Self-perception and clinical presentation of eating and swallowing abilities in elderly residents of residential care facilities

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Submitted in fulfilment of the requirements for the degree MA Speech-Language Pathology in the Department of Speech-Language Pathology and Audiology

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DECLARATION OF ORIGINALITY:

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3. I have not used work previously produced by another student or any other person with a view to handing it in as my own.

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SIGNATURE

ACKNOWLEDGEMENTS

- To my supervisors Mrs Bhavani Pillay, Dr Rouxjeanne Vermeulen and Dr Esedra Krüger, thank you for allowing me the opportunity to shape this study into my own and for guiding me during the research process. Your support, knowledge, and expertise have made this research what it is – I will always be grateful for your contribution to my career.
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- To my incredible husband, thank you for believing in me. It would be impossible to take on as many roles as I do if it was not for you – thank you for giving me the time, opportunity and space to pursue my goals. You inspire me to be better every single day.
- I would like to dedicate this dissertation to every woman who aspires to be in research – there is space for you at the table.

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Date:	August 2024
Title:	Self-perception and clinical presentation of eating and swallowing abilities in elderly residents of residential care facilities

Abstract

Purpose: To describe the self-perception and clinical presentation of eating and swallowing abilities amongst the elderly who reside in residential care facilities.

Method: Forty-four participants (mean age=80 years) were included in this comparative within-subject study. Participants were assessed using an oropharyngeal dysphagia assessment protocol. A cognitive screener, the Saint Louis University Mental Status examination was used when the level of cognitive impairment was unknown. The oropharyngeal dysphagia protocol included a medical history review, administration of the Eating Abilities Test – 10, the Mann Assessment of Swallowing Abilities, and the three-ounce water swallow challenge of the Yale Swallow Protocol.

Results: Twenty-one of 44 (n=21; 48%) participants indicated an overall self-perceived concern for oropharyngeal dysphagia when reporting within the Eating Abilities Test – 10. Evidence of compensatory eating behaviours, without receiving therapeutic intervention, were found. A negative, low correlation was present between the Eating Abilities Test – 10 and the Mann Assessment of Swallowing Abilities ($r=-0.306$, $p<0.05$) scores.

Conclusions: Individuals who perceived eating and swallowing difficulties, demonstrated fewer clinical symptoms possibly due to self-mediated compensatory techniques. It is essential to integrate patient-reported outcome measures with clinical assessments for oropharyngeal dysphagia in residential care facilities. Collaboration between facilities' staff and external professionals, such as speech-language therapists, could ensure timely interventions for dysphagia treatment.

Keywords: Dysphagia; Elderly; Residential care facilities; Self-perception; Clinical assessment

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List of abbreviations

The following abbreviations are used in this dissertation:

CCM	Chronic Care Model
EAT-10	Eating Abilities Test – 10
HPCSA	Health Professions Council of South Africa
IDDSI	International Dysphagia Diet Standardisation Initiative
MASA	Mann Assessment of Swallowing Abilities
OD	Oropharyngeal dysphagia
PROM	Patient Reported Outcome Measures
RCF	Residential care facility
SLT	Speech-Language Therapist
WHO	World Health Organisation
YSP	Yale Swallow Protocol

Terminology as used in this dissertation

Elderly

The Older Persons Act 13 of 2006 classifies the 'elderly' as a male who is aged 65 years and a female who is aged 60 years. The age within international literature varies according to region (Department of Justice and Constitutional Development, 2006). Within this research study, the researcher refers to 'elderly' as either a male or female who is aged 65 years or older. This reference is in keeping with international best practice guidelines for OD monitoring (Umay et al., 2022).

Residential care facilities

A residential care facility can be a building or other structure for the purposes of providing accommodation and provision of services on a 24-hour basis to older persons (South African National Department of Social Development, 2005). A person in South Africa, who is older than the age of 60 years is entitled to apply for the placement within such a facility (Department of Justice and Constitutional Development, 2006). The researcher uses "residential care facilities" in this study as all facilities included in data collection provided 24-hour medical care to their residents. To promote standardisation with international literature, the term "residential care facilities" was selected for this study (Estupiñán Artiles et al., 2021; Sun et al., 2021).

Outline of chapters

Chapter 1: A comprehensive introduction to the current state of research, the problem statement and rationale, the research question, as well as the terminology used in this dissertation. The chapter concludes with an outline of chapters contained in the dissertation.

Chapter 2: An in-depth discussion outlining the method and procedures used in the research study including the aim; design, setting and sample populations, materials and apparatuses and data analysis description. The chapter concludes with a discussion of the guiding ethical principles as well as the reliability and validity of the study.

Chapter 3: The article that was submitted on 23 July 2024 for peer review to the international journal Communication Disorders, Audiology and Swallowing (CoDAS).

Chapter 4: A concluding chapter exploring the theoretical and clinical results of the study. The chapter details the strengths, limitations and recommendations for future research within this cohort.

CHAPTER 1: INTRODUCTION

The first chapter provides a comprehensive review of recent literature, background and relevance of the research study conducted. The effects of ageing on the swallowing mechanism, the negative impact of oropharyngeal dysphagia on the elderly and the current management practices of oropharyngeal dysphagia within residential care facilities are explored. The problem statement and rationale for this study are outlined and the research question stated. Terminology is defined as used in this dissertation.

1.1 Introduction

By the year 2050, population projections estimate that more than two billion people will be aged 60 years or older with the majority of this demographic residing in low- to middle-income countries (United Nations, 2019). The World Health Organisation (WHO) acknowledges this growth and advocates for healthy ageing - a process of prolonging wellness during elderly years through establishing proactive chronic care management (World Health Organisation, 2023; Wagner, 1998). Modern families now consider residential care facility (RCF) placement as they are unable to provide proactive chronic care management for their frail and multimorbid family members (Boucaud-Maitre et al., 2023).

Facing a plethora of multimorbid conditions, the prevalence of oropharyngeal dysphagia (OD) is a growing health concern for the elderly (Abu-Ghanem et al., 2020). Despite an increasing amount of literature highlighting the complex management of OD within the RCF population, frustration of RCF staff is noted due to the lack of standardised OD screening and assessment protocols (Abu-Ghanem et al., 2020: Estupiñán Artiles et al., 20202: Royal Society for Public Health, 2018). With insufficient

access to care guidelines and local protocols, evidence-based practice will be compromised within the low-to middle-income setting RCF system (Park, 2015). Robust elderly care policies are required to support healthy ageing within these RCF systems for the growing elderly population (Li et al., 2021; World Health Organisation, 2023). During RCF policy-planning, a culture of coordinated and proactive OD screening policies, such as that of chronic care models, should be considered (Smith et al., 2023: Wagner, 1998).

Due to the unprecedented rate of demand for elderly care and the increased risk for OD within this cohort, research to inform elderly care policies within a low- to middle-income RCF setting i.e., South Africa is essential. Provisional data from local research studies could necessitate increased provision of Speech-Language Therapy (SLT) services to support OD management within the RCF cohort .

1.2 Effects of ageing on the swallowing function

The multifaceted effects of ageing swallowing physiology are transient and contribute considerably to the manifestation of OD (Feng et al., 2023; Wirth et al., 2016). The complexity in management of OD within the elderly population lies in the distinction between age-related swallowing changes (presbyphagia) and impaired swallowing abilities. A person with presbyphagia can remain functional in domains of oral intake abilities and nutritional status (Li et al., 2021; Namasivayam-Macdonald & Riquelme, 2019). Common physiological changes associated with presbyphagia include but are not limited to: edentulism, xerostomia, increased connective and fatty lingual tissue, increased pharyngeal space and decreased oesophageal motility (Feng et al., 2023; Wilkinson et al., 2021).

The manifestation of OD is triggered by the negative impact of chronic diseases namely neurological disorders, head and neck cancers, respiratory disorders, cardiac conditions, gastroesophageal reflux disease, and esophagitis (Wilkinson et al., 2021; Wolf et al., 2021). With multimorbid conditions compounding with age, so too does the prescription of chronic medication, resulting in a heightened prevalence of drug-induced OD (Matsumura et al., 2020; Wolf et al., 2020). Whilst, the physical consequences of OD can often present overtly, the consideration of the psychosocial impact of OD cannot be ignored.

1.3 Negative impact of oropharyngeal dysphagia on the elderly

The inability to consume an oral diet safely and efficiently is at the forefront of negative sequelae associated with OD (Wolf et al., 2021). With the threat of impaired functioning of the swallowing mechanism in the elderly, the possibility for aspiration of nutritional boluses causing aspiration-related pneumonia arises (Geirsdóttir et al., 2021; Wirth et al., 2016). Decreased oral intake can result in inadvertent weight-loss and the exacerbation of chronic health conditions, resulting in reduced functional capabilities of the elderly (Kristensen et al., 2020; Sznajder et al., 2016). The RCF demographic is at high-risk for multiple hospitalisations because of physical inactivity and underlying malnutrition (Smith et al., 2023, Zanetti et al., 2023) With extended length of hospital stays, further exposure to infectious diseases could result in poorer clinical outcomes for recovery within this vulnerable population (Shin et al., 2023).

Whilst OD in the elderly can cause a multitude of physical health complications, the negative impact on a person's quality of life and mental health must not be under-estimated (Depolli et al., 2023; Speyer et al., 2022). Feelings of crisis, stress, decreased quality of life, and peri-prandial anxiety can manifest even in the presence

of mild OD symptoms (Depolli et al., 2023; Kim et al., 2019). The presence of OD can result in loss of meal-time pleasure and could result in the refusal to eat in the presence of other residents (McGinnis et al., 2019). It has been reported that the elderly often avoid reporting OD symptoms as it is perceived as a normal aspect of ageing resulting in RCF residents suffering from OD without any support (Wirth et al., 2016). The complex interplay between physical and mental health implications associated with OD must be accounted for by the multidisciplinary team within the RCF system to ensure holistic and proactive treatment provision (McRae et al., 2019).

Chronic multimorbidity challenges safe prescription and administration of oral poly-pharmacotherapy regimens to the elderly person suffering from OD (Logrippo et al., 2017). Individual management in the prescription of chronic medication is complicated by the fact that the elderly often receive care from multiple healthcare providers across various healthcare settings contributing to disjointed care (Perron, 2024). The SLT could be a useful care provider within the RCF system because of frequent monitoring of possible drug-induced dysphagia and could liaise with RCF medical doctors to review for drug therapy alternatives thereby supporting healthier ageing practices (Matsumura et al., 2020).

1.4 Assessment and management of oropharyngeal dysphagia within the residential care facility system

The prevalence of OD within the RCF cohort varies markedly but has been suggested to range between 40% to 68% (Baijens et al., 2016; Birchall et al., 2022). Due to the poor prognosis of clinical outcomes, the need for timeous identification and proactive intervention is imperative (Kater, 2022). Previously, healthcare systems have been reactive in the assessment and treatment of OD providing treatment only when

hospitalisation has occurred in place of routine, annual and proactive screening (Estupiñán Artiles et al., 2020).

With increased risk and under-identification for OD within the RCF cohort, best practice guidelines encourage annual swallowing screening (Speyer et al., 2021). This screening approach is recommended for adults who are aged 65 years and older who present with clinical risk factors for OD, such as a history of aspiration pneumonia, presence of a fever, or low oral intake (Imaizumi et al., 2020: Umay et al., 2022). These international guidelines correlate with principles of healthy ageing and chronic care models. The Chronic Care Model (CCM) advocates for proactive care that anticipates the needs of stakeholders, such as OD screening due to inherent risk, and ensures healthcare teams have access to appropriate clinical expertise, potentially that of the SLT (Wagner, 1998).

The use of OD screening tools with established psychometric properties is recommended in low- to middle-income countries where healthcare screening must be cost-effective, easy to administer, and non-invasive (Speyer et al., 2021). If screening tools lack validity, reliability and are culturally unresponsive – the administration of these would not prove beneficial (Speyer et al., 2021). In these settings, high patient-to-therapists caseloads are evident and could restrict access to specialist OD services i.e., the SLT department, highlighting the importance of utilising appropriate tools to identify persons who require further OD assessment (Figueira et al., 2023; Kater, 2023).

Whilst the foundational components of clinical screening and assessment includes standardised assessment tools, healthcare providers are ethically bound to uphold the principles of evidence-based practice through the consideration of stakeholder concerns (Barends et al., 2014). It is hypothesised that elderly individuals show greater sensitivity to the self-perception of dysphagia because of chronic multimorbidity awareness, highlighting the importance of stakeholder consultation to support healthy ageing (Figueira et al., 2023). The use of patient-reported outcome measures (PROMs) could enhance patient centered care (Tommel et al., 2023).

1.5 Problem statement and rationale

The scarcity of international standards for OD screening and assessment, and the established risks for the under-identification and under-treatment of OD, necessitates a comparison of self-perceptions and clinical characteristics of eating and swallowing abilities. The establishment of a comparative profile between self-perception of eating and swallowing abilities and the clinical presentation thereof could inform care policies to accommodate for sufficient SLT service provision within the RCF system. With a changing healthcare landscape i.e., in South Africa, the implementation of the National Health Insurance Act 20 of 2023 was passed to ensure equitable and fair access to healthcare for all (National Health Insurance (NHI) Act 20, 2023). The South African SLT cannot adequately advocate for consultation during NHI policy planning and service implementation within the RCF system if a lack of recent local literature exists.

Therefore, the research question arose: “How do the self-perceptions of eating and swallowing abilities compare to the clinical presentation in the elderly living in residential care facilities?”. The knowledge gained from this study may highlight the need for policy review concerning the monitoring and treatment of OD within the RCF

system in a low- to middle-income country such as South Africa. The principal researcher of this study encourages SLTs to advocate for the establishment of OD screening protocols and treatment guidelines within RCF settings to ensure contribution to healthy ageing of this population.

CHAPTER 2: METHOD

The research aim, design, setting and sample population, materials and apparatuses, procedures and data analysis description are explored within the second chapter. The reliability and validity of the research study are delineated. The ethical standards adhered to conclude the chapter.

2.1 Aim

The aim of this research study was to describe how self-perceptions of eating and swallowing abilities of the elderly, who are RCF residents, compared to the clinical presentation thereof.

2.2 Research design

This research study employed a primarily quantitative research design, chosen for its congruence with the study's objectives of measuring variables and deducing potential relationships as seen in the comparative, within-subject study method (Leavy, 2023). This study design allowed direct comparison to be drawn between the participant's self-perception of their eating and swallowing abilities with the clinical presentation thereof (Brink & Van Rensburg, 2022). Applicability for the selection of this research design within this geographical context is supported by insufficient research and public policies informing holistic healthcare management and healthcare planning for the elderly population in South Africa (Solanki et al., 2019).

