin and facial contractures, craziest thing. We have absolutely no knowledge on how to deal with that and then it's   I think the most important thing is just to know what your limit is.

R: Yeah, don't pretend you can do everything when you can't.

P4: Yes. You know lots of little bits of things. We all do, know lots of little bits, and some know a little bit more in a particular field because that has been what they've been working in and the more you work in something the more you kind of develop knowledge and understanding and more insight and it's important to keep pursuing more [laughs]

R: yeah

P4: not to just sit back and "okay I'm going to follow this recipe forever"

R: Yeah [laughs] because yeah the recipe also changes and if you don't notice then…

P4: Yes-

R: -it's quite bad-

P4: -and it's easy to follow a recipe.

R: Yes, and I mean all your patients are not the same, so… the recipe doesn't always work.

P4: [laughs]... but it's important to notice that it doesn't work.

R: Yeah

P4: I'm saying it's easy to fall into that habit of maybe just do the same thing for everyone… because my caseload is so high or because I don't better insight, or because whatever

R: yeah well I heard a story about a student, comserving, not from Stellenbosch, from somewhere else, who was going to do a blue-dye test for dysphagia and-

164

P4: -we did blue-dyes on all of them

R: -yes-

P4: -on everyone -

R: -even when they-

P4: -without a tracheostomy-

R: -yes, 'cause [names clinician] was so excited, she was like, "Aww she's never seen one, she wants to o and like watch" and she's like, "oh yeah when did they have their tracheostomy done?" and they were like "they don't have one" and she was like, "oh but how?"...

P4: [laughing]

R: This girl was just adamant that "no, this is what they do, this is how they do it" and then she was like, "Okay then I want to come see how it's done, how does it work?" and then the senior person was like "No…" Yeah.

P4: So ever since I heard that, I make sure that everyone knows that a blue-dye is for a specific purpose only, and then they're like "Yes, we know that's for a very specific purpose"

R: [laughing]

P4: I'm like, "Are you sure? Because if I catch you doing that anywhere [laughing]" Well, we've been doing lots of blue-dyes this year. We've been working in the ICUs, been in the burns unit, been in G5, in the ENT with the oral... Neck… what was it? Oral, neck cancer?

R: Oh, okay.

P4: , yes. Also the laryngectomies that have been there-

R: -yeah-

P4: -so, dysphagia post-laryngectomy, dysphagia post-glossectomy, mandibulectomy whatever.

R: That's very cool. That's actually that's how I, so one of my patients that got me into this whole distanced thing, she was a cancer patient who had had part of her tongue, jaw and neck removed… yeah, and she had no teeth. she posed the question to me, "Am I going to be eating this soft food forever?" and it just kind of like a "uh... I think so" I mean this.... We try, but uh she was one of those people who I was like, "Okay, when I leave or when you leave hospice, how do I keep helping you?" and so we'd do like phonecalls to work on her speech because also obviously that had issues, but yeah that's where I initially got the idea of looking into telepractice and then because of scoping it was like, "okay, let's focus on dysphagia, because there's not a lot of info on it" yeah...

P4: And uh… the scary thing is that there's such variation in dysphagia practice as well. You would think that it's that it needs to be more controlled and …

R: I was most surprised because I really thought that when I started researching I was going to get a bunch of studies about management, you know where patients are at home and you are practising the swallows with them and it's like, I mean it's still risky, but it's not as risky as immediately, VFS and then most of the stuff I got was assessment and I was like, "but surely you have to be there. What if something goes wrong?" so it was it was very interesting to see what was happening, but… overseas they seem to be making it work, , but it is literally just Australia and America. So…

P4: [laughs]

R: And all the Australian studies are done by the same authors, different orders of their names, but it's the same people. which is like those people are obviously very knowledgeable but it's also very scary because whatever biases they have are feeding into all the research that's being done. Similar story on the American side, yeah

P4: And...I went to the academic year day presentations a couple of weeks ago and...it was so obvious the bias that is present in research. it was actually quite scary. It was the first time that it dawned on me in such a weird way that the way in which you frame your research question and the way that you write it up is definitely biased. It's always going to be, but then how do you make it something that could possibly be far-reaching?

