ASSESSMENT OF COMPETENCE IN DYSPHAGIA MANAGEMENT AMONG HEALTHCARE PROVIDERS: A SCOPING REVIEW

A Thesis
by
GARNET F. ROBINSON

Submitted to the School of Graduate Studies
at Appalachian State University
in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE

December 2023
Department of Rehabilitation Sciences

ASSESSMENT OF COMPETENCE IN DYSPHAGIA MANAGEMENT AMONG HEALTHCARE PROVIDERS: A SCOPING REVIEW

A Thesis
by
GARNET F. ROBINSON
December 2023

APPROVED BY:

R. Jordan Hazelwood, Ph.D., CCC-SLP, BCS-S, CCRE
Chairperson, Thesis Committee

George W. Wolford, Ph.D., CCC-SLP
Member, Thesis Committee

Rebecca F. Smith, M.S., CCC-SLP, CNT, CLC, BCS-S
Member, Thesis Committee

Gail S. Donaldson, Ph.D., CCC-A
Chairperson, Department of Rehabilitation Sciences

Ashely D. Colquitt, Ph.D.
Associate Vice Provost and Dean, Cratis D. Williams School of Graduate Studies

Abstract

ASSESSMENT OF COMPETENCE IN DYSPHAGIA MANAGEMENT AMONG HEALTHCARE PROVIDERS: A SCOPING REVIEW

Garnet F. Robinson
B.A., University of South Carolina
M.S., Appalachian State University

Chairperson: R. Jordan Hazelwood, Ph.D., CCC-SLP, BCS-S, CCRE

Swallowing is a dynamic and complex physiologic process. A high level of care is expected and needed for patients with disordered swallowing. While speech-language pathologists (SLPs) are the preferred healthcare providers for dysphagia management, other healthcare providers also manage dysphagia (ASHA, 2020; Graner et al., 2010). Since swallowing is imperative to sustain life and maintain health, ensuring professional competence in managing swallowing disorders is important. A lack of competence among healthcare providers around dysphagia management may be due to the lack of provider training in this area (Bonilha et al., 2014; Marin et al., 2020; Zuercher et al., 2019). This scoping review aims to describe and compare available metrics used by healthcare providers when assessing competence in dysphagia management. A total of 11 final articles addressed multiple assessments of competence in dysphagia management among healthcare providers. The findings of this scoping review suggest a standardized metric to assess competence in

dysphagia among healthcare providers is needed to improve training and maintain healthcare providers' competence in dysphagia management.

Acknowledgments

The author would like to thank the Department of Rehabilitation Sciences and the Master of Science in Speech-Language Pathology program in the Beaver College of Health Sciences at Appalachian State University in Boone, N.C., for the opportunity to pursue this research.

Additionally, the author would like to especially thank her thesis Chairperson, Dr. Jordan Hazelwood, for her constant support, mentorship, and advocacy throughout this process and throughout the author's time in the program. Furthermore, the author would like to extend thanks to Dr. George Wolford and Ms. Rebecca Smith for their guidance and encouragement in the development and completion of this thesis. The author would like to offer an additional extension of gratitude to Mr. John Wiswell for his instruction and insight into the search terms and databases utilized in this project. Also, the author extends thanks to Ms. Caeleigh McGuire and Ms. Faith Kreoger for their hard work and dedication contributed to the inclusion and exclusion of articles for this review.

Finally, the author would like to thank her family, friends, and cohort colleagues for their inspiration, consolation, and confidence throughout this process.

Dedication

This work is dedicated to all healthcare providers, present and future, who commit years of hard work and knowledge to their respective fields.