2.3 Study setting

The data were collected from residents of RCFs located in Johannesburg, South Africa. The RCFs that were selected were of private funding and were not associated with the Department of Health and/or the Department of Social Development.

2.4 Sample

Sample strategy

A non-probability, purposive sampling strategy was used to recruit appropriate participants for this study (Brink & Van Rensburg, 2022). This sampling strategy was selected as it ensured participants included in the study were more likely to be predisposed to the phenomena being studied i.e., OD is a geriatric syndrome with a high incidence rate amongst the RCF cohort (Banda et al., 2022; Speyer et al., 2021). Prospective participants were required to be 65 years or older and living full-time at the predetermined RCF. Participants were included regardless of whether they had been diagnosed with OD and/or required current diet modifications.

Sample size

The sample size consisted of 44 participants. Only one prospective participant was excluded based on a previous diagnosis of moderate cognitive impairment. The central limit theorem suggests sample sizes that are equal to or greater than 30 are considered “sufficient” to represent characteristics of the whole population through population means and standard deviations (Islaqm & Islam, 2018). The concept of “data sufficiency” is evidenced by the information power model which encourages researchers to prioritise establishing the depth of data samples rather than striving for vaguely defined “data saturation” that is often seen in quantitative data practices (LaDonna et al., 2021). This research study aimed to achieve depth in data samples by comparing outcomes across different assessment tools.

2.5 Participants

Inclusion criteria

To qualify for voluntary participation in this research study, participants were required to meet the following inclusion criteria as described in Table 1.

Table 1. Inclusion and exclusion criteria and justification thereof

Inclusion criteria	*Justification*
The participant must be aged 65 years or older.	Presbyphagia is expected to occur in people aged 65 years or older, thus increasing the likelihood of OD (Mehraban-Far et al., 2021).
The participant must be a full-time resident at the RCF.	Research findings from this study could have important policy implications for regulations, guidelines, and standards governing the provision of care in these settings.
The participant could not have a cognitive baseline impairment worse than mild (as indicated using the Saint Louis University Mental Status examination).	Considered a barrier to research, participants with moderate to severe cognitive impairment could compromise the accuracy of self-reported outcome measures, necessitating the use of proxy-reported outcome measures thus eliminating the possibility of within subject comparison (Shepherd, 2020).

Recruitment of participants

The researcher personally approached residents, who were pre-determined by nursing staff as appropriate to participate, to discuss the purpose of the research study, associated risks, and benefits to their voluntary participation (Appendix C). An informal interpreter i.e., nursing staff member was available should further explanation in an alternative language be required. No incidence of interpretation was required as all participants were proficient in conversational English.

Description of participants

Participants were aged between 65-97 years old and identified as either male or female (Table 2).

Table 2. Participant characteristics (n=44)

Category:	Amount:
Gender:	
Female	32 (73%)
Male	12 (27%)
Living situation:	
Single room	28 (64%)
Shared room	3 (7%)
Frail care	13 (30%)
Basic ADLs:	
Independent	32 (73%)
Needs assistance	8 (18%)
Dependent	4 (9%)
Eating and mealtimes:	
Independent	26 (59%)
Requires set-up	15 (34%)
Needs (physical assistance/verbal prompting) to complete meals.	1 (2%)
Fully dependent on carer.	2 (5%)

2.6 Materials and apparatus

The OD assessment protocol consisted of a background case history form (Appendix D), a PROM tool, and two standardised clinical assessment tools namely the Eating Abilities test (EAT-10) (Appendix E), the Mann Assessment of Swallowing Abilities (MASA) (Appendix F), and the water swallow challenge of the Yale Swallow Protocol (YSP) (Appendix G).

The background case history form began the protocol administration. It is essential for accurate background history to be collected as this information can help guide appropriate differential diagnosis through collation with clinical findings (Selvanderan et al., 2021). When the level of cognitive impairment was unknown or not indicated in the participant's residential care file, the Saint Louis University Mental Status (SLUMs) examination was administered (Appendix H). The SLUMS is a standardised cognitive screener that demonstrates strong test-retest reliability and is applicable for monitoring cognitive decline in individuals (Lee et al., 2022). Participants who were reported as or were found to present with a cognitive impairment worse than mild were excluded from this study due to the nature of the self-reporting questionnaires.

The Eating Assessment Tool-10 (EAT-10) (Appendix E) was utilised. This PROMs tool establishes participants' self-perceived presence or absence of eating and swallowing difficulties (Belafsky et al., 2008). The EAT-10 consists of 10 statements that are commonly used to describe a person's difficulty with eating and swallowing. If a participant has an EAT-10 total score of 3 or higher, this could be indicative of difficulty swallowing safely and efficiently and typically warrants further assessment by an SLT (Sheikhany et al., 2022). A direct correlation between a person's EAT-10 scores and aspiration has previously been demonstrated, as observed in videofluoroscopic swallow study findings, with a sensitivity for predicting aspiration of 71% (Cheney et al., 2015). Table 3 presents the cut-off vales for the EAT-10 assessment tool.

Table 3. Cut-off values for the EAT-10 assessment tool

Implication:	*Score:*
No indication of difficulty swallowing	EAT-10 score of 0 – 2
Indication of difficulty swallowing	EAT-10 score of 3 – 10

The MASA tool (Appendix F) assessed the participants' abilities to consume an oral diet safely and efficiently. This tool has been vigorously researched and validated for use in a mixed-disease population (Chojin et al., 2017; Kwon et al., 2019; Ohira et al., 2017). The MASA tool allowed the researcher to quantify the risk of aspiration and/or severity of dysphagia during the clinical swallow examination with consideration of cognitive impairment (Kwon et al., 2019). This assessment tool is useful in a low- to middle-income setting as it does not require specialised equipment but rather utilises widely available assessment materials i.e., masticatory foods, a penlight, tongue depressor and laryngeal mirror (Okuni & Ebihara, 2022). Table 4 presents the cut-off values for the MASA tool.

Table 4. Cut-off values for the results of the MASA tool

Score:	*Severity category*
No abnormality	≥170
Mild	149-169
Moderate	141-148
Severe	≤140

The Yale Swallow Protocol (YSP) (Appendix G) was used to assess the participants' ability to consume three ounces of thin liquid i.e., water safely and efficiently using sequential swallows (Leder & Suiter, 2014). Prospective data from a double-blind, multi-rater study indicated that the YSP is a reliable and valid option to screen for aspiration risk in settings where clinicians are dependent on subjective assessment methods i.e. the RCF setting (Ward et al., 2020). The YSP was adapted for use in this research study by not including the brief cognitive screener or the oral-mechanism

examination as these assessment areas were assessed in greater detail during the Mann Assessment of Swallowing Abilities (MASA) tool (Appendix F).

2.7 Procedures

Data collection

The researcher telephonically contacted the nursing manager of the predetermined residential care facilities and received written permission to conduct data collection (Appendix B). An agreed-upon date and time was established for the researcher to visit the residential care facility to invite potential participants. The researcher clearly explained the purpose, risks, and benefits of participation in this research study and provided sufficient opportunity to raise concerns regarding their voluntary participation (Appendix C). An informal interpreter, whom was a member of nursing staff at the RCF facility, was available during the invitation period to explain the informed consent letters to accommodate for the possibility that a participant or their family member did not hold conversational proficiency in English. The use of such informal interpreters was not necessary throughout the data collection process as all prospective participants held conversational proficiency in English.

Once participant informed written consent was obtained, individual data collection occurred in a single sitting with the provision of short comfort breaks. All OD assessments were conducted by one researcher, a qualified SLT who has clinical experience in both the public and private health sector assessing and treating elderly patients presenting with OD. The researcher is currently registered with the Health Professions Council of South Africa (HPCSA). A member of the nursing staff at the RCF was present to ensure that the safety of all participants was monitored externally. The researcher began the assessment session by completing a background history

form (Appendix D) through revision of a participants' residential care file. This was done prior to the clinical swallowing assessment to ensure the researcher was aware of any risks regarding current medication and previous medical history.

The EAT-10 tool was administered first. The researcher verbalised the statements contained in the assessment tool individually and recorded the participants' responses accordingly on the assessment form. Following the completion of the EAT-10, the clinical swallowing abilities assessment began with the administration of the MASA tool. An oral-motor examination was performed prior to the presentation of nutritional boluses. In accordance with graded difficulty of oral diets within the International Dysphagia Diet Standardisation Initiative (IDDSI) the participant was required to eat an IDDSI 4 (pureé – sugar-free instant porridge) and IDDSI 7 (regular – gluten free biscuit) consistency (International Dysphagia Diet Standardisation Initiative, 2019). Additionally, observable domains such as the participant's level of alertness, cooperation, auditory comprehension, respiration at rest, and respiration rate for swallowing were recorded by the researcher throughout the assessment session.

Lastly, the three-ounce water swallow challenge of the Yale Swallow Protocol (YSP), was utilised to assess the participant's ability to swallow a thin liquid consistency safely and efficiently (Leder & Suiter, 2014). The participant was required to drink three ounces of water from a cup (a straw was supplied if drinking from a cup was too difficult) using sequential swallows, slowly and consistently without stopping. The researcher observed the participant for difficulty with uninterrupted drinking, and signs and symptoms of overt aspiration (coughing or choking during or immediately after completion of drinking the water).

To ensure research rigour, a second-rater was utilised. This external, second-rater is a qualified and registered SLT with the HPCSA who has experience in both the public and private sector assessing and treating OD within the elderly. Participants from the RCF sites were randomly selected and re-assessed using the same OD assessment protocol on a different day.

2.8 Data analysis and management

Data was stored in a password-protected storage drive during the research study and is physically stored in a repository on the premises of the University of Pretoria. Confidentiality measures adhered to in the study are in accordance with the University of Pretoria's data storage policy i.e., 15 years, and in the data repository for 15 years.

Each participant's assessment forms were assigned a unique participant code. Once the assessment session was completed, the assessment form was safely stored in a sealed box. Only the researcher had access to these forms when personally entering the data into Microsoft Excel 2020 on a password-protected Apple MacBook Air 2020.

This document was then shared with the external statistician via password-protected e-mail. The Statistical Analysis System (SAS) version 9.4 was used to perform the analysis (SAS Institute Inc, 2013). During data analysis, the Fisher's exact test was used to determine the relationship between the outcome measures of the three-ounce water swallow challenge and the EAT-10's self-perceptions. The data were checked for normality using the Shapiro-Wilk test. The non-parametric test, Spearman's rho correlation, was performed to determine if a correlation amongst the PROMs tool and clinical assessment tools were evident.

2.9 Reliability and validity

To promote the validity of the research study results, vigorously reviewed assessment tools that are validated for use in a mixed-disease population was selected when the researcher developed the OD assessment protocol based on clinical experience (Belafsky et al., 2008; Kwon et al., 2019; Ward et al., 2020). Additionally, prior to the commencement of data collection, the researcher piloted the OD assessment protocol to ensure appropriateness of selected assessment tools and to mitigate inefficient timelines. Investigator triangulation through the use of a second-rater during the data collection stage of this study encourages the credibility of the research findings (FitzPatrick, 2019). Preventatively, the researcher reduced the impact of researcher bias by utilising an external statistician during the data analysis stage of the research study.

2.10 Ethical considerations

Ethical clearance

This study obtained ethical clearance from the Research and Ethics Committee of the Faculty of Humanities at the University of Pretoria (Appendix A) prior to the commencement of data collection. Ethical considerations are essential in health science research to ensure the protection of human rights and the social well-being of the study participants, particularly of vulnerable populations (Brink & Van Rensberg, 2022).

As outlined in the Declaration of Helsinki, various groups are considerably more vulnerable within medical research and must be safeguarded against additional harm (World Medical Association, 2013). The researcher utilised international guiding

principles and the 'principlism' approach to provide insight into key principles of biomedical research i.e., autonomy, non-maleficence, beneficence, and justice (Beauchamp & Childress, 2019: World Medical Association, 2013).

Within a local context, the South African law strictly protects the right to privacy of its people (Protection of Personal Information Act, 2013). In accordance with the Protection of Personal Information (POPI) Act 4 of 2013, the researcher collected and processed only essential data to achieve the aim of this research study.

Autonomy and informed consent

Honouring the prospective participant's right to self-determination, participation in this study was on a voluntary basis. The researcher executed their ethical obligation to provide clear, sufficient, and understandable information prior to the potential receipt of written consent (Pallocci et al., 2023). The prospective participants were provided with an informed consent document (Appendix C) which was accompanied by a verbal explanation by the researcher regarding the aim, potential risks, and benefits of participating in the research study. Additionally, the researcher emphasised that should prospective participants decide to participate in the study, this was not considered exclusive, and that they held the right to revoke consent, during any point of the research study, without negatively impacting the quality of care they would receive (Pallocci et al., 2023).

Non-maleficence, beneficence and justice

The researcher maintained their ethical responsibility to protect prospective participants from potential discomfort and harm in a physical, emotional, spiritual, economic, social, and/or legal capacity (Beauchamp & Childress, 2019). There were minimal established risks to participating in this study and a member of nursing staff

of the RCF was present throughout the data collection process to ensure that the safety of all participants was monitored by an external stakeholder. Guidelines within health science research, that involve the direct involvement of human participants, propose research can only be conducted by individuals with the appropriate scientific education (World Medical Association, 2013). The assessment was conducted by the researcher, a trained and registered SLT.

Beneficence and justice principles advocate for equitable allocation of research gains and responsibilities (Beauchamp & Childress, 2019). During the data collection process, if a participant was found to present with clinical signs and symptoms of previously undetected OD, the participant was provided with a referral letter that contained contact details of no less than three different SLT departments and/or practices in the surrounding areas for further assessment and intervention outside of the research study (Appendix I).

Confidentiality

The researcher prevented the misuse of confidential information i.e., personal identifying information and/or participant medical history by applying privacy-preserving controls during the collecting, processing, and storing of the research data (Protection of Personal Information Act, 2013). Each participant was assigned a unique code that was used for the purpose of data analysis.

CHAPTER 3: ARTICLE

The following article was submitted to the international journal of *Communication Disorders, Audiology and Swallowing.* The style, format and referencing are in accordance with the author guidelines and journal specifications, thus differ from the remainder of the dissertation. Proof of submission can be found in Appendix J.