R: it's actually interesting because we uh covered something similar on the linguistics side, but it was about almost how in like these small specialised fields there's strong publication bias, because obviously anything you want to publish is generally peer-reviewed, but what happens when your research contradicts the research that the reviewer has based their like rise up on-

P4: -life-work on-

R: -exactly! And that's why a lot of studies they they get rejected, so all the published stuff is telling one story, but all the research isn't necessarily telling the same story, , so yeah, for one of their studies they actually just looked at all the conference abstracts, because they felt like it was easier for people to get accepted for a conference than to get published and that was how they basically proved, well, their research, it was done now in 2018, showed that the whole , advantages and disadvantages of bilingualism, supposedly having better, , what is the word?... higher order functions and stuff, but having smaller vocabulary or picking up things slower, not necessarily true. so yeah interesting, interesting stuff

P4: Yeah. And how've you found doing the scoping review?

R: It has been… it has been interesting. Do you have any more notes on the, on the this [gestures to info pack]? Because if not, then I can stop recording and that means I have to transcribe less [laughs]

P4: okay, as long as you transcribe that sentence.

166

R: [laughing]

P4: , I think that was all… … the thing, we just didn't cover your last question.

R: Oh ooh whoopsie,

P4: Why I think telepractice has not been applied to other areas of… and … when I started thinking about it-

R: -yeah-

P4: There's definitely a lack of resources, and then I was like, "but there is this whole drive to do things via mobile te-" and then I went and looked it up even further because it's been kind of a theme for the last few years   looking at that the m-health and looking at different components of that specific friend of mine's uh thing that he wants to develop with his non-profit,   and there's actually a massive drive in South Africa, especially surrounding HIV…

R: okay-

P4: Education, awareness,   prevention, uh and specifically targeted at teens-

R: Okay oh, fair enough -

P4: -and young adults, but and it's not only in, I didn't know that it was such a big thing like "Ah there's definitely a lack of resources and people can't access" and then I went and looked and it is actually something that is being done and makes sense because that is your way that you're going to reach your population-

R: -yeah-

P4: -through something that they actually use-

R: -yeah-

P4: -so-

R: -so it would almost be just using that infrastructure to target it for dysphagia kind of -

P4: -yes-

R: - situation…

P4:   and this uh specifically asks about other areas of, or is it other areas or is it dysphagia specific?

R: dys- dysphagia specific

P4: Okay, well, I don't know of anything that's dysphagia specific, but….

R: well, okay...yeah

P4: It is uh something that is being done in healthcare in general and something that is on the rise.

R: yeah 'cause I think yeah I was thinking particularly about the counselling aspect…

P4: mmmm

R: Especially with like the family and how 1) counselling can use up a lot of time during your actual session,   so we were thinking about how if something like that could be done through a videoconference, or if if you're just planning to spend your session telling your patient about like maybe they're getting a PEG and you want to explain it to hem and show them what it looks like and how it's gonna work and all that kind of stuff. I mean they may not necessarily have the funds at that point to get transport, come through to the hospital and all that stuff so, if things like that could be done um through videoconferencing, I mean you can still show them you know what the tube is going to look like-

P4: -what I find even more effective is if you send the, if you have to have it as a video, that's fine if it's something that you have to demonstrate-

R: -yeah-

P4: -but even just a voice note. It's something that they can go and listen to over and over again, when they have the capacity to process information -

R: -very true-

P4: -beyond what you've done. So, there's a threshold. A patient has a threshold, every...in any given situation. There is much value in doing things with them and reinforcing-

R: -yeah-

P4: -as you go along and making it real for them, because there is a level where they can take in any information anymore

R: yeah

P4:   uh but giving it to them in a way, in a something that is a common place tool-

R: -yeah-

P4: -is uh… and then something that they can go back to-

R: -yes-

P4: -so I've seen, well I've experienced that working particularly well, for me to go back to, and shorter chunks. Not a lot of information at the same time. But I find also that a lot of clinicians that think "I'm going to make a recommendation for this person and I'm just going to assume that he's going to follow it and when I come back tomorrow and he's not - 'patient uncooperative' " and it's not that you haven't… you haven't… mmmmm… engaged with this person on this information or that way of doing something. You haven't made it real for this person. Even myself, if I go to the doctor and the doctor says, "You need to take this for 7 days" I feel better by day three and then I stop doing it.

R: Oh wow

P4: You know?