Table of Contents

Abstract iv

Acknowledgments vi

Dedication vii

List of Tables ix

List of Figures x

Introduction 1

Methods 18

Results 26

Discussion 44

Conclusion 50

References 51

Vita 59

List of Tables

Table 1. MBSImP Components 2

Table 2. Distinctions Between Competence and Competency 9

Table 3. COMPASS Professional Competency Variables 16

Table 4. Checklist Items to be Included in the Report of Scoping Review 18

Table 5. Search Strategy for All Online Databases 23

Table 6. Exclusion and Inclusion Criteria.....24

Table 7. Data Extraction Factors Defined.....25

Table 8. Completed Data Extraction Table.....28

List of Figures

Figure 1. Assessment of Clinical Skills/Competence/Performance Framework ...11

Figure 2. PRISMA-ScR Flow Chart Summary of the Scoping Review Process...27

Figure 3. Number of Publications by Year 35

Figure 4. Record Publication Frequency and Location 36

Figure 5. Final Records Population of Interest 41

Figure 6. Number of Records by Retrieval Database 43

Introduction

Background

Swallowing is a dynamic and complex physiologic process. People often take the function of swallowing for granted even though it is biologically necessary without the presence of alternative means of hydration and nutrition. Traditionally, swallowing physiology has been described in three different phases of the swallowing process: oral, pharyngeal, and esophageal. The Modified Barium Swallow Impairment Profile (MBSImP) is a standardized approach to instruction, assessment, and reporting of physiological swallowing impairments as seen in a modified barium swallow study (MBSS) (Martin-Harris et al., 2008). As described in the MBSImP approach, 17 components across three domains describe the physiologic impairment of the swallowing mechanism (Martin-Harris, 2015). (Table 1). Healthcare providers need to understand neurologic swallowing control to make the best clinical diagnosis and be able to effectively manage patients who present with dysphagia.

Neurological Swallowing Control

Twelve pairs of cranial nerves (CNs), which are part of the peripheral nervous system, modulate sensorimotor integration for the head, neck, and respiratory system. The MBSImP approach describes three domains of swallowing: oral, pharyngeal, and esophageal. Six physiologic swallowing components comprise the oral domain. Component 1, modulated by the facial nerve (CNVII), is lip closure. Lip closure involves ensuring a tight lip seal that does not allow for anterior spillage; moreover, promoting anterior oral containment. Component 2 is tongue control during bolus hold, which is modulated by CNs trigeminal (CN V), vagus (CN X), hypoglossal (CN XII), and the first cervical spinal nerve (C1).

Table 1

MBSImP Components

Component Number	Component Name
1	Lip closure
2	Tongue control during bolus hold
3	Bolus preparation/Mastication
4	Bolus transport/Lingual motion
5	Oral residue
6	Initiation of the pharyngeal swallow
7	Soft palate elevation
8	Laryngeal elevation
9	Anterior hyoid excursion
10	Epiglottic movement
11	Laryngeal vestibular closure
12	Pharyngeal stripping wave
13	Pharyngeal contraction
14	Pharyngoesophageal segment opening
15	Tongue base retraction
16	Pharyngeal residue
17	Esophageal clearance

Tongue control during bolus hold involves containing a bolus within the oral cavity by elevating the tongue to the soft palate at the roof of the mouth, allowing the subject to hold the bolus in the oral cavity without any escape anteriorly to the lips or posteriorly to the oropharynx. Component 3 is bolus preparation/mastication. This component is modulated by CNs V, VII, X, XII, and C1. Component 3 involves rotary chewing motions of the mandible in conjunction with saliva to create a cohesive bolus. Component 4, bolus transport/lingual motion, is modulated by CNs V, VII, X, XII, and C1.

The intrinsic and extrinsic lingual muscles work together in this process to move the bolus to appropriate positioning by lateralizing and depressing the tongue. Component 4, bolus transport/lingual motion involves the tongue moving against the palate posteriorly to keep the bolus shape and propel the bolus posteriorly. Component 5, oral residue, is

measured when any contrast residue remains in the oral cavity after the swallow. The CNs that modulate Component 5, CNs V, VII, X, XII, and C1, are responsible for increasing swallow efficiency by assisting in decreasing oral residue following the swallow. While lingual motion is the main element contributing to this component, there are multiple sensory features of the tongue such as general sensations of touch, temperature, and special sensation of taste that also contribute. Component 6, initiation of the pharyngeal swallow, is modulated by the glossopharyngeal nerve (CN IX) and CN X, which initiate the pharyngeal swallow. This component involves a response to sensory inputs in the oropharynx and receives sensory information from the tongue and bolus. These sensory inputs carry the information received to the swallowing centers of the medulla resulting in a motor response in the form of a swallow.