Self-perception and clinical presentation of eating and swallowing in the elderly within residential care facilities

ABSTRACT

Purpose: To describe the self-perception and clinical presentation of eating and swallowing abilities amongst the elderly who reside in residential care facilities. **Method:** Forty-four participants (mean age=80 years) were included in this comparative within-subject study. Participants were assessed using an oropharyngeal dysphagia assessment protocol. A cognitive screener, the Saint Louis University Mental Status was used when the level of cognitive impairment was unknown. The oropharyngeal dysphagia protocol included a medical history review, administration of the Eating Abilities Test – 10, the Mann Assessment of Swallowing Abilities, and the three-ounce water swallow challenge of the Yale Swallow Protocol. **Results:** Twenty-one of 44 (n=21; 48%) participants indicated an overall self-perceived concern for oropharyngeal dysphagia when reporting within the Eating Abilities Test – 10. Evidence of compensatory eating behaviours, without receiving therapeutic intervention, were found. A negative, low correlation was present between Eating Abilities Test – 10 and the Mann Assessment of Swallowing Abilities ($r=-0.306$, $p<0.05$) scores. **Conclusions:** Individuals who perceived eating and swallowing difficulties, demonstrated fewer clinical symptoms possibly due to self-mediated compensatory techniques. It is essential to integrate patient-reported outcome measures with clinical assessments for oropharyngeal dysphagia in residential care facilities. Collaboration between facilities' staff and external professionals, such as

speech-language therapists, could ensure timely interventions for dysphagia treatment. **Keywords:** Dysphagia; Elderly; Residential care facilities; Self-perception; Clinical assessment

INTRODUCTION

The United Nations (UN) estimates that by the year 2050, more than two billion people will be aged 60 years and/or older with the majority of this population residing in lower- and middle-income countries [1]. As the incidence of complex medical diagnoses increases with age, these evolving demographics pose a significant obstacle to delivering healthcare services capable of meeting the needs of the aging populous [2]. A mounting concern for the incidence of oropharyngeal dysphagia (OD) within this cohort is highlighted [3]. With age-related physiological changes (such as loss of muscle mass and tissue elasticity, edentulism, xerostomia, and cervical spinal changes), combined with the burden of frailty and multi-comorbidity, the inherent risk of OD within the elderly population increases [4].

The World Health Organisation (WHO) and European Union Geriatric Medicine Society (EuGMS) classify OD as a “geriatric syndrome” thereby implying chronic, clinical impairment of the swallowing mechanism and associated decreased quality of life (QoL) [5,6]. The negative physiological sequelae of OD posing considerable danger to the elderly population include increased risk of malnutrition and dehydration, inability to swallow solid oral dosage forms of medication, frailty, asphyxiation, compromised respiratory status, lengthy hospitalizations, and ultimately fatality [6,7]. The psychosocial impact of OD should not be overlooked [3]. Depression, anxiety,

social isolation during mealtimes, feelings of loneliness, and periprandial stress are strongly associated with OD [8].

The provision of informal, home-based care for aging family members has declined due to caregivers' reduced capacity, insufficient clinical expertise, and the rejection of traditional family structures that historically facilitated elderly care at home [9]. This shift, combined with a longer life expectancy, underscores the demand for residential care facility (RCF) placement. The prevalence of OD in residents of RCFs is not fully known, yet previous studies indicate that OD is commonly overlooked as a typical part of the aging process resulting in this cohort being under-diagnosed and under-treated [7,10]. Inefficiencies within OD management are broadly observed within various healthcare settings – it is not uncommon for RCF staff to only refer to speech-language therapists (SLTs) to manage all aspects of OD when signs and/or symptoms of eating and swallowing difficulties become overt and are not active role-players in timeous identification [11].

A comparison of the self-perceptions and clinical presentation of eating and swallowing abilities of elderly residents within the RCF system is warranted. To encourage the provision of evidence-based healthcare, RCF staff will require an informed understanding of the nature of OD presentation within this population. This study thus aimed to compare the self-reported perceptions and clinical presentation of eating and swallowing abilities within the elderly population residing in RCFs.

METHOD

Institutional review board clearance was obtained prior to data collection (reference number: HUM039/0623). As encouraged by the Declaration of Helsinki, participation in this research study was voluntary and contingent upon the receipt of written informed consent [12].

Study sample

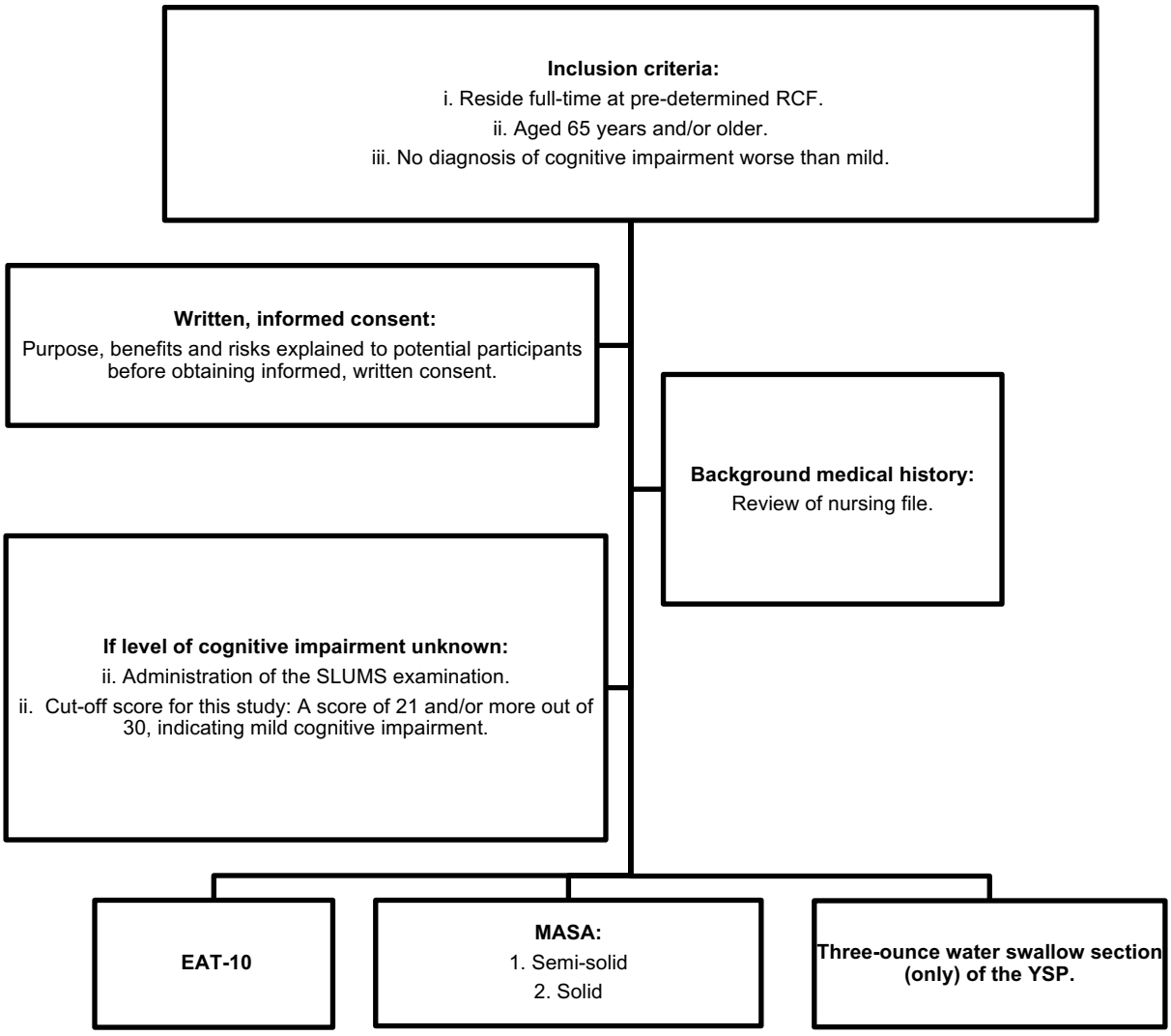
A total of 44 participants, with a mean age of 80 years old (SD=± 6.54), were included in this sample. The ages of participants ranged between 65- to 97-years-old. Potential participants had to be 65 years and older and be a permanent resident of the pre-selected RCF to qualify for voluntary participation. Additionally, potential participants were excluded if they had received a formal diagnosis of moderate-to-severe cognitive impairment. In circumstances where the appropriacy of cognition was unknown to RCF staff, the Saint Louis University Mental Status (SLUMS) examination was administered [13]. Only one prospective participant was excluded based on a previous diagnosis of moderate cognitive impairment.

Oropharyngeal dysphagia assessment protocol

A background case history form was utilized to identify demographic information, providing insight into the type of resident accommodation, level of autonomy during activities of daily living (ADLs), medical history and current medical intervention rendered. Three standardized OD assessment tools were administered namely the Eating Assessment Tool – 10 (EAT-10), the Mann Assessment of Swallowing Ability (MASA), and the three-ounce water swallow challenge of the Yale Swallow Protocol (YSP) [14–16]. All evaluations were conducted during a single session. A second rater

was used to ensure research rigour. Figure 1 outlines the OD assessment protocol utilized during this research study.

Figure 1. Oropharyngeal dysphagia protocol utilized during the research study.



Caption: RCF: Residential Care Facility; SLUMS: Saint Louis University Mental Status; EAT-10: Eating Assessment Tool-10; MASA: Mann Assessment of Swallowing Abilities; YSP: Yale Swallow Protocol

Eating Assessment Tool – 10

A patient-reported outcome measures (PROMs) tool was administered to establish participants' self-perceptions regarding symptom-specific eating and swallowing concerns [17]. The EAT-10 demonstrates reliability and internal consistency when compared to patient outcomes of the Penetration Aspiration Scale (PAS) which is widely utilized in clinical practice for its ability to predict OD [18]. This tool is a self-administered, paper-based questionnaire including ten statements rated from zero to four. For each statement, a score of zero indicates "no problem" while a score of four would indicate "a severe problem". The higher the final score out of 40, the higher the risk for aspiration because of impaired eating and swallowing. A total EAT-10 score between zero and two indicates no difficulty swallowing, while a score between three and ten indicates a self-perceived swallowing difficulty.

Mann Assessment of Swallowing Ability

This validated assessment tool was used to quantify the risk of aspiration and severity of possible dysphagia [15]. The MASA tool utilises a five- to ten-point rating scale. The highest MASA score that can be achieved is 200 points, indicating normal swallowing physiology.

Three-ounce water swallow challenge of the Yale Swallow Protocol

The three-ounce water swallow challenge assessed the ability of participants to swallow three ounces of water using sequential swallows for observation of immediate and/or delayed signs of aspiration. This clinical screening tool was included in this study due to its strong negative predictive value (92.4%) when standradized in a

prospective, double-blind, multi-rater study within a post-acute care setting – a setting that could be representative of the RCF system [19].

Data analysis

The collected data were entered into Microsoft Office 2019. The SAS version 9.4 was used to perform the analysis [20]. On continuous variables, descriptive statistics i.e., such as means and standard deviations were applied, whilst frequency tables i.e., count and percentages were used on categorical variables. The Fisher's exact test was used to determine the relationship between the outcome measures of the three-ounce water swallow challenge of the YSP and the EAT-10's self-perceptions. The data were checked for normality using the Shapiro-Wilk test and found that the MASA and the EAT-10 scores were not normally distributed. The non-parametric test: Spearman's rho correlation, was subsequently performed to determine whether the MASA and EAT-10 scores were correlated.

RESULTS

A total of 44 participants, with an average age of 80 years old (standard deviation ± 6.54), were included in this sample. Participants' residential arrangements were predominantly reported as single-room configurations with individuals requiring support during eating and mealtimes. Only one participant was receiving speech-language therapy (SLT) intervention for a diagnosis of OD due to ongoing oral cancer treatment at the time of the research study. Table 1 presents the reported co-morbidities of the total sample (n=44).

Table 1. Descriptive summary of participant reported co-morbidities (n=44)

Co-morbidity	*Number of participants (percentage)*
High blood pressure	28 (64%)
Depression or anxiety	19 (43%)
Thyroid disease	12 (27%)
High cholesterol	11 (25%)
Stroke	10 (23%)
Diabetes	7 (16%)
Osteoporosis	6 (14%)
Heart disease	6 (14%)
Heart failure	5 (11%)
Arthritis	4 (9%)
Parkinson's Disease	3 (7%)
Cataracts	3 (7%)
Emphysema	2 (5%)
Asthma	2 (5%)
Gout	2 (5%)
None	1 (2%)
Heart murmur	1 (2%)
Coronary heart disease	1 (2%)
Sciatica	1 (2%)
Alcohol/substance abuse	1 (2%)
Pneumonia	1 (2%)
Hay Fever/allergies	1 (2%)
Frequent urinary tract infections	1 (2%)
Kidney disease	1 (2%)
Colitis	1 (2%)

Only one participant in the study presented with no co-morbidities and no prescribed chronic medication (Table 1). Frequently identified co-morbidities within the sample were high blood pressure (n=28; 64%), depression and/or anxiety (n=19; 43%), and thyroid disease (n=12; 27%).

Among participants receiving chronic treatment for high blood pressure, the sensation of food sticking in the throat emerged as the predominant self-perceived eating and swallowing difficulty, (n=20; 45%). However, only three of these participants were clinically suspected of having OD when assessed using the MASA. Half of the participants (n=22; 50%) who were diagnosed with depression and/or anxiety and/or thyroid diseases (n=22; 50%), indicated additional effort taken to swallow pills on the self-perception scales of the EAT-10.

A total of 21 out of 44 (48%) participants indicated an overall self-perceived concern for OD. Indicating a mild-to-severe concern amongst the sample, the highest EAT-10 scores, presented in Table 2, were: i) *swallowing pills take extra effort* (n= 22; 50%) and ii) *when I swallow, food sticks in my throat* (n=20; 45%). The lowest frequency of scores recorded, indicating no concern with OD, were: i) *my swallowing problem has caused me to lose weight* (n=12; 27%); and ii) *swallowing is stressful* (n=8; 18%). Table 2 describes the self-reported outcomes of the EAT-10.