R: Yeah

P4: It is uh you think that you have a better way to do it and unless someone is guiding you through that process, most of us don't.

R: And I mean also, we have major language barriers. I remember one of my patients who was refusing to have the PEG inserted because she was currently on an NG tube and she was hooked up in the hospital to the… feeding thingy, so like they just had it there all the time and she was under the impression that if she gets this… PEG   she's going to be hooked up all the time to something, 'cause no-one had explained to her that like "no, it can close and you can wear clothes and walk around and do everything" and then and then she was okay with it   yeah so.

P4: We have a lady, we saw this morning, she has lupus and all kinds of other problems and autoimmune difficulty, so she has these flare-ups of problems

R: yeah

P4: I don't have any more, so you can close [the recording], but she...

Interview 5 (R=Researcher, P=Participant)

Interview 5 (R=Researcher, P5=Participant 5)

R: Okay here we go m okay so you had a chance to kind of look through the… the info pack?

P5: mhh m [affirmative]

R: That's great. Of what you saw in there, is there any other kind of telepractice with dysphagia that you've come across?

P5: Not with dysphagia, I've, I've come across with with aphasia-

R: -okay-

P5: -with language therapy, which is basically… uh, it's a form of Skype really, , but I've never come across that for dysphagia, no.

R: Okay, that's good-

P5: -completely new to me [laughs]

R: [laughs] okay, and then most of the studies made use of both audio and visual, do you think it's necessary to have both?

P5: Yeah, I definitely think both, because you need that, I, I personally would need the the audio input from the patient and whoever is on the other side as well, so yeah… definitely.

R: Okay, so   and then most of them also did everything in real-time, so in the South African context, how practical or how easy do you think it would be to accomplish real-time… in telepractice?

P5: , I think that's going to be relevant for a few of the other questions as well, but I think   it's going to be an issue when it comes to the equipment-

R: -okay-

P5: -like having the tablets, having the videocameras, having the internet connection -

R: -yes-

P5: -having that sort of thing, so real-time time is going to be [laughing] a real challenge, , in the South African context, more so I think in government because we just we don't have certain things in place, what I think, I think if people are more aware of it, and it's something that can be implemented, this could possibly be a really great thing within private practice.

R: Okay.

P5: Because you have more access to those type of equipment.

R: Okay, okay that's great, yeah. Those, the resources and the internet have been like the key things we're worried about.

P5: Yeah

170

R: Okay so where you work at the moment, here, the equipment, if you wanted to, is there a way that it could be…

P5: No, I'll tell you why, , at the moment with any type of equipment that we want to acquire,

R: Yes,

P5: there's major financial…. I don't want to say problems, but there are issues [laughing]

R: Okay-

P5: -within, within the Western Cape Department of Health currently, where budgets are completely, , overspent, depleted, whatever, , so I can imagine if I go to them and say, "Please can I please have a tablet" or "Can I please have a videocamera?" or "Can I have internet access-" even getting internet access, I'll, I won't be able to get it at this stage, maybe in a few years' time, or a year's time, if things are looking a bit better financially for the department of health, but at my work- place of work right now it won't happen.

R: Okay so do you guys not have internet access here?

P5: We have internet, we've got internet on our computers, desktop, , in our offices…

R: Yes-

P5: -because we have uh systems of booking patients etc., so we've got internet access, , not to all sites obviously they they bar things like Facebook and Instagram [laughing] otherwise people would be on it all the time. So , so we've got internet access, I can Google things, I can XX, but YouTube is not on-

R: -okay-

P5: -So I can't even watch academic videos, if I wanna look at dysphagia videos, , there is, wireless internet in the hospital, but it's a very select few people that has access to the iPads and it's mostly in our EC department where they have to quickly… I don't know what they do with it, but anyway, so nobody else really has Wi-Fi access, no.

R: Okay, but like , let's say if patients were there with their own tablets-

P5: -yeah that would be fine.

R: Would they be able to connect to the Wi-Fi?

P5: Yeah they would be able to connect, yeah.

R: Okay, so that's that's that's slightly encouraging, , okay so if let's say… what is the, the speeds like on your current-

P5: The speed is quite fast-

R: -okay-

P5: -it's quite fast speed, which makes it even like more frustrating that we can't have access to something like this in the wards.