Ten components comprise the pharyngeal domain. Component 7, soft palate elevation, is modulated by CNs V and X. Soft palate elevation results in the nasopharynx being closed off to generate pressure, allowing the bolus to flow through the pharynx. Furthermore, Component 7 involves the elevation of the soft palate to meet the pharyngeal wall to ensure that the bolus does not enter the nasopharynx and to provide protection to the nasal cavity. Component 8 is laryngeal elevation. This component is modulated by CNs IX and X, and C1. Functional laryngeal elevation involves the arytenoids contracting and moving anteriorly to contact the epiglottic petiole as a form of airway protection to ensure the bolus does not enter the laryngeal vestibule. Component 9, anterior hyoid excursion, is modulated by CN V and C1. This component involves anterior movement of the hyoid which allows for the opening of the pharyngoesophageal segment (PES). Component 10, epiglottic movement, is modulated by CNs V, IX, X, XII, and C1. In conjunction with Components 8

and 9, Component 10 involves complete inversion of the epiglottis which aids in the bolus flow timing and protection of the laryngeal vestibule from airway invasion during the swallow. Component 11, laryngeal vestibular closure, is modulated by CNs X and XII and is assessed at the height of the swallow, ensuring the airway is protected from foreign bodies, including the bolus. Component 12, modulated by cranial nerve X, is the pharyngeal stripping wave. This component aids in pharyngeal clearance through contractions of the superior, middle, and inferior pharyngeal constrictor muscles. Component 13, pharyngeal contraction, is modulated by CNs IX and X and involves the superior to the inferior progression of pharyngeal contractions as the bolus progresses downward through the pharynx and into the PES. The pharyngeal constrictor muscles apply pressure to the bolus tail through these sequential contractions superiorly to inferiorly. Component 14 is the pharyngoesophageal segment opening. This component is modulated by CNs V, VII, IX, X, and C1 and works to open the PES to allow the bolus to pass through to the esophagus. Component 15, tongue base retraction, is modulated by CNs X and XII. This component involves posterior retraction of the tongue to apply positive pressure to the bolus, which leads to complete pharyngeal clearance. Component 16, pharyngeal residue, modulated by CNs V, VII, IX, X, XII, and C1 rid the pharynx of any pharyngeal residue. Pharyngeal residue is any bolus residue remaining in the pharynx after the swallow.

The esophageal domain is comprised of one component. Component 17, esophageal clearance, is modulated by CN X, which works to clear the bolus from the esophagus and prevents any retrograde flow from the esophagus into the pharynx.

In addition to the peripheral nervous system, characterized by the cranial and cervical nerves, the swallowing process is modulated by a bilateral network from the brainstem to

subcortical and cortical brain structures, which is part of the central nervous system. The cortex is a major contributor to swallowing control. The motor and sensory cortex initiate and mediate movement for the voluntary stage of swallowing, such as the oral stage. The medulla, containing the nucleus ambiguous and nucleus tractus solitarius, controls the involuntary stages of swallowing, such as pharyngeal and esophageal stages. The cerebellum is the area that is responsible for the sequencing and timing of the swallow in all stages. A lesion present within the areas of the central or peripheral nervous systems could result in dysphagia (Jean, 2001; Wilmskoetter et al., 2020).

Dysphagia

Disordered swallowing results from various etiologies across the lifespan, including progressive neurological diseases, cerebral palsy, stroke, and structural abnormalities (Bernardes et al., 2022; Clavé & Shaker, 2015). When the safety and efficiency of the swallowing mechanism are disordered at the oropharyngeal or esophageal stages of swallowing the resulting symptom is dysphagia (Abdel Jalil et al., 2015; ASHA, 2023; Azer et al., 2023; Clavé & Shaker, 2015). When the safety or efficiency of the swallow is poorly coordinated, the food or liquid being swallowed can be misguided into the airway (Molfenter et al., 2023). The symptoms of dysphagia can lead to detrimental consequences such as malnutrition, pneumonia, dehydration, death, and challenges in maintaining quality of life (Garand et al., 2020; Molfenter et al., 2023; Vesey, 2013).