Table 2. Descriptive summary of participant rating on Eating Assessment Tool – 10 (EAT-10) (n=44)

EAT-10 statement:	*Participants with no concern n (%)*	*Participants (with mild to severe concern n (%)*
Swallowing is stressful	32 (73%)	12 (27%)
I cough when I eat	28 (64%)	16 (36%)
When I swallow, food sticks in my throat	24 (55%)	20 (45%)
Pleasure of eating is affected by my swallowing	31 (70%)	13 (30%)
Swallowing is painful	41 (93%)	3 (7%)
Swallowing pills takes extra effort	22 (50%)	22 (50%)
Swallowing solids takes extra effort	27 (61%)	17 (39%)
Swallowing liquids takes extra effort	31 (70%)	13 (30%)
My swallowing problem interferes with going out for meals	37 (84%)	7 (16%)
My swallowing problem has caused me to lose weight	32 (72%)	12 (27%)

From the clinical swallow examination data, the most common clinical domains on the MASA that demonstrated an observable impairment were: i) reduced tongue strength (n=9; 20%); ii) diminished gag reflex (n=14; 32%); iii) palatal reflex (n=15; 34%); iv) poor bolus clearance (semi-solid n=25; 57%)(solid n=31; 70%); v) lengthy oral transit time (semi-solid n=21; 48%) (solid n=20; 45%); vi) and the pharyngeal phase (semi-solid n=10; 23%) (solid n=11; 25%). For both a solid and semi-solid consistency, majority of the sample (n=41; 95%) scored above 177, thus indicating no established risk for OD and/or aspiration within this research sample. Table 3 indicates the results of the MASA according to risk categories for dysphagia and/or aspiration.

Table 3. Frequency scores of the Mann Assessment of Swallowing Abilities (MASA) (n=44)

	Frequency score (percentage)		
Dysphagia risk:	**No abnormality**	**Mild risk**	**Moderate risk**
Solids	41 (93%)	2 (5%)	1 (2%)
Semi-solids	41 (93%)	2 (5%)	1 (2%)
Aspiration risk:			
Solids	42 (95%)	1 (2%)	1 (2%)
Semi-solids	42 (95%)	2 (5%)	0 (0%)

The administration of the three-ounce water swallow challenge demonstrated that majority of the sample (n=33; 75%) did not present with overt signs and/or symptoms of aspiration on a thin liquid. However, it should be noted that numerous participants n=20; 45%) utilized a self-mediated compensatory swallow behavior i.e., multiple swallows (instead of sequential swallows). Of the 11 participants (25%) who failed the three-ounce water swallow challenge less than half of these participants had previously indicated moderate-to-severe difficulty drinking thin liquids on the EAT-10 assessment tool (n=5; 45%).

The Fisher's Exact Test (p-value < 0.05) was applied to the outcome measures of the three-ounce water swallow challenge of the YSP and the self-perceptions of the EAT-10. An association between overt signs and/or symptoms of aspiration on thin liquids and the self-perceived additional effort taken to swallow a thin liquid was established. A statistically significant correlation between the absence of reported self-perceived difficulties in swallowing solid consistencies as assessed by the EAT-10 tool and the absence of clinical impairment in the pharyngeal response domain within the MASA

(p=0.02) was evident. The Spearman Correlation Coefficients were applied to the data evidencing a significant, negative low correlation between the MASA semi-solid score (r=0.04, p<0.05) and the EAT-10.

DISCUSSION

This research study revealed a varied disparity between the clinical presentation of OD and the reporting of self-perceptions regarding eating and swallowing abilities within the elderly population residing in an RCF. Despite a substantial portion of the sample indicating self-perceived concern for OD, the most frequent MASA score that was recorded highlighted no established risk for dysphagia and/or aspiration. Similar findings are mirrored by an international study that analyzed psychosocial wellness in the presence of OD [21]. The findings found that participants who did not demonstrate overt signs and/or symptoms of OD during clinical testing, continued to explicitly report symptoms of eating and swallowing difficulties [21].

The heightened prevalence and/or perception of OD within the elderly population is primarily attributed to multimorbidity and polypharmacy rather than physiological aging itself, with the importance of monitoring for changes in swallowing function increasing when a higher comorbidity index is apparent [22,23]. Most of the research sample was treated for chronic multi-morbidity, with a considerable portion of participants reporting a self-perceived eating and swallowing difficulty. Pre-existing chronic conditions such as hypertension, depression and/or anxiety, diabetes mellitus, previous stroke and/or cancer, and heart failure have been established as contributing factors to the manifestation of OD and were all present within this research sample [3,24].

Physiological changes clinically observed in this research study, that correlated with previous studies, include reduced lingual strength; diminished gag reflex; decreased palatal movement; incomplete bolus clearance; and delayed oral transit time [25]. Whilst the correspondence between self-reported OD concerns and the clinical presentation thereof varied, domains of clinically impaired physiology were commonly reported as self-perceptions of i) *swallowing pills take extra effort* and ii) *when I swallow, food sticks in my throat*. The most common comorbidities were hypertension, anxiety and/or depression, and thyroid diseases, all of which have a previously determined association with the manifestation of OD [23]. The challenge posed to RCF staff lies in monitoring these subtle physiological changes due to chronic multi-morbidity, widespread prescription of polypharmacy and unique variability in the incidence of OD within this cohort [26].

In correlation with other studies, the current research study noted that patients' subjective experiences of eating and swallowing abilities can differ from the clinical findings of healthcare providers [26,27]. It was found that individuals who perceive difficulties with eating and swallowing potentially exhibit fewer observable clinical symptoms due to self-mediated compensations i.e., paced and controlled boluses. Further disconnect when comparing the findings of standardised tools i.e., three-ounce water swallow challenge of the YSP, and the results of the PROM tools i.e., EAT-10 was noted within this research sample. While an association between overt aspiration on thin liquids and the self-perceived additional effort to swallow them was established, the incidence of an aspiration event was reduced when participants used self-mediated compensatory swallow maneuvers, such as paced, volume-controlled multiple swallows, instead of the prescribed sequential swallows. These adaptations

to impaired swallowing physiology could potentially indicate the participants' personal insight into the adjustments that are necessary to maintain the safety and efficacy of eating and swallowing [4,25,28]. Comparative literature that explores the link between self-mediated swallowing strategies and the reporting of self-perceived OD is limited – the results of this research study warrant further investigation to explore the frequency, nature and efficacy of such self-mediated compensatory swallowing behaviours within this cohort.

Swallowing difficulties without an overt etiology should not be overlooked by RCF staff and attributed to age-related changes as this could undermine the timeous provision of health care services to the RCF resident [4,10]. A shift from the traditional biomedical model and alignment towards the consideration of patient self-perceptions, encourages the consideration of unobservable qualitative information that could prevent the under-identification and under-treatment of eating and swallowing difficulties within the elderly population of the RCF system [27].

LIMITATIONS AND FUTURE RESEARCH

Although the sample included participants with various co-morbidities, only a few had progressive neurological disorders. Additionally, the sample size was small and drawn exclusively from selected private RCFs impacting the extrapolation of the results to the broader population. Further research on a larger scale is warranted, including an in-depth exploration of the self-implemented compensatory strategies for swallowing difficulties identified in this study.

CONCLUSION

This study suggests the combined use of objective measurement tools, that are designed to clinically assess for the presence of OD, are enhanced when correlated with the person's self-perception of their eating and swallowing abilities amongst the RCF cohort. MDT team collaboration between RCF staff and external professional services (such as SLT services) could potentially link the gap between OD manifestation and timeous intervention. Initiatives to provide education about eating and swallowing difficulties should extend from public and patient arenas to interprofessional education of RCF staff.

REFERENCES:

1. United Nations. World Population Aging 2019: Highlights. 2019.

2. The Organization for Economic Cooperation and Development, World Health Organisation. Health at a glance: Measuring progress towards universal health coverage. 6th ed. 2020.

3. Abu-Ghanem S, Chen S, Amin MR. Oropharyngeal dysphagia in the elderly: evaluation and prevalence. Curr Otorhinolaryngol Rep. 2020;8(1):34–42.

4. Ahn DH, Yang HE, Kang HJ, Do KH, Han SC, Jang SW, et al. Changes in etiology and severity of dysphagia with aging. Eur Geriatr Med. 2020;11(1):139–45.

5. Baijens LWJ, Clavé P, Cras P, Ekberg O, Forster A, Kolb GF, et al. European union geriatric medicine society white paper: Oropharyngeal dysphagia as a geriatric syndrome. Clin Interv Aging. 2016;11:1403–28.

6. Geirsdóttir ÓG, Bell JJ, Santy-Tomlinson J, Falaschi P, Hertz K. Interdisciplinary nutritional management and care for older adults: An evidence-based practical guide for nurses perspectives in nursing management and care for older adults series editors [Internet]. 2021. Available from: http://www.springer.com/series/15860

7. Logrippo S, Ricci G, Sestili M, Cespi M, Ferrara L, Palmieri GF, et al. Oral drug therapy in elderly with dysphagia: Between a rock and a hard place. Clin Interv Aging. 2017;12:241–51.

8. Nishida T, Yamabe K, Honda S. Dysphagia is associated with oral, physical, cognitive and psychological frailty in Japanese community-dwelling elderly persons. Gerodontology. 2020;37(2):185–90.

9. Sun C, Ding Y, Cui Y, Zhu S, Li X, Chen S, et al. The adaptation of older adults' transition to residential care facilities and cultural factors: a meta-synthesis. BMC Geriatr. 2021;21(1).

10. Estupiñán Artiles C, Regan J, Donnellan C. Dysphagia screening in residential care settings: A scoping review. Int J Nurs Stud. 2021;114.

11. Levenson SA, Walker VL. It is time to revamp approaches to managing dysphagia in nursing homes. J Am Med Dir Assoc. 2019;20(8):952–5.

12. World Medical Association. Declaration of Helsinki: Ethical principles for medical research involving human subjects. 2013.

13. Morley J, Tumosa N. Saint Louis University Mental Status Examination (SLUMS). APA PsycTests. 2002;

14. Belafsky PC, Mouadeb DA, Rees CJ, Pryor JC, Postma GN, Allen J, et al. Validity and reliability of the Eating Assessment Tool (EAT-10). 2008.

15. Mann G. The Mann Assessment of Swallowing Ability. Delmar: Cengage Learning ; 2002.

16. Leder S, Suiter D. The Yale Swallow Protocol: An evidence-based approach to decision making. Springer International Publishing; 2014.

17. Zhang P ping, Yuan Y, Lu D zhi, Li T ting, Zhang H, Wang H ying, et al. Diagnostic accuracy of the Eating Assessment Tool-10 (EAT-10) in screening dysphagia: A systematic review and meta-analysis. Dysphagia. 2023;38(1):145–58.

18. Rosenbek J, Robbins J, Roecker E, Coyle J. A penetration-aspiration scale. Dysphagia 1996;

19. Ward M, Skelley-Ashford M, Brown K, Ashford J, Suiter D. Validation of the yale swallow protocol in post-acute care: A prospective, double-blind, multirater study. Am J Speech Lang Pathol. 2020;29(4):1937–43.

20. SAS Institute. Statistical Analysis Software. 2023.

21. Leiman DA, Jones HN, North R, Porter Starr KN, Pieper CF, Cohen SM. Self-reported dysphagia and psychosocial health among community-dwelling older adults: Results of a national study. J Gen Intern Med. 2023.

22. Jardine M, Miles A, Allen J. Self-reported swallowing and nutrition status in community-living older adults. Dysphagia. 2021;36(2):198–206.

23. da Silva AF, Moreira EAM, Barni GC, Panza VSP, Furkim AM, Moreno YMF. Relationships between high comorbidity index and nutritional parameters in patients with oropharyngeal dysphagia. Clin Nutr ESPEN. 2020;38:218–22.

24. Banda KJ, Chu H, Chen R, Kang XL, Jen HJ, Liu D, et al. Prevalence of oropharyngeal dysphagia and risk of pneumonia, malnutrition, and mortality in adults aged 60 Years and older: A meta-analysis. Gerontology. 2022;68(8):841–53.

25. Mancopes R, Gandhi P, Smaoui S, Steele CM. Which physiological swallowing parameters change with healthy aging? OBM Geriat [Internet] 2021;5(1). Available from: http://www.lidsen.com/journals/geriatrics/geriatrics-05-01-153

26. Zanetti M, Veronese N, Riso S, Boccardi V, Bolli CF, Cintoni M, et al. Polypharmacy and malnutrition in older people: A narrative review. Nutrition. 2023;112134.

27. Cohen ML, Hula WD. Patient-reported outcomes and evidence-based practice in speech-language pathology. Am J Speech Lang Pathol. 2020;29(1):357–70.

28. Wolf U, Eckert S, Walter G, Wienke A, Bartel S, Plontke SK, et al. Prevalence of oropharyngeal dysphagia in geriatric patients and real-life associations with diseases and drugs. Sci Rep. 2021;11(1).

CHAPTER 4: IMPLICATIONS AND CONCLUSIONS

The concluding chapter aims to provide a synopsis and contextual analysis of the research findings within relevant international literature and frameworks. Provided the preliminary nature of the research study outcomes, the chapter addresses research limitations and future directions for research within this context.

4.1. Summary of results

The data revealed a substantial number of participants with chronic multimorbidity would report an overall concern for OD symptoms but did not consistently display clinical OD signs. Within this research sample, a low risk for OD on semi-solid and solid consistencies was established. In-depth data analysis revealed that all participants who indicated a self-perceived concern for the additional effort taken to swallow a thin liquid failed the clinical assessment for this consistency. During these thin liquid trials, numerous participants utilised a self-mediated swallow maneuver i.e., multiple swallows instead of sequential swallows, thus compromising the clinical presentation of overt aspiration. This self-mediated behaviour suggests a nuanced relationship between self-perception and clinical presentation for specific diet consistencies.

4.2 Theoretical and clinical implications

As the ageing population is set to increase, the prevalence of OD within the RCF cohort will continue to grow – support for healthy ageing within the RCF system by SLT services is essential (National Health Service, 2018). Implications of this study mirror international research findings. The inappropriate self-reporting of OD within the RCF population exists and the incidence of OD will vary widely (Birchall et al., 2022;

Estupiñán Artiles et al., 2021; Namasivayam-Macdonald & Riquelme, 2019). Researchers have suggested that the elderly often avoid reporting their eating and swallowing difficulties as these difficulties are viewed as a typical aspect of ageing and are not considered dysfunctional (Park et al., 2016; Van der Maarel-Weirink et al., 2014). Whilst this lack of consideration for impairment rather over age-related changes could have been evident in the study – it was not explored in detail. Data captured within a larger, multi-site longitudinal study found that RCF residents who report symptoms of OD are eight times more likely to present with OD (Namasivayam-Macdonald & Riquelme, 2019). Under the researcher's review, majority of participants did not present with clinical signs of aspiration when trialing a semi-solid and solid consistency. However, the researcher observed numerous participants utilising a self-mediated swallow maneuver to decrease the incidence of aspiration during thin liquid trials. These findings correlate with an international study that suggests elderly people actively rely on using swallowing maneuvers to remain asymptomatic for eating and swallowing difficulties (Park et al., 2016). During OD assessment, the SLT should remain aware of different eating and swallowing abilities within individual IDDSI levels as the incidence of self-initiated swallowing compensations could be evident on one consistency and may not present in other oral trials. The variance in self-perception and clinical presentation holds significant value for the SLT and OD monitoring practices within the RCF system. Data analysis revealed that reliance on either a PROMs tool or a clinical assessment tool would be insufficient during OD assessment and monitoring. The findings of this research study suggest that the results of an eating and swallowing assessment are enhanced when self-perceptions and clinical presentation are collated to create a holistic profile of eating and swallowing abilities.