R: yeah-

171

P5: -yeah-

R: I know, , one of my other participants was saying like something as simple as like her Gmail she can't access, Dropbox has been blocked.

P5: hmm Dropbox has been blocked here, we don't have Dropbox. They've got some other system which they call, ag I don't even know what they call it, but yeah, so Dropbox is not an option, but I must say Gmail is fast, mmm…

R: Okay,

P5: If I Google pictures, or if I Google like ASHA websites and stuff like that -

R: -yeah-

P5: -that's fairly fast-

R: -okay, well that's good at least. … and if let's say, okay so there is internet at your desktop?

P5: yeah

R: and there is Wi-Fi, the problem in the uh… main kind of area, is that the   devices used to access the Wi-Fi are limited?

P5: Yes

R: Okay so at least the actual internet isn't a main like issue, it's just restrictions on what you can access

P5: -restrictions, yes, yes absolutely.

R: , so… one of the big things as well, , if we were to do something like this, and let's say you are going to videoconference with your patients

P5: -hmm-

R: -we wouldn't want this kind of video footage to be able to be hacked or… stored somewhere and then people can access it,   so what kind of exposure have you had to videoconferencing apps that are encrypted, or…?

P5: None really, no. Even if I Skype per- on a private level, I know nothing about that, so…

R: Okay-

P5: Yeah [laughing] It's a very unknown area for me to have anything encrypted-

R: -so, the good thing is - so you're familiar with using Skype?

P5: mmm [affirmative]

R: Okay so-

P5: -just by the way, we don't have cameras hey. These computers do not have cameras. [laughing]

R: You'd have to a little webcam-

P5: You'll have to have a little webcam, yes. We don't they-

R: -yeah-

P5: -uh also you can't Skype on this [laughing]

R: Oh, good to know.

P5: So we've got the computer, but you can't Skype on it, no.

R: [laughing]. Okay, 'cause I was gonna say "Good news: Skype is encrypted"

 So like as part of their-

P5: -Oh brilliant okay, oh-

R: -system-

P5: -okay-

R: - and I don't know if you've ever used like WhatsApp videocall?

P5: Yeah, WhatsApp videocall as well, so is that-

R: Also encrypted, yup. So that I found quite encouraging-

P5: -yeah-

R: -'cause they both free apps-

P5: -yeah they free apps and they very… very user-friendly-

R: -yeah, so that's quite cool. … but then… we run into issues with internet, and data, and uh, 'cause I mean, I don't know do you-

P5: -absolutely-

R: -find that most of your patients have cell phones that use WhatsApp, or...?

P5: Just remember where I'm working at and-

R: -yeah-

P5: -our general population, it's not the most … affluent   population that you have in the Western Cape, so   everybody's got phones, but uh even with smartphones, they don't necessarily have data. They forever buying airtime and buying data and I don't know if, yeah. So people do have smartphones. I'm always amazed at you know people don't have money for anything else, but they do seem to have money for a smartphone [laughs], but it's the data that's probably more of an issue then.

R: Okay, 'cause I'm thinking about , it is a common issue that I've come across with a lot of participants, , at least… your hospital does have Wi-Fi, so I'm thinking if your patients have smartphones and they can connect to the Wi-Fi here… and then-

P5: -I just want to tell you, on that note [laughing]-

R: -please-

P5: -I don't know what the chances are that they will give me a password to the Wi-Fi.

R: Okay

P5: yeah they going to have loads of issues and issues with confidentiality and this and that and even if I get access, I don't know if I'm going to be able to give my patients the access.

R: Yeah, okay, it is a it is a tricky situation

P5: It is

R: So it's password-

P5: -frustrating more than tricky-

R: Yeah, so it's password protected Wi-Fi? -

P5: -yeah-

R: -so it's not, there isn't like-

P5: -no, it's not a free Wi-Fi, no.

R: Okay, 'cause I've also heard things about the Western Cape starting to establish free Wi-Fi-

P5: -they are, they are, and there's like hotspots in the city, in different places. I know close to Gardens, close to the… company gardens there's like a Wi-Fi hotspot there. So, it it is being rolled out, but at the moment in our hospital we don't have that yet, yeah.