Dysphagia is a significant healthcare burden resulting in substantial financial obligations that require skilled training and complex equipment to appropriately manage (Attrill et al., 2018; Bonilha et al., 2014; Marin et al., 2020; Zuercher et al., 2019). This results in an overwhelming economic burden to both institutions and the patient (Bernardes

et al., 2022). Additionally, dysphagia significantly impacts the patient's quality of life, length of hospital stay, and caregiver burden (Molfenter et al., 2023). A patient's quality of life can be significantly burdened in various psychological and social aspects. In a study of 360 patients with known subjective dysphagia complaints, 84% of respondents felt that eating should be enjoyable, but only 45% found it to be enjoyable (Ekberg et al., 2002). Additionally, 41% of respondents experienced anxiety or panic during mealtimes and 36% of respondents avoided eating in social settings with others due to their dysphagia (Ekberg et al., 2002). In a large sample of patients with heterogeneous etiologies, those with dysphagia were in the hospital for approximately four more days than those without dysphagia (Attrill et al., 2018). Furthermore, while often overlooked, the burden on caregivers and families should be addressed due to the impact on the health and well-being of an entire family and the associated consequences of such a burden (Shune and Namasivayam-MacDonald, 2020). Healthcare providers must be able to accurately and efficiently assess a patient for dysphagia since dysphagia is a significant healthcare burden. While assessing a patient's dysphagia may include variations depending on the underlying etiology, a comprehensive clinical assessment of dysphagia includes the following: case history gathering, dysphagia screening, non-instrumental assessment, and instrumental assessment (ASHA, 2023; Lancaster, 2015).

Healthcare provider review of case history is vital to providing appropriate services, including assessment and treatment. For example, a patient who has previously undergone treatment for head and neck cancer will present with anatomical structures that differ from a patient who has not undergone this treatment. Therefore, the patient's past medical history should be considered when developing a plan of care. The purpose of a swallow screening is to identify the risk of dysphagia and determine the need for further assessment. Screening for

dysphagia may include administration of a questionnaire to address the patient or caregiver's concerns, observation of the signs and symptoms of dysphagia, or administration of a standardized screening protocol (ASHA, 2023). Two standardized, validated protocols for screening dysphagia are the 3-oz water swallow test and the Yale swallow protocol (ASHA, 2023; DePippo et al., 1992; Suiter et al., 2014). If a screening reveals the need for further assessment, this can occur with or without instrumentation. Non-instrumental assessment of swallowing is performed to assess the presence, extent, and signs and symptoms of swallowing difficulty. A clinical swallow evaluation is a non-instrumental assessment that considers the patient's overall health status while evaluating cranial nerve function, along with oral hygiene, and observation of oral bolus trials in various consistencies and delivery methods (ASHA, 2023). Since non-instrumental assessment cannot fully inform the healthcare provider about the anatomy or physiological function of the larynx, pharynx, or upper esophagus, it may be necessary to complete an instrumental assessment to assess swallowing safety, efficiency, and physiological function that may lead to impairments in the patient's swallowing (Garand et al., 2020). Instrumental assessments evaluate the anatomical structures of the head and neck as well as the many physiological components involved in swallowing that are unable to be seen by the healthcare provider clinically. In most medical settings, the healthcare provider is likely to use flexible endoscopic evaluation of swallowing (FEES) or modified barium swallow studies (MBSSs) (ASHA, 2023; Langmore et al., 1991; Logemann, 1986). Other forms of instrumentation may be utilized as well, including high-resolution manometry and diagnostic ultrasound (Bernardes et al., 2022). Conducting a comprehensive evaluation of the patient with dysphagia gives the healthcare provider the necessary information to appropriately diagnose the swallowing disorder and develop an

effective plan of care for the patient.