The implications of these undetected and unsupervised swallowing maneuvers could prove detrimental against the clinical backdrop of chronic multimorbidity.

Literature acknowledges OD as a dysfunction that does not occur in isolation, but rather as a medical symptom of multimorbidity or neurological changes (Lutomski et al., 2023). The role of the SLT, and their ability to identify, diagnose and treat OD, could positively contribute to healthy ageing within the RCF population. Regularly planned OD screening within the RCF system could allow for standardised monitoring of OD signs that indicate subtle multimorbid changes within this population – information that is beneficial to the treating medical team. An international scoping review revealed that none of the included studies referenced a national or international clinical guideline on dysphagia screening (Estupiñán Artiles et al., 2021). Due to the multimorbid nature of the RCF population, redesign of service delivery within the RCF setting is required.

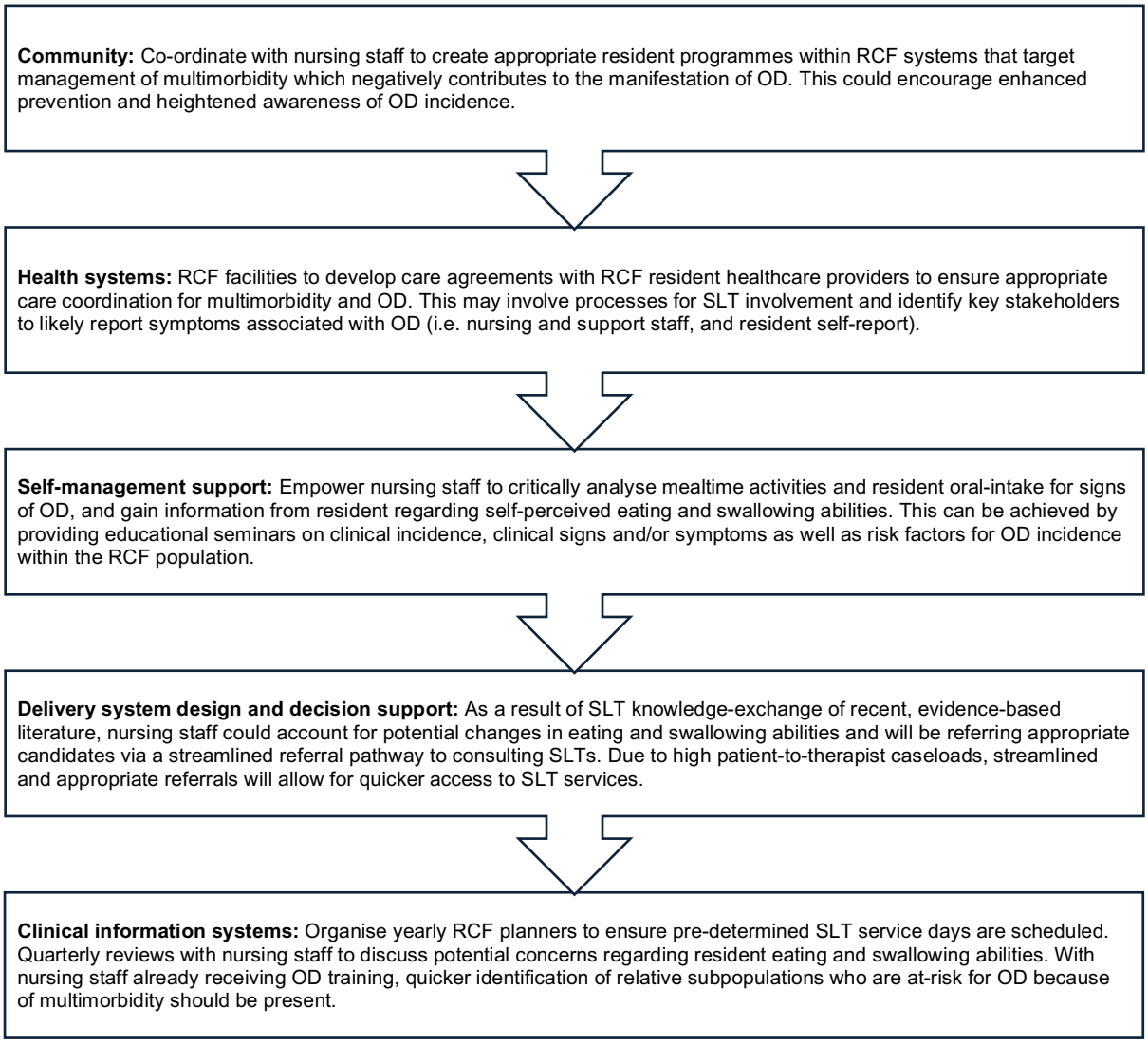
In a low- to middle-income country, like South Africa, high patient-to-therapist caseloads are common within the SLT profession (Kater, 2022). The full-time employment of an SLT within an RCF system of low- to middle-income country's is not always financially viable, thus reliance on nursing staff is essential. Nursing staff of an RCF should be utilised as a key role player in OD identification as they administer medication and assist residents during mealtimes where OD could be explicitly evident (Bhimte & Rangasayee, 2015). The important role of nursing staff in identifying OD is highlighted in international research, encouraging role reversal and role exchange with the SLT (Park et al., 2015). The SLT is encouraged by the HPCSA to provide in-service training to healthcare professionals regarding signs and symptoms of OD, risk

factors for OD and the appropriate referral pathways to specialist SLT assessment should the RCF resident require it (Department of Health, 2017). Knowledge exchange between SLTs and RCF nursing staff could support timeous OD identification, monitoring of OD intervention and facilitate quicker access to SLT services.

The current study implies that SLTs not only have the responsibility to advocate for improved local OD screening protocols, but to also collaborate with RCF nursing staff through education and policy development. The CCM encourages superior care for chronic diseases, a problem the elderly RCF population faces. Research has demonstrated that nursing staff within an OD-friendly RCF report enhanced skills for monitoring and referring for OD and a positive change in their routine care and systems (Royal Society for Public Health, 2018). This collaboration between nursing staff and SLT services is suggested as a route of care coordination and can be conceptualised using an adaptation of the CCM and international RCF dysphagia pilot programmes (Royal Society for Public Health, 2018; Wagner, 1998).

Utilising an established model to support planned and proactive management of OD could be a viable option to improve OD monitoring and assessment within the RCF system. As a result of knowledge-exchange between RCF nursing staff and the SLT, heightened awareness of OD within this healthcare setting could support improved care coordination and streamline referral pathways for residents who require urgent SLT intervention. The proposed adaptation of the CCM that accommodates for OD monitoring and assessment within a low- to middle-income RCF setting is explored in Figure 1.

Figure 1. A proposed OD screening and assessment framework within the CCM



4.3 Strengths and limitations

The prospective design of this research study allowed the researcher to tailor the OD assessment protocol based on first-hand clinical experience from working with this vulnerable population. To enhance research rigour within this study, one qualified SLT collected the data thus mitigating margin of error during data collection. Investigator triangulation improved credibility of the research findings (FitzPatrick, 2019). The

results of the clinical assessment tools that were administered by the second rater were compared to the findings of the initial assessments to assess their agreement prior to data analysis and interpretation.

To enhance validity of this provisional data, and to extrapolate the implications of this research study to the general RCF population, a larger sample size would be essential. The replication of this research study within a larger sample size is necessary due to the historical variance in the incidence and management of OD within this population (Baijens et al., 2016; Birchall et al., 2022). Additionally, the administration of the OD protocol is only reflective of how the participant performed in one controlled assessment session and is not indicative of a full meal-time experience which could provide more insight into the provisional data (Hansen et al., 2023).

4.4 Recommendations for future research

Future research could explore the correlation of PROM tools and clinical OD assessment tools with objective standardised measures i.e., videofluoroscopic swallow study to determine if the administration of PROMs tools and clinical OD assessment tools are sufficient for explicit use in the RCF setting. Longitudinal observation and assessment during mealtimes could provide deeper insight into the frequency, type and indication for the use of self-mediated swallow maneuvers within the RCF cohort. Analysis of these mealtime behaviours (or lack thereof) could further inform educational efforts with nursing staff to ensure that OD is not under identified or misdiagnosed as a typical part of ageing. Additionally, the researcher advocates for research to accommodate and explore the influence that individual cultures can contribute to the under-reporting of OD symptoms.

4.5 Conclusion

Within this study, reporting patterns for OD and the clinical presentation of symptoms were nuanced and varied. It is unlikely that the utilisation of one clinical tool would support the establishment of a holistic profile of eating and swallowing abilities within the RCF population. Rather, clinical assessment of OD should capitalise on stakeholder self-perceptions to enhance assessment findings and inform treatment planning. Ensuring equitable and cost-effective access to OD intervention is paramount to healthy ageing. Including SLT consultation during RCF policy planning is the foundational step in alerting RCF systems to the risks of inadequate OD management. To ensure improved OD monitoring and treatment practices within the RCF setting, the SLT is encouraged to advocate for a culture of coordinated multidisciplinary care and collaboration. Education and role reversal with nursing staff could improve understanding and heighten awareness of OD. The SLT should initiate in-service training regarding the risk factors for eating and swallowing difficulties, OD signs and symptoms and the importance of prompt referrals to SLT services when the risk for aspiration is evident. This improved monitoring and potential identification of OD by nursing staff could support timeous referrals and avoid overloading SLT caseloads in countries where the patient-to-therapist ratio is high.

REFERENCES

Abu-Ghanem, S., Chen, S., & Amin, M. R. (2020). *Oropharyngeal Dysphagia in the Elderly: Evaluation and Prevalence.* https://doi.org/10.1007/s40136-020-00258-x

Baijens, L. W. J., Clavé, P., Cras, P., Ekberg, O., Forster, A., Kolb, G. F., Leners, J. C., Masiero, S., Mateos-Nozal, J., Ortega, O., Smithard, D. G., Speyer, R., & Walshe, M. (2016). *European union geriatric medicine society white paper: Oropharyngeal dysphagia as a geriatric syndrome*. https://doi.org/10.2147/CIA.S107750

Banda, K. J., Chu, H., Chen, R., Kang, X. L., Jen, H. J., Liu, D., Shen Hsiao, S. T., & Chou, K. R. (2022). *Prevalence of oropharyngeal dysphagia and risk of pneumonia, malnutrition, and mortality in adults aged 60 Years and older: A meta-analysis.* Gerontology, 68(8), 841–853. https://doi.org/10.1159/000520326

Barends, E., Rousseau, D. M., & Briner, R. B. (2014). *Evidence-Based Management: The Basic Principles.* (pp 36-40).

Beauchamp, T., & Childress, J. (2019). *Principles of biomedical ethics* (8th ed.). Oxford University Press. (pp 9-12).

Belafsky, P. C., Mouadeb, D. A., Rees, C. J., Pryor, J. C., Postma, G. N., Allen, J., & Leonard, R. J. (2008). *Validity and reliability of the Eating Assessment Tool (EAT-10).* Rhinology & Laryngology (Vol. 117, Issue 12).

Birchall, O., Bennett, M., Lawson, N., Cotton, S. M., & Vogel, A. P. (2022). *Instrumental swallowing assessment in adults in residential aged care homes: Practice patterns and opportunities*. Australasian Journal on Ageing. https://doi.org/10.1111/ajag.13122

Boucaud-Maitre, D., Meillon, C., Letenneur, L., Villeneuve, R., Dartigues, J. F., Amieva, H., & Tabue-Teguo, M. (2023). *Health trajectories of elderly living in French senior housing: a longitudinal perspective.* Scientific Reports, 13(1). https://doi.org/10.1038/s41598-023-32429-3

Brink, H., & Van Rensburg, G. (2022). *Fundamentals of Research Methodology for Health Care Professionals* (5th ed). (pp 50-78).