R: Okay, yeah, that's good to know

P5: That would be brilliant, because it would give them something to do in the waiting areas when they wait forever-

R: -yes-

P5: -and-

R: -I have also heard some sad stories where the hospital has the free Wi-Fi, but it only works in the parking lot and uh not inside-

P5: -that is bizarre-

R: -the hospital [laughing]

P5: That is bizarre.

R: So , I think it's going to be , a process.

P5: [laughing]

R:

P5: Okay, well yeah.

R: Okay, so you are familiar with Skype and WhatsApp, okay so, have you always worked in government or have you done-

P5: -No, I've-

R: -You've done some private.

P5: I've worked in private. I've worked in the education department. I was at the university for three years and then since 2011 I've been in government.

174

R: Okay

P5: So I have experience of the world out there [laughing]-

R: -yay!-

P5: -the world beyond government [laughing]

R: Okay, so one of the issues is South Africa doesn't currently have any laws, on how to reimburse for telepractice.

P5: I didn't ever think of that until I read your study and I was like, "That's very true."

R: Yeah, so -

P5: -because they don't have laws for telepractice-

R: -yeah-

P5: -in any form?

R: no, and uh most medical aid plans don't cover it. Most don't even cover outpatient services. m so I don't know, you mentioned that you've come across telepractice being used for aphasia -

P5: -yeah,-

R: - was that public or private? Because I'm wondering-

P5: -that was private, yeah-

R: -Okay, so how how did the billing process happen?

P5: I don't know. I don't know. I just, I know about a colleague of mine who did it, but I never even asked her how she bills for it, because it wasn't something that I thought about at the time. So I'm sure however they worked it out, must've been sort of a personal arrangement.

R: Yeah, okay. Because yeah at the moment that's one of the things-

P5: - there's nothing. There's no ICD- well there's ICD-10 codes, but there's no like BHF codes for something like that.

R: yeah   and also,   so we have the complication where, in some of the studies they have like let's say you've got your brand new clinician out in the middle of nowhere and now they need to do a VFS for the first time and they're scared and nervous, and you know, they don't want to damage the patient,   so let's say they now ask if they can consult with you. So you're videoconferencing and seeing the... the... VFS in real-time-

P5: -the thing, yeah-

R: Which one of you's gonna get paid?

P5: that's the thing because there's two therapists now doing the same procedure that one therapist would have done.

R: Yeah, so I don't know if you have any… ideas

175

P5: I, I don't have any ideas. It's really a - when I read it I was like, "This is the first time I'm thinking about this" and that whole thing about two people being involved, in one procedure, who's getting paid? I, I've never thought about that, so I honestly don't have an answer, because both of them are doing the work, the one is consulting, the one is… physically doing it. So… why should one person get paid and the other not? They should both really be compensated, so… I don't know, I don't have… that's that's your, that's your baby for your thesis [laughing] 'cause I don't know-

R: [laughing]

P5: I really do not know how to approach that.

R: Okay, …

P5: Ideally both should get paid, but I mean, which medical aid is going to… and which patient is going to be happy with two people being paid for this procedure?

R: Yeah 'cause I've had, I've had a few suggestions, …

P5: Really, like what?

R: Some, some people have said that… so you know how you can have like your GP and your ENT?

P5: mmm [affirmative]

 R: So in this case the novice would kind of be like the GP and the…

P5: - oh okay, I see what you mean-

R: -the consulting would be like-

P5: -yeah yeah-

R: So obviously the consulting one would be more expensive, but in that way, you could kind of separate the roles.

P5: But then it would have to be sort of, there'll have to be rates for that. There'll have to be codes for that. It has to be on paper somewhere.

R: Yes, and then the other issue that's come up is also... ... it being done at the same time, so apparently even if you're a speech therapist and an audiologist, you can't conduct both services within the same session.

P5: No, you can't.

R: 'cause you can't bill for both during the same time.

P5: Mmm, yeah I know.

R: so it's about also like whether the medical aid would approve something -

P5: -yeah yeah [knock on door]

R: Let me pause this and then you can - [recording paused] - There you go, yeah so whether the medical aid would actually approve payments for two things being done across the same time, ?

P5: Yeah, see there's there's that's another thing that I didn't even think about.