Cheney, D. M., Tausif Siddiqui, M., Litts, J. K., Kuhn, M. A., & Belafsky, P. C. (2015). *The ability of the 10-item eating assessment tool (EAT-10) to predict aspiration risk in persons with dysphagia.* Annals of Otology, Rhinology and Laryngology, 124(5), 351–354. https://doi.org/10.1177/0003489414558107

Chojin, Y., Kato, T., Rikihisa, M., Omori, M., Noguchi, S., Akata, K., Ogoshi, T., Yatera, K., & Mukae, H. (2017). *Evaluation of the mann assessment of swallowing ability in elderly patients with pneumonia.* Aging and Disease, 8(4), 420–433. https://doi.org/10.14336/AD.2017.0102

Department of Health. (2017). *Regulations defining the scope of the profession of Speech-Language Therapy*. Retrieved August 8, 2024, from https://www.hpcsa.co.za/Content/upload/professional_boards/slh/regulations/Regulations_defining_the_scope_of_the_profession_of_Speech_Language_Therapy.pdf

Department of Justice and Constitutional Development. (2006). *Older Persons Act 13 of 2006*. Retrieved August 8, 2024, from https://www.justice.gov.za/legislation/acts/2006-013_olderpersons.pdf

Depolli, G. T., Oliveira, G. B. de, Oliveira, T. J. de, Santos, M. H. de S., Rocha, R. M., Guimarães, M. F., & Azevedo, E. H. M. (2023). *Quality of life in dysphagia and anxiety and depression symptoms pre and post-thyroidectomy*. CoDAS, 35(5). https://doi.org/10.1590/2317-1782/20232022099en

Estupiñán Artiles, C., Regan, J., & Donnellan, C. (2021). *Dysphagia screening in residential care settings: A scoping review*. In International Journal of Nursing Studies (Vol. 114). Elsevier Ltd. https://doi.org/10.1016/j.ijnurstu.2020.103813

Feng, H.-Y., Zhang, P.-P., & Wang, X.-W. (2023). *Presbyphagia: Dysphagia in the elderly. World Journal of Clinical Cases,* 11(11), 2363–2373. https://doi.org/10.12998/wjcc.v11.i11.2363

Figueira, R. S., Xavier, M. O., Tomasi, E., Demarco, F. F., Gonzalez, M. C., & Bielemann, R. M. (2023). *Validation of dysphagia perception to predict the risk for dysphagia in non-institutionalized older adults. Clinical Nutrition* ESPEN, 57, 358–363. https://doi.org/10.1016/j.clnesp.2023.07.014

FitzPatrick, B. (2019). *Validity in qualitative health education research.* In Currents in Pharmacy Teaching and Learning (Vol. 11, Issue 2, pp. 211–217). Elsevier Inc. https://doi.org/10.1016/j.cptl.2018.11.014

Geirsdóttir, Ó. G., Bell, J. J., Santy-Tomlinson, J., Falaschi, P., & Hertz, K. (2021). *Interdisciplinary nutritional management and care for older adults: An evidence-based practical guide for nurses perspectives in nursing management and care for older adults series editors.* http://www.springer.com/series/15860

Hansen, T., Rasmussen, S. A. F., Fabricius, J., Grove, L. M. D., & Simpelaere, I. (2023). *Measuring mealtime performance in older adults with suspected oropharyngeal dysphagia: an updated systematic review of psychometric properties*. Disability and Rehabilitation. https://doi.org/10.1080/09638288.2023.2178033

Imaizumi, M., Suzuki, T., Ikeda, M., Matsuzuka, T., Goto, A., & Omori, K. (2020). *Implementing a flexible endoscopic evaluation of swallowing at elderly care facilities to reveal characteristics of elderly subjects who screened positive for a swallowing disorder.* Auris Nasus Larynx, 47(4), 602–608. https://doi.org/10.1016/j.anl.2020.02.004

International Dysphagia Diet Standardisation Initiative. (2019). Retrieved on July 25, 2024 from, https://doi.org/10.1007/s00455

Islaqm, M. R., & Islam, M. R. (2018). *Sample size and its role in Central Limit Theorem (CLT).* Computational and Applied Mathematics Journal, 4(1), 1–7. http://www.aascit.org/journal/camj

Kater, K. A. (2022). *Triage and dysphagia: Are hospitals in the South African public health sector ready?* South African Journal of Communication Disorders, 69(1). https://doi.org/10.4102/sajcd.v69i1.852

Kim, J. Y., Lee, Y. W., Kim, H. S., & Lee, E. H. (2019). *The mediating and moderating effects of meaning in life on the relationship between depression and quality of life in patients with dysphagia.* Journal of Clinical Nursing, 28(15–16), 2782–2789. https://doi.org/10.1111/jocn.14907

Kristensen, M. B., Isenring, E., & Brown, B. (2020). *Nutrition and swallowing therapy strategies for patients with head and neck cancer.* In Nutrition (Vol. 69). Elsevier Inc. https://doi.org/10.1016/j.nut.2019.06.028

Kwon, S., Sim, J., Park, J., Jung, Y., Cho, K. H., Min, K., Kim, M. Y., Kim, J. M., & Im, S. H. (2019). *Assessment of aspiration risk using the Mann Assessment of Swallowing Ability in brain-injured patients with cognitive impairment*. Frontiers in Neurology, 10. https://doi.org/10.3389/fneur.2019.01264

LaDonna, K. A., Artino, A. R., & Balmer, D. F. (2021). *Beyond the guise of saturation: Rigour and qualitative interview data*. In Journal of Graduate Medical Education (Vol. 13, Issue 5, pp. 607–611). Accreditation Council for Graduate Medical Education. https://doi.org/10.4300/JGME-D-21-00752.1

Leavy, P. (2023). Research Design: Quantitative, Qualitative, Mixed Methods, Art-based, and Community-Based Participatory Research Approaches (Second Edition). (pp 17-20)

Leder, S. B., & Suiter, D. M. (2014). *The Yale Swallow Protocol*. Springer International Publishing. https://doi.org/10.1007/978-3-319-05113-0

Lee, Y. C., Lin, Y. Te, & Chiu, E. C. (2022). *A comparison of test-retest reliability of four cognitive screening tools in people with dementia*. Disability and Rehabilitation, 44(15), 4090–4095. https://doi.org/10.1080/09638288.2021.1891466

Li, X., Ploner, A., Wang, Y., Zhan, Y., Pedersen, N. L., Magnusson, P. K., Jylhävä, J., & Hägg, S. (2021). *Clinical biomarkers and associations with healthspan and lifespan: Evidence from observational and genetic data.* EBioMedicine, 66. https://doi.org/10.1016/j.ebiom.2021.103318

Logrippo, S., Ricci, G., Sestili, M., Cespi, M., Ferrara, L., Palmieri, G. F., Ganzetti, R., Bonacucina, G., & Blasi, P. (2017). *Oral drug therapy in elderly with dysphagia: Between a rock and a hard place.* In Clinical Interventions in Aging (Vol. 12, pp. 241–251). Dove Medical Press Ltd. https://doi.org/10.2147/CIA.S121905

Lutomski, J. E., Hoekstra, T., Akker, M. van den, Blom, J., Calderón-Larrañaga, A., Marengoni, A., Prados-Torres, A., Olde-Rikkert, M., & Melis, R. (2023). *Multimorbidity patterns in older persons and their association with self-reported quality of life and limitations in activities of daily living*. Archives of Gerontology and Geriatrics, 115. https://doi.org/10.1016/j.archger.2023.105134

Matsumura, E., Nohara, K., Tanaka, N., Fujii, N., & Sakai, T. (2020). *A survey on medications received by elderly persons with dysphagia living at home or in a nursing home.* Journal of Oral Science, 62(2), 239–241. https://doi.org/10.2334/josnusd.19-0370

McGinnis, C. M., Homan, K., Solomon, M., Taylor, J., Staebell, K., Erger, D., & Raut, N. (2019). *Dysphagia: Interprofessional Management, Impact, and Patient-Centered*

Care. In Nutrition in Clinical Practice (Vol. 34, Issue 1, pp. 80–95). John Wiley and Sons Inc. https://doi.org/10.1002/ncp.10239

McRae, J., Smith, C., Beeke, S., & Emmanuel, A. (2019). *Oropharyngeal dysphagia management in cervical spinal cord injury patients: an exploratory survey of variations to care across specialised and non-specialised units.* Spinal Cord Series and Cases, 5(1). https://doi.org/10.1038/s41394-019-0175-y

Mehraban-Far, S., Alrassi, J., Patel, R., Ahmad, V., Browne, N., Lam, W., Jiang, Y., Barber, N., & Mortensen, M. (2021). *Dysphagia in the elderly population: A Videofluoroscopic study.* American Journal of Otolaryngology - Head and Neck Medicine and Surgery, 42(2). https://doi.org/10.1016/j.amjoto.2020.102854

Namasivayam-Macdonald, A. M., & Riquelme, L. F. (2019). *Presbyphagia to dysphagia: Multiple perspectives and strategies for quality care of older adults.* Seminars in Speech and Language, 40(3), 227–242. https://doi.org/10.1055/s-0039-1688837

National Health Insurance Act 20 (2023). South African Government. https://www.gov.za/documents/acts/national-health-insurance-act-20-2023-english-afrikaans-16-may-2024

National Health Service. (2018). *Ageing well*. https://www.longtermplan.nhs.uk/areas-of-work/ageing-well/

Ohira, M., Ishida, R., Maki, Y., Ohkubo, M., Sugiyama, T., Sakayori, T., & Sato, T. (2017). *Evaluation of a dysphagia screening system based on the Mann Assessment of Swallowing Ability for use in dependent older adults.* Geriatrics and Gerontology International, 17(4), 561–567. https://doi.org/10.1111/ggi.12755

Okuni, I., & Ebihara, S. (2022). *Are Oropharyngeal Dysphagia Screening Tests Effective in Preventing Pneumonia?* In Journal of Clinical Medicine (Vol. 11, Issue 2). MDPI. https://doi.org/10.3390/jcm11020370

Pallocci, M., Treglia, M., Passalacqua, P., Tittarelli, R., Zanovello, C., De Luca, L., Caparrelli, V., De Luna, V., Cisterna, A. M., Quintavalle, G., & Marsella, L. T. (2023). *Informed Consent: Legal Obligation or Cornerstone of the Care Relationship?* International Journal of Environmental Research and Public Health, 20(3). https://doi.org/10.3390/ijerph20032118

Park, J.-S., Oh, D.-H., & Chang, M. (2016). *Comparison of maximal tongue strength and tongue strength used during swallowing in relation to age in healthy adults.* https://doi.org/10.1589/jpts.28.442

Park, Y., Seieun, O., Heekyung, C., & Hwal, L. (2015). *Evidence-Based Nursing Care Algorithm of Dysphagia for Nursing Home Residents.* http://doi.org/10.3928/00989134-20151015-04

Perron, A. E. (2024). *Towards a Prescription for Change: Interprofessional Management of Polypharmacy and Deprescribing.* In Current Geriatrics Reports. Springer. https://doi.org/10.1007/s13670-024-00420-z

Protection of Personal Information Act. (2013). South African Government. Retrieved on July 27, 2024 from https://www.gov.za/documents/protection-personal-information-act

Royal Society for Public Health. (2018). *Dysphagia Friendly Care Homes.* Retrived on August 1, 2024 from https://www.rsph.org.uk/static/e674ac2a-3a05-45ac-92b61338930794f5/047-Dysphagia-Friendly-Care-Homes.pdf

SAS Institute Inc. (2013). SAS (9.4). https://support.sas.com/software/94/

Selvanderan, S., Wong, S., Holloway, R., & Kuo, P. (2021). *Dysphagia: clinical evaluation and management.* Internal Medicine Journal, 51(7), 1021–1027. https://doi.org/10.1111/imj.15409

Sheikhany, A. R., Shohdi, S. S., Aziz, A. A., Abdelkader, O. A., & Abdel Hady, A. F. (2022). *Screening of dysphagia in geriatrics.* BMC Geriatrics, 22(1). https://doi.org/10.1186/s12877-022-03685-1

Shepherd, V. (2020). *An under-represented and underserved population in trials: Methodological, structural, and systemic barriers to the inclusion of adults lacking capacity to consent.* In Trials (Vol. 21, Issue 1). BioMed Central Ltd. https://doi.org/10.1186/s13063-020-04406-y

Shin, D., Lebovic, G., & Lin, R. J. (2023). *In-hospital mortality for aspiration pneumonia in a tertiary teaching hospital: A retrospective cohort review from 2008 to 2018.* Journal of Otolaryngology - Head and Neck Surgery, 52(1). https://doi.org/10.1186/s40463-022-00617-2

Shivraj Bhimte, M., & Rangasayee, M. R. (2015). *To study awareness level of dysphagia and role of speech language pathologist in dysphagia assessment and management among nurses* (Vol. 03, Issue 07). Retrieved on August 7, 2024 from www.jmscr.igmpublication.org

Smith, C., Bhattacharya, D., & Scott, S. (2023). *Understanding how primary care practitioners can be supported to recognise, screen and initially diagnose oropharyngeal dysphagia: protocol for a behavioural science realist review.* BMJ Open, 13(2). https://doi.org/10.1136/bmjopen-2022-065121

Solanki, G., Kelly, G., Cornell, J., Daviaud, E., & Geffen, L. (2019). *Understanding barriers to HIV testing and treatment.* In South African Health Review. Retrieved on May 12, 2024 from https://www.hst.org.za/publications/South%20African%20Health%20Reviews/11%20SAHR_2019_Understanding%20barriers%20to%20HIV%20testing%20and%20treatment.pdf

South African National Department of Social Development. (2005). South African Policy for Older Persons. Retrieved on June 9, 2024 from za/assets/departments/social-development/south_african_ policy_for_older_persons_2005.pdf

Speyer, R., Cordier, R., Denman, D., Windsor, C., Krisciunas, G. P., Smithard, D., & Heijnen, B. J. (2022). *Development of two patient self-reported measures on Functional Health Status (FOD) and Health-Related Quality of Life (QOD) in adults with oropharyngeal dysphagia using the delphi technique*. Journal of Clinical Medicine, 11(19). https://doi.org/10.3390/jcm11195920

Speyer, R., Cordier, R., Farneti, D., Nascimento, W., Pilz, W., Verin, E., Walshe, M., & Woisard, V. (2021). *White Paper by the European Society for Swallowing Disorders: Screening and non-instrumental assessment for dysphagia in adults.* Dysphagia, 37(2), 333–349. https://doi.org/10.1007/s00455-021-10283-7

Sun, C., Ding, Y., Cui, Y., Zhu, S., Li, X., Chen, S., Zhou, R., & Yu, Y. (2021). *The adaptation of older adults' transition to residential care facilities and cultural factors: a meta-synthesis.* BMC Geriatrics, 21(1). https://doi.org/10.1186/s12877-020-01987-w

Sznajder, J., Slefarska-Wasilewska, M., & Kłek, S. (2016). *The influence of the initial state of nutrition on the lifespan of patients with amyotrophic lateral sclerosis (ALS) during home enteral nutrition. https://doi.org/10.20960/nh.v33i1.7*.

Tommel, J., Evers, A. W. M., van Hamersvelt, H. W., Jordens, R., van Dijk, S., Hilbrands, L. B., Hermans, M. M. H., Hollander, D. A. M. J., van de Kerkhof, J. J., ten Dam, M. A. G. J., & van Middendorp, H. (2023). "*What matters to you?": The relevance of patient priorities in dialysis care for assessment and clinical practice.* Seminars in Dialysis, 36(2), 131–141. https://doi.org/10.1111/sdi.13080

Umay, E., Eyigor, S., Bahat, G., Halil, M., Giray, E., Unsal, P., Unlu, Z., Tikiz, C., Vural, M., Cincin, A. T., Bengisu, S., Gurcay, E., Keseroglu, K., Aydeniz, B., Karaca, E. C.,

Karaca, B., Yalcin, A., Ozsurekci, C., Seyidoglu, D., … Ozturk, E. A. (2022). *Best practice recommendations for geriatric dysphagia management with 5 Ws and 1H.* Annals of Geriatric Medicine and Research, 26(2), 94–124. https://doi.org/10.4235/agmr.21.0145

United Nations. (2019). World Population Ageing 2019: Highlights. Retrieved on May 2, 2024 from https://www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeing2019-Report.pdf

Van der Maarel-Wierink, C. D., Meijers, J. M. M., De Visschere, L. M. J., de Baat, C., Halfens, R. J. G., & Schols, J. M. G. A. (2014). *Subjective dysphagia in older care home residents: A cross-sectional, multi-centre point prevalence measurement.* International Journal of Nursing Studies, 51(6), 875–881. https://doi.org/10.1016/j.ijnurstu.2013.10.016

Wagner, E. (1998). *Chronic disease management: what will it take to improve care for chronic illness?* PMID: 10345255

Ward, M., Skelley-Ashford, M., Brown, K., Ashford, J., & Suiter, D. (2020). *Validation of the yale swallow protocol in post-acute care: A prospective, double-blind, multirater study.* American Journal of Speech-Language Pathology, 29(4), 1937–1943. https://doi.org/10.1044/2020_AJSLP-19-00147

Wilkinson, J. M., Codipilly, C., & Wilfahrt, R. P. (2021). *Dysphagia: Evaluation and collaborative management* (Vol. 103, Issue 2). https://www.proquest.com/scholarly-journals/dysphagia-evaluation-collaborative-management/docview/2630392543/se-2

Wirth, R., Dziewas, R., Beck, A. M., Clavé, P., Hamdy, S., Heppner, H. J., Langmore, S., Leischker, A. H., Martino, R., Pluschinski, P., Rösler, A., Shaker, R., Warnecke, T., Sieber, C. C., & Volkert, D. (2016). *Oropharyngeal dysphagia in older persons – from*

pathophysiology to adequate intervention: A review and summary of an international expert meeting. Clinical Interventions in Aging, 11, 189–208. https://doi.org/10.2147/CIA.S97481

Wolf, U., Eckert, S., Walter, G., Wienke, A., Bartel, S., Plontke, S. K., & Naumann, C. (2021). *Prevalence of oropharyngeal dysphagia in geriatric patients and real-life associations with diseases and drugs.* Scientific Reports, 11(1). https://doi.org/10.1038/s41598-021-99858-w

World Health Organisation. (2023). *Progress report on the United Nations Decade of Healthy Ageing (2021-2030).* Retrieved on May 17, 2024 from https://unece.org/sites/default/files/2023-11/9_WHO_UN%20Decade%20of%20Healthy%20Ageing.pdf

World Medical Association. (2013). *Declaration of Helsinki: Ethical principles for medical research involving human subjects.* Retrieved on May 17, 2024 from https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/

Zanetti, M., Veronese, N., Riso, S., Boccardi, V., Bolli, C. F., Cintoni, M., Francesco, V. Di, Mazza, L., Onfiani, G., Zenaro, D., & Pilotto, A. (2023). *Polypharmacy and malnutrition in older people: A narrative review.* Nutrition, 112134. https://doi.org/10.1016/j.nut.2023.112134

APPENDICES

Appendix A

Ethical clearance letter: Faculty of Humanities Research Ethics Committee

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Humanities 100. Since 1919

11 August 2023

Dear Ms CS Bell

Project Title:	A comparative analysis of self-perception and clinical presentation of eating and swallowing abilities in elderly residents of residential care facilities
Researcher:	Ms CS Bell
Supervisor(s):	Ms SB Pillay
Department:	Speech Language Pathology and Audiology
Reference number:	18009639 (HUM039/0623)
Degree:	Masters

I have pleasure in informing you that the above application was **approved** by the Research Ethics Committee on 11 August 2023. Please note that before research can commence all other approvals must have been received.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should the actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

We wish you success with the project.

Sincerely,

Prof Karen Harris
Chair: Research Ethics Committee
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: tracey.andrew@up.ac.za

Research Ethics Committee Members: Prof KL Harris (Chair); Mr A Bizos; Dr A-M de Beer; Dr A dos Santos; Dr P Gutura; Ms KT Govinder Andrew; Dr E Johnson; Dr D Krige; Prof D Maree; Mr A Mohamed; Dr I Noomé, Dr J Okeke; Dr C Puttergill; Prof D Reyburn; Prof M Soer; Prof E Taljard; Ms D Mokalapa

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Appendix B

Information leaflet and nursing manager consent for onsite data collection

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho
Department of Speech-Language Pathology and Audiology

June 2023

Request for participation of residents as part of a postgraduate research project.

Dear _____,

Thank you for your time and willingness to allow myself to access the facility to conduct my research project as per our telephonic conversation.

The title of my study is "A comparative analysis of self-perception and clinical presentation of eating and swallowing abilities in elderly residents of residential care facilities". This study hopes to contribute to current research in the field of Speech-Language Pathology. The aim is compare the elderly's self-perception regarding their eating and swallowing ability with the clinical presentation thereof. The study will be conducted by myself, a qualified and registered Speech-Language Therapist and current MA Speech-Language Pathology student at the University of Pretoria.

Participants in the research study must be aged 65 years and/or older and must be a permanent resident at the residential care facility. The residents will not be paid to participate and participation is on a voluntary basis. I will invite all appropriate residents of the facility to participate by explaining my research study to them and provide ample opportunity for answering any questions they may have. A pre-arranged interpreter will be available during this question and answer session should a resident not understand conversational English. If a resident is unable to provide written consent autonomously, the next of kin will be contacted telephonically whereby I will explain my research project and I will send an electronic version of written consent to be completed on behalf of their loved one. The resident will have to 'pass' a short cognitive screening to ensure that they will be able to accurately report their self-perceptions regarding their eating and swallowing abilities. All information will be kept strictly confidential and only the researcher and project supervisors of the research study will have access to the information.

The participation in the research study involves three components namely:

- The completion of a background demographic history. I will ask these questions to the residents. If the resident is unable to recall all information, nursing staff will be consulted.
- A short survey on self-perceived swallowing abilities. I will ask these questions to the residents.
- A clinical swallowing examination of the residents' swallowing abilities of different food consistencies. I will complete this with the resident at a time that is convenient.

The entire assessment will be conducted at the bedside or in residents' rooms, will take no longer than 30 minutes, and will not interfere with the daily running of your facility. I will provide all food consistencies and will request the attendance of one member of nursing staff to ensure that the safety of the resident is maintained. There are minimal risks to participating in this study, however, should

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the resident present with swallowing difficulties or concerns, I will provide them with a referral for treatment services outside of the study.

I have applied for ethical approval from the Faculty of Humanities Research Ethics Committee and will notify you once I have received approval for the project to commence. Should you have further questions please contact myself on caitlinspeechtherapy@gmail.com or 083 380 1460 or my supervisor bhavani.pillay@up.ac.za.

Yours sincerely,

Caitlin Bell
Student

Mrs B. Pillay
Supervisor

Dr E. Krüger
Co-Supervisor

Mrs R. Vermeulen
Co-Supervisor

Prof. J. van der Linde
Head of the Department of Speech language Pathology and Audiology

---

PERMISSION BY MANAGER TO CONDUCT RESEARCH

I _____, was informed about all the details pertaining to the study titled: "A comparative analysis of self-perception and clinical presentation of eating and swallowing abilities in elderly residents of residential care facilities", and give permission to Caitlin Bell to conduct the research with residents of _____.

_____
Name and designation

_____ _____
Signature Date (dd/mm/yy)

_____
Official stamp of the facility (if applicable)

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Appendix C

Information leaflet and participant informed consent

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho
Department of Speech-Language Pathology and Audiology

INVITATION TO PARTICIPATE IN RESEARCH STUDY:

Study title:	A comparative analysis of self-perception and clinical presentation of eating and swallowing abilities in elderly residents of residential care facilities.
Primary researcher:	Caitlin Bell
Supervisors:	Mrs. B. Pillay, Dr E. Kruger & Mrs. R. Vermeulen
Institution:	Department of Speech-Language Pathology & Audiology, University of Pretoria

Dear resident,

I am a qualified Speech-Language Therapist who is **researching swallowing and eating difficulties** in the elderly. I invite you to participate in this research study. Before agreeing to participate, it is important that **you understand** what this research study is about. Please **read this document** carefully. Should you have any questions or concerns about participating, please do not hesitate to ask me.

This study aims to help **healthcare providers** understand the **swallowing and eating difficulties** that the **elderly** population experience as there is limited information regarding this.

This research study has been **approved** to take place where you live by the unit manager. All information that I collect during the research study will be **confidential**. **No one** will be able to identify you or the place you live when the information is written in the research report. I intend to publish the findings in a **research thesis** as well as a **scientific article**. You will have to pass a **short cognitive assessment** before you can participate.

This research study has **three steps**: I will ask you and the nursing staff **short questions** about your background medical history. I will ask you **10 questions** on what **you think** about your swallowing abilities. I will conduct a **clinical swallowing examination** of your ability to **swallow and eat** different food consistencies. I will provide the different food consistencies.

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Risks and benefits of participating in the study:
There are minimal risks to participating in this study. The assessment will be **conducted by myself**, a qualified and registered Speech-Language Therapist who **has experience** working with swallowing and eating difficulties in the elderly. A member of the nursing staff will be present during the entire assessment. You will **not be paid** to take part in the research study. A potential benefit to taking part in this study is that if you have **signs** of **eating and swallowing difficulties**, you will be provided with an appropriate **referral** for further assessment and treatment outside of the research study.

Your rights as a participant:
It is **your decision** as to whether you would like to participate in this study or not. You may decide you would like to participate and then **change your decision at any point in time** and this will not affect the healthcare and/or services that you receive. You can look at **your assessment results** should you wish to do so.

Ethical research approval:
This proposed research study was submitted to the University of Pretoria's Research Ethics Committee, and written approval has been granted by this committee. Research will be conducted in accordance with all relevant policies of the University of Pretoria.

Information and contact person:
All researchers involved in this study will apply ethical practices in every aspect and will comply with the University of Pretoria's policies regarding plagiarism. If you **have any further questions** about the research study, please do not hesitate to contact the primary researcher, Caitlin Bell, via the e-mail address caitlinpeechtherapy@gmail.com

Yours sincerely,

Caitlin Bell
Student

Mrs B. Pillay
Supervisor

Dr E. Krüger
Co-Supervisor

Mrs R. Vermeulen
Co-Supervisor

Prof. J. van der Linde
Head of the Department of Speech language Pathology and Audiology

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CONSENT TO PARTICIPATE IN THIS STUDY

- I confirm that the researcher requesting my consent for participation in this study has **informed me** about the nature and process, potential risks, as well as benefits of the study.
- I have **read and understood** the above-written information about this study.
- I have had adequate time to **ask questions** and have no objections to participating in this study.
- I am aware that the information obtained in this study, including personal details, will be processed, presented, and reported anonymously.
- I consent that the
- Data may be reused by **future researchers** for further research.
- I understand that I will **not be disadvantaged** in any way should I wish to **stop** my participation in this study and that withdrawal will not affect me.
- I have received a **signed copy of** this informed consent agreement.

_____ _____

Participant Name **Participant signature**

_____

Date

Name of person taking consent: _____

Signature: _____

Date: _____

Witness: I hereby declare that _____has given informed consent of his/ her own free will with no coercion from the researcher.

_____

Witness signature

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NEXT OF KIN – CONSENT TO PARTICIPATE IN THIS STUDY

I (next of kin) _____, have read the consent document which describes the nature and purpose of the study in which I consent for _____ (name of participant) to participate. The information contained in this document has mentioned both the possible risks and benefits of the study and the alternative treatments available should the participant require it. The participant understands that he/she will be free to withdraw from the study at any time for any reason and without jeopardizing his/her standard of care.

I hereby certify that the participant can participate in this study.

_____ _____
Next of kin's name (Please print) **Date**

_____ _____
Next of kin's signature **Date**

Name of person taking consent: _____
Signature: _____
Date: _____

Witness: I hereby declare that (name of next of kin) _____by his/her own free will, has given informed consent on behalf of _____ with no coercion from the researcher.

_____
Witness signature

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Appendix D:

Participant background case history form

Participant Background Information Form:

Participant unique code:		Date site:	
DOB:		Age:	
Gender:	O Male O Female O Other	Languages spoken:	O English O Afrikaans O Other

1. **Living situation:**
   - O Single room
   - O Shared room
   - O Frail care

2. **Activities of daily living (ADL):**
   - O Basic ADLs (bathing, grooming, toileting, and transferring)
     - o Independent
     - o Needs assistance
     - o Dependent mealtimes
   - O Eating and mealtimes:
     - o Independent
     - o Requires set-up.
     - o Needs (physical assistance/verbal prompting) to complete meals.
     - o Fully dependent on a carer.