R: I'm I didn't think about it until I heard it-

P5: -yeah-

R: -because also I haven't had any real exposure with with private practice   so it's been, what was the other… there was another suggestion... … oh the other suggestion was that the medical aid covers the one therapist and then the person needs to pay for the other one

P5: That is-

R: - -

P5: -That is such a schlep.

R: yeah

P5: And can you imagine how that's going to be reflected in your financial recording and your books and VAT and etc. etc. on a private level?

R: So, yeah it's something that we definitely need to get… legal policies going for-

P5: -yeah absolutely-

R: - and the scary thing is that even in like America and Australia where telepractice is kind of becoming more established, and their medical aids   do cover it, sort of, none of the studies on dysphagia explained how the clinicians are reimbursed.

P5: Oh so none of them mentions?

R: Yeah they don't, they don't really talk about it   and a few of the like ASHA little pamphlety things that I looked at, they basically just say that like "Okay that telepractice has been added to the Medicare…"

P5: But they don't say how

R: Yeah so there's there's not a lot of info on how to make it work   but also obviously the resources there are quite different, ,

P5: Mmm

R: Yeah so speaking of which, with our resources, in the South African context, was there any particular study, in the info pack, or any kind of method that stood out to you as like a, "Hey! This could this could actually work." [laughing]

P5: I was looking through it, , [pages through information pack] so, screening and referral-

R: -yes-

P5: -this seems like something that could work, where they put themself on a scale of, you know, how quickly do I need to be… so that would that would definitely work already now… and then … with regards to the management, ... method three and four, so where they they start doing the telepractice therapy after one or two sessions in real-time and also this one [points at method four] is more like a Skype peer interview with each other -

R: -yeah-

P5: -that can also work already, , because people have their own cell phones and they have their own computers that they can use for that   the others are still -in my context, just remember I work for government-

R: -yes-

P5: -so it's not the ideal , but the others are still going to be a biiit of a difficult situation to... complete [laughing].

R: Yeah, , I was -

P5: -is that what you wanted to know?

R: Yes, yes yeah, because , we need a starting point, you know? Which is also why I'm I'm lucky enough to be in the Western Cape where I mean, trying to kick-start something like telepractice in the Eastern Cape…

P5: Sho, that's gonna be hard.

R: Yeah, it's uh I mean it's probably where we need it most, but the infrastructure-

P5: -you have to start somewhere-

R: -yeah, , so at least here we're starting to get better Wi-Fi, we're starting to get…

P5: more access-

R: -yeah a so there's there's more opportunity   but it's still very difficult, … Also what I found interesting was that areas like counselling and prevention-

P5: -yeah-

R: -not touched on at all.

P5: Yeah, you get people who make videos and the videos get played at places, but it's sort of like more a question of saving time and resources [laughing] so just pop in the video and people can watch the video, or you see sometimes in hospitals they've got certain programmes on loop in the TVs that they wait for, , in the areas where they are waiting, , but yeah it's I think it's just something that nobody's thought of, it's always been this thing that you know about it, but it seems like it's for overseas

R: [laughing]

P5: It works overseas, but it's not going to work here because people tend to be a bit negative about how we can implement new things

R: yeah,

P5: I think it's also it's scary because you, nobody's done it so you don't want to be the first person to do something and then make a mess of it-

R: -yes-

P5: -so I think it's, there's many factors which've… prevented it from happening this far, but it's definitely something that could work, but it's going to take a little bit of work to get all the things in place for it to to be effective.

R: And, do you feel like your patients could benefit from something like … let's say from , uh… counselling side, if you're having to… explain to them, uh… like what a PEG is and how things will work, and it's, the kind of information where it can sometimes be information overload, , do you think they would benefit from maybe having you send them that video and then they can watch it-

P5: -yeah absolutely-

R: -and then like a few days later they can watch it again and process-

P5: -and even, even when it comes to sort of management, , a lot of the patients are in wheelchairs-

R: -okay-

P5: Its, from a transport point, very hard for them to get here.

R: Yes.

P5: If I'm in a situation where they can sit in their lounge, and I can, 'cause it's sometimes it's really just follow-up, it's just "How's it going? Okay, try this next time that this happens," whatever, you know? If I could do counselling via that route and they don't have to physically come in…

R: yeah-

P5: -and sit here and get on to a bus or whatever with the wheelchair and, it's it's really hard for some of them to come here, , that'll be brilliant. Or I've had patients who literally if the gang violence is too bad in their area they can't come out of their house [laughing]

R: Yeah

P5: They might be shot, in the crossfire, so they they will you know, postpone sessions till a week or two, if things are a bit more quiet,   so imagine if I could have done that with them?