3. **State of dentition:**
   - O All/mostly own teeth
   - O Denture
   - O Fixed partial
   - O No teeth, no dentures

4. **Use of spectacles:**
   - O Yes
   - O No

5. **Hearing difficulties:**
   - O Yes
   - O No

6. **Use hearing aids:**
   - O Yes
   - O No

☐ heart disease	☐ emphysema	☐ frequent urinary tract infections	☐ sexually transmitted disease/herpes
☐ osteoporosis	☐ asthma		
☐ heart failure	☐ chronic bronchitis	☐ incontinence	☐ HIV/AIDS
☐ heart murmur	☐ pneumonia	☐ tuberculosis	☐ polio
☐ coronary heart disease	☐ hay fever/allergies	☐ liver disease	☐ kidney stones
☐ rheumatic fever	☐ diabetes	☐ jaundice/hepatitis	☐ kidney disease
☐ rheumatic heart disease	☐ stroke	☐ thyroid disease	☐ prostate disease
☐ high blood pressure	☐ seizure	☐ depression or anxiety	☐ colitis
☐ high cholesterol	☐ anemia	☐ gall bladder disease	☐ diverticulitis
☐ arthritis	☐ bleeding disorder	☐ glaucoma	☐ hemorrhoids
☐ sciatica	☐ gout	☐ cataracts	☐ ulcers
☐ Alcohol/substance abuse	☐ Parkinson's Disease	☐ fracture	☐ head injury

8. Previous history of head and neck cancer:

_____

_____

9. Additional medical history:

_____

_____

10. Current prescribed medications (information from chart review and corroborated by nursing staff):

_____

_____

_____

11. Current feeding status: Please indicate all that apply.

	No change is required to the resident's feeding plan e.g., regular/normal ward diet
	Consistency modification e.g., one type of diet only such as liquidised, purée, minced and moist, soft and bite-sized, easy to chew (IDDSI, 2019)
	Use of food thickeners for liquid intake e.g., slightly thick, mildly thick, moderately thick or extremely thick (IDDSI, 2019)

12. Additional dietary history:

_____

_____

_____

Appendix E:

The Eating Abilities Test – 10 (EAT-10)

Patient Questionnaire – *EAT-10*

MEG MELBOURNE ENT GR

Eating Assessment Tool (EAT-10)

How to complete this Questionnaire:

• This questionnaire helps to measure swallowing difficulties. • These are statements many people have used to describe difficulty swallowing / eating • To what extent do you experience the following problems? • Circle the most appropriate response for each statement.	0 - 4 Rating Scale 0 = No problem 1 = Mild Problem 2 = Mild to moderate 3 = Moderate problem 4 = Severe problem

Situation	Severity of Problem
My swallowing problem has caused me to lose weight.	0 1 2 3 4
My swallowing problems interferes with my ability to go out for meals.	0 1 2 3 4
Swallowing liquids takes extra effort	0 1 2 3 4
Swallowing solids takes extra effort.	0 1 2 3 4
Swallowing pills takes extra effort.	0 1 2 3 4
Swallowing is painful	0 1 2 3 4
The pleasure of eating is affected by my swallowing.	0 1 2 3 4
When I swallow food sticks in my throat.	0 1 2 3 4
I cough when I eat.	0 1 2 3 4
Swallowing is stressful	0 1 2 3 4
TOTAL 10 x 4 = 40 max	_____

Appendix F

Mann Assessment of Swallowing Abilities (MASA)

Mann Assessment of Swallowing Ability (MASA) Scoring Sheet

Alertness	2 no response to speech	5 difficult to rouse	8 fluctuates		10 alert
Cooperation	2 no cooperation	5 reluctant	8 fluctuating cooperation		10 cooperative
Auditory comprehension	2 no response to speech	4 occasional motor response if cued	6 follows simple conversation with repetition	8 follows ordinary conversation with little difficulty	10 NAD
Respiration	2 chest infection suctioning	4 coarse basal crepitations chest physiotherapy	6 fine basal crepitations	8 sputum upper airway other condition	10 chest clear
Respiratory rate (for swallow)	1 no independent control	3 some control/uncoordinated	5 able to control breath rate for swallow		
Dysphasia	1 unable to assess	2 no functional speech sounds/single words	3 expresses self in limited manner short phrases/words	4 mild difficulty finding words or expressing ideas	5 NAD
Dyspraxia	1 unable to assess	2 groping/inaccurate/partial or irrelevant responses	3 speech crude/defective in accuracy or speed on command	4 speech accurate after trial and error, minor searching movements	5 NAD
Dysarthria	1 unable to assess	2 speech unintelligible	3 speech intelligible but obviously defective	4 slow with occasional hesitation or slurring	5 NAD
Saliva	1 gross drool	2 some drool consistently	3 drooling at times	4 frothy/expectorated	5 NAD
Lip seal	1 no closure unable to assess	2 incomplete seal	3 unilaterally weak poor maintenance	4 mild impairment occasional leakage	5 NAD
Tongue movement	2 no movement	4 minimal movement	6 incomplete movement	8 mild impairment in range	10 full ROM
Tongue strength	2 gross weakness	5 unilateral weakness	8 minimal weakness		10 NAD
Tongue coordination	2 no movement unable to assess	5 gross incoordination	8 mild incoordination		10 NAD
Oral preparation	2 unable to examine	4 no bolus formation no attempt	6 minimal chew thrust gravity assisted	8 lip or tongue seal bolus escape	10 NAD
Gag	1 no gag	2 absent unilaterally	3 diminished unilaterally	4 diminished bilaterally	5 hyperreflexive NAD
Palate	2 no spread or elevation	4 minimal movement nasal regurgitation/air escape	6 unilaterally weak	8 slight asymmetry mobile	10 NAD
Bolus clearance	2 no clearance	5 some clearance/residue	8 significant clearance/ minimal residue	10 fully cleared	
Oral transit	2 no movement observed	4 delay > 10 sec	6 delay > 5 sec	8 delay > 1 sec	10 NAD
Cough reflex	1 none observed/unable to assess		3 weak reflexive cough		5 NAD
Voluntary cough	2 no attempt/ unable to assess	5 attempt inadequate	8 attempt bovine	10 NAD	
Voice	2 aphonic unable to assess	4 wet/gurgling	6 hoarse	8 mild impairment slight huskiness	10 NAD
Trache	1 trache/cuffed		5 trache/fenestrated		10 no trache
Pharyngeal phase	2 no swallow unable to assess	5 pooling/gurgling laryngeal elevation incomplete	8 laryngeal elevation mildly restricted slow initiation incomplete clearance	10 immediate laryngeal elevation clearance of material	
Pharyngeal response	1 not coping/gurgling		5 cough before/during/after swallow		10 NAD
Diet recommendations	NBM risk too great	thick vitamized oddslot diet	modified soft	soft	normal
Fluid recommendation	NBM	thick fluid (batter)	thick (honey)	thick (nectar)	normal
Swallow integrity **Dysphagia** **Aspiration**	**definite** dysphagia aspiration	**probable** dysphagia aspiration	**possible** dysphagia aspiration	**unlikely** dysphagia aspiration	

Total = ☐☐☐

Additional Problems: _____

Summary: _____

Recommendations: _____

Diagnosis: _____

Date: _____ Signature: _____

Appendix G

Yale Swallow Protocol (YSP)

Yale Swallow Protocol

Step 1: Exclusion Criteria

___ Yale Swallow Protocol Deferred due to NO concern for aspiration risk.

Any YES answer to the following risk factors will also defer administration to protocol:

Yes	No	
___	___	Unable to remain alert for testing.
___	___	Eating a modified diet (thickened liquids) due to pre-existing dysphagia.
___	___	Existing enteral tube feeding via stomach or nose.
___	___	Head-of-bed restrictions <30°.
___	___	Tracheostomy tube present.
___	___	Nil per os by physician order.

If the patient's clinical status changes resulting in a new risk for aspiration, the protocol must be readministered before oral alimentation or medications are ordered.

Step 2: Administration Instructions

If patient is deemed an aspiration risk and all exclusion criteria in Step 1 are checked "NO," proceed with protocol:

- Brief Cognitive Screen:

  What is your name?
  Where are you right now?
  What year is it?

- Oral-Mechanism Examination

  Labial closure
  Lingual range of motion
  Facial symmetry (smile/pucker)

- Perform 3-ounce water swallow challenge:

  Sit patient upright at 80-90° (or as high as tolerated >30°).
  Ask patient to drink the entire 3 ounces (90cc) of water from a cup or with a straw, in sequential swallows, and slow and steady but without stopping. (Note: Cup or straw can be held by clinician or patient.) Assess patient for interrupted drinking and coughing or choking during or immediately after completion of drinking.

  Note: Information from the brief cognitive screen and oral mechanism examination provide information on odds of aspiration risk with the 3-ounce water swallow challenge and should not be used as exclusionary criteria for screening.

Information Provided by SA Swallowing Services, PLLC., 2014

Step 3: Pass/Fail Criteria

Results and Recommendations

____ PASS: Complete and uninterrupted drinking of all 3 ounces of water without overt signs of aspiration, i.e., coughing or choking, either during or immediately after completion.

- If patient passes, collaborate with MD/PA/LIP to order appropriate oral diet. If dentate, order a soft solid consistency or regular consistency diet. If edentulous, order a liquid and puree diet.

____ FAIL: Inability to drink the entire 3 ounces in sequential swallows due to stopping/starting or patient exhibits overt signs of aspiration, i.e., coughing or choking, either during or immediately after completion.

- If patient fails, keep nil per os (including medications) and discuss with the MD/PA/LIP the need for an objective swallowing evaluation by speech-language pathologist.
- Readminister the protocol in 24 h if patient shows clinical improvement.

(Taken from: Suiter, D.M., Sloggy, J., & Leder, S.B. (2014). Validation of the Yale Swallow Protocol: A prospective double-blinded videofluoroscopic study. *Dysphagia, 29,* 199-203.)

Validation Information

1. Three-ounce water swallow test validation first reported on 44 stroke patients by DePippo et al. (1992). Failure required referral for objective (VFSS) dysphagia test.

2. A revised 3-ounce water swallow challenge administered to 3,000 hospitalized patients with 14 distinct diagnoses and referenced with FEES as the standard correctly predicted aspiration 96.5% of the time, with a negative predictive value of 97.9%, and a false negative rate of ≤2.0%. (Suiter, D.B. & Leder, S.B. [2008]. Clinical utility of the 3-ounce water swallow test. *Dysphagia, 23*, 244-250.)

3. Validation study of Yale Swallow Protocol was reported using 25 subjects with categorical diagnoses of esophageal surgery, head & neck cancer, neurosurgery, medical issues, or neurological (CAV, MS, TBI) and using VFSS as the standard reference. Seven participants passed and 18 failed the 3-ounce swallow challenge. Of the 18 who failed, 14 aspirated on VFSS (true positives) and 4 did not aspirate on VFSS (false positives). Sensitivity for the protocol = 100%, specificity = 64%, positive predictive value = 78%, and negative predictive value = 100%. All participants who passed the protocol, i.e., deemed to have no aspiration risk, also did not aspirate during VFSS. (Suiter, D.M., Sloggy, J., & Leder, S.B. [2014). Validation of the Yale Swallow Protocol: A prospective double-blinded videofluoroscopic study. *Dysphagia, 29,* 199-203.)

Information Provided by SA Swallowing Services, PLLC., 2014

Appendix H

Saint Louis University Mental Status (SLUMS) examination

VAMC
SLUMS EXAMINATION

Questions about this assessment tool? E-mail aging@slu.edu

Name_____ Age_____

Is the patient alert?_____ Level of education_____

__/1 **1. What day of the week is it?**

__/1 **2. What is the year?**

__/1 **3. What state are we in?**

4. Please remember these five objects. I will ask you what they are later.
Apple Pen Tie House Car

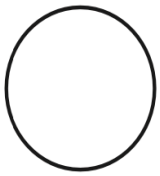
5. You have $100 and you go to the store and buy a dozen apples for $3 and a tricycle for $20.
How much did you spend?
__/3 **How much do you have left?**

6. Please name as many animals as you can in one minute.
__/3 0 0-4 animals 1 5-9 animals 2 10-14 animals 3 15+ animals

__/5 **7. What were the five objects I asked you to remember? 1 point for each one correct.**

8. I am going to give you a series of numbers and I would like you to give them to me backwards. For example, if I say 42, you would say 24.
__/2 0 87 1 648 1 8537

9. This is a clock face. Please put in the hour markers and the time at ten minutes to eleven o'clock.



2 Hour markers okay
__/4 2 Time correct

10. Please place an X in the triangle.

__/2 **Which of the above figures is largest?**

11. I am going to tell you a story. Please listen carefully because afterwards, I'm going to ask you some questions about it.

Jill was a very successful stockbroker. She made a lot of money on the stock market. She then met Jack, a devastatingly handsome man. She married him and had three children. They lived in Chicago. She then stopped work and stayed at home to bring up her children. When they were teenagers, she went back to work. She and Jack lived happily ever after.

__/8 2 **What was the female's name?** 2 **What work did she do?**
2 **When did she go back to work?** 2 **What state did she live in?**

_____ **TOTAL SCORE**

SCORING

High School Education		Less than High School Education
27-30	Normal	25-30
21-26	Mild Neurocognitive Disorder	20-24
1-20	Dementia	1-19

CLINICIAN'S SIGNATURE DATE TIME

SH Tariq, N Tumosa, JT Chibnall, HM Perry III, and JE Morley. The Saint Louis University Mental Status (SLUMS) Examination for detecting mild cognitive impairment and dementia is more sensitive than the Mini-Mental Status Examination (MMSE) - A pilot study. *Am J Geriatr Psych* 14:900-10, 2006.

Appendix I

Referral letter to speech-language therapy services outside of the research study

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Fakulteit Geesteswetenskappe
Lefapha la Bomotho
Department of Speech-Language Pathology and Audiology

Humanities 100. Since 1919

LETTER OF REFERRAL

Dear _____,

Thank you for your participation in this research study entitled, "A comparative analysis of self-perception and clinical presentation of eating and swallowing abilities in elderly residents of residential care facilities." During the research study it was observed that you are experiencing eating and swallowing difficulties and could benefit from additional speech therapy services.

It was observed during the research study that you had trouble swallowing, namely:

- Thin liquids (e.g., water and juice)
- Solid consistency (e.g., crackers)

Signs and symptoms of difficulty eating and swallowing observed:

_____
_____

This is a referral letter with contact details of possible Speech-Language Therapy practices and/or clinics who will be able to assist you with further assessment and therapy.

Practice:	Contact details:	Health sector:
University of the Witwatersrand Speech-Language Therapy Department	Kim.coutts@wits.ac.za	Public (Out-patient department)
Brainworx Therapy	083 656 8979 karyn@brainworx.com	Private (Home visits available)
Laura Cramb Speech Therapy Inc.	072 667 0883 info@lauracrambspeechtherapyinc.co.za	Private (Home-visits available)

Kind regards,

Caitlin Bell
Student

Mrs B. Pillay
Supervisor

Dr E. Krüger
Co-Supervisor

Mrs R. Vermeulen
Co-Supervisor

Prof. J. van der Linde
Head of the Department of Speech language Pathology and Audiology

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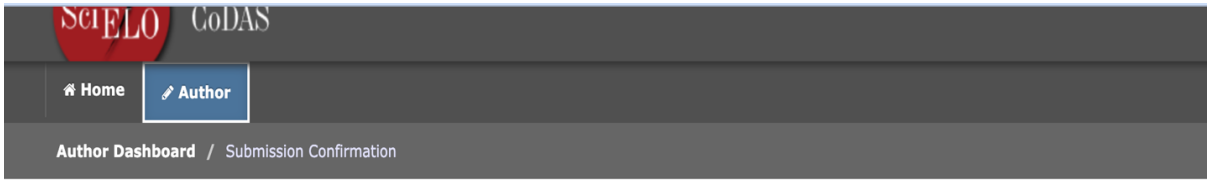
Appendix J

Proof of submission of research article to the journal of Communication Disorders, Audiology and Swallowing (CoDAS)



Submission Confirmation

Thank you for your submission

Submitted to	CoDAS
Manuscript ID	CODAS-2024-0228
Title	Autopercepção e apresentação clínica da alimentação e deglutição em idosos em instituições de cuidados residenciais
Authors	Bell, Caitlin Pillay, S Bhavani Vermeulen, Rouxjeanne Krüger, Esedra Masenge, Andries
Date Submitted	23-Jul-2024