R: yeah

P5: That would be brilliant, but now that brings you back to "How does the hospital bill for that?

R: yeah

P5: because it was contact time, if you think about it-

R: Yes, yeah-

P5: but… how do you…

R: yeah-

P5: do that?

R: That's actually, that's a very interesting , so I have come across, uh, the issue with transport and wheelchairs and sometimes we question whether it would actually be cheaper to buy the data and do the the session, than organise the taxi to-

P5: -it would be cheaper-

R: - yeah but I haven't come across, the, the violence angle-

P5: -yeah, I have patients who literally sometimes have to cancel because they cannot leave their homes [laughing]

R: Yeah

P5: It's, the bullets are literally flying past their house, so… and that's the problem we have in [names location (Location A)], it's it's a real real problem here.

R: yeah. So that's that's a new kind of of thing, 'cause then that could really be, especially for those those follow-ups where you're just checking-

P5: -where it's just checking in, and you can say "How's it going with the PEG, oh no the something something, okay well you know what, get to the day hospital because you need to sort out maybe a leaking PEG or , no you can't, you have to flush it before you do the next meal" whatever, you know, just-

R: -yeah-

P5: -the practical things, which really, to come in all the way, for that, wasn't really necessary. You can do it that route.

R: Yeah 'cause I've even , one of the studies involved laryngectomy, post-laryngectomy patients, and they did it via videoconference where they even had the speech therapist helping the patient to clean the...the stoma, and stuff.

P5: That's brilliant. See, so there you go. It can be done.

R: Okay, so in this case, it's just... the resources that are… holding us back-

P5: -holding us back, yeah-

R: …

P5: -basically-

R: Wow, okay, it's definitely not an aspect that I had thought about-

P5: [laughing] There you go! Fun and games in [location A]

R: Yeah, , was there anything else that you found particularly interesting or you wanted to ask more about?

P5: No, I mean I find the whole study interesting, … like I said, it's, there's many things that you mentioned, that came up in the different [clears throat] studies which I've never thought about. I, uh, telepractice was something I knew about-

R: -yeah-

P5: -but I always thought it's like language therapy-

R: -yes-

P5: -I never thought it's something that could be relevant to dysphagia, and to assessment and management of dysphagia, so, that's really, that's new to me and I, I think it's awesome if we can, if we can get, you know, off the ground.

R: Yeah, 'cause we see it a lot with… voice, especially-

P5: -Yeah exactly! Voice therapy is brilliant for-

R: -yeah-

P5: -for that [laughing]-

R: -'cause really they just come in and you're like, "Oh, great, you sound great now"

P5: Yeah, exactly

R: So, [laughing]   but yeah I was also, I was quite surprised because I did expect a lot of it to be based on therapy, you know, like a few sessions in person-

P5: -but here's an assessment-

R: -yeah and like the VFSs, I was like "okay?"

P5: Yeah, that still, I must tell you-

R: - [laughing]-

P5: -w, of all the things happening…

R: yes

P5: ...via telepractice, the VFS is still, I'm like, "I don't know how this is gonna work-

R: [laughing]

P5: -in our contexts" but you know-

R: -yeah-

P5: -it, it's being done and it can be done if -

R: -so if -

P5: -get the right things in place-

R: -yeah, if, if the equipment and the internet and the resources were all sorted, and I mean, okay, what I've come across is that in government billing isn't as big of an issue?

P5: No, it's not such a big issue.

R: 'cause if your patients can't afford it, they can't afford it.

P5: Yeah

R: … so something like, uh… the counselling, let's say, let's not go in the deep end and start with the assessment, but , some of the other stuff, would you feel comfortable, engaging in that?

P5: Yeah, I would, totally.

R: Okay-

P5: -I would definitely give it a go.

R: Yay! Well, that's super encouraging.

P5: [laughing]

R: , yeah, okay well if you don't have any more questions for me, then that might be us done?

P5: Cool. Thank you so much for coming here, sho.

R: Thank you for having me. I really appreciate it.

P5: I made you come all- [recording ended]