Interdisciplinary Care

While speech-language pathologists (SLPs) are the preferred healthcare providers for dysphagia management, other healthcare providers also manage dysphagia (ASHA, 2020; Graner et al., 2010). Research has shown that interdisciplinary care for dysphagia management results in better patient outcomes and decreased costs (Miles et al., 2014; Wieseke et al., 2008). The interdisciplinary team involved in dysphagia management can include but is not limited to a primary care provider, nurse, otolaryngologist, dietician, nutritionist, occupational therapist, and speech-language pathologist (Garipoğlu, 2019; Molfenter et al., 2023; Wieseke et al., 2008). Each member of the team, in collaborative communication, offers a unique perspective that can reduce complications of dysphagia and produce better outcomes. In most cases, primary care providers and nurses are responsible for recognizing symptoms of dysphagia and screening patients for dysphagia (Smith et al., 2023; Wieseke et al., 2008). Dieticians and nutritionists are part of the early diagnosis and treatment team to establish a functional nutritional plan for the patient with dysphagia (Garipoğlu, 2019). Otolaryngologists (ENTs), speech-language pathologists, and occupational therapists (OTs) are responsible for the evaluation and treatment of patients with swallowing disorders. While SLPs, ENTs, and OTs all work to support the functionality of the patient's swallow, each discipline works to accomplish this from a different perspective. For example, SLPs address dysphagia from the neurophysiologic perspective, whereas OTs address dysphagia from the sensory perspective (Boczko & Feightner, 2007; Clark et al., 2007). Additionally, SLPs, OTs, and ENTs have specialized training and access to instrumentation resources (Nawaz & Tulunay-Ugur, 2018; Wieseke et al., 2008).

However, these providers do not receive adequate training in dysphagia management (Garipoğlu, 2019; Hazelwood et al., 2022; Neubauer, 2019; Vose et al., 2018).

Competence vs. Competency

A high level of care is needed and expected for patients with dysphagia. However, healthcare providers receive little focused training in dysphagia management. Therefore, in order to best serve patients, healthcare providers should acquire knowledge and skills and apply those in an appropriate and timely manner. While the terms *competence* and *competency* are often used synonymously, there is a clear distinction between them (Table 2). Competence is the ability to perform to a set standard through qualification-based mastery of skills. Competency describes the behaviors and characteristics involved in knowing which skills to use and when to use them that result in performance (Moghabghab et al., 2018).

Table 2

Distinctions Between Competence and Competency

Competence	Competency
Skills-based or qualification-based	Behavior-based
Describes ability to perform to a set standard	Describes behaviors and characteristics that result in performance
Mastery of skills	Knowing which skill to use and when
Understanding core concepts	Expanding upon concepts
What is measured	How the standard is achieved

The Assessment of Clinical Skills/Competence/Performance, developed by George Miller, categorized the domains of competence into four levels: knowledge, competence, performance, and action (Miller, 1990). Miller, an American psychologist and one of the founders of cognitive science, suggests that no single assessment can encapsulate all the data required to accurately assess the delivery of professional services by a healthcare provider.

Therefore, he suggests a framework in which a comprehensive assessment may occur (Miller, 1990) (Figure 1).

Miller's foundational concept of his framework is knowledge, which he defines as knowing. Healthcare providers must collect information and have the intellectual capability to interpret and analyze it. Healthcare providers can demonstrate knowledge of dysphagia by identifying anatomical structures that contribute physiologic functions to the swallow. Miller asserts that there are many objective assessments of knowledge. However, protocols that solely measure knowledge are incomplete assessment metrics because healthcare provider competence is comprised of multiple factors beyond knowledge (Miller, 1990).

Miller suggests that an appropriate step to fulfill a broader objective, other than an objective assessment alone, is to assess if one knows how to effectively use the knowledge, judgment, or skill s/he has acquired. Miller defines the second concept of his framework, competence, as knowing how. Healthcare providers can demonstrate knowledge of how to manage dysphagia by identifying disordered swallowing and developing an effective plan of care (Miller, 1990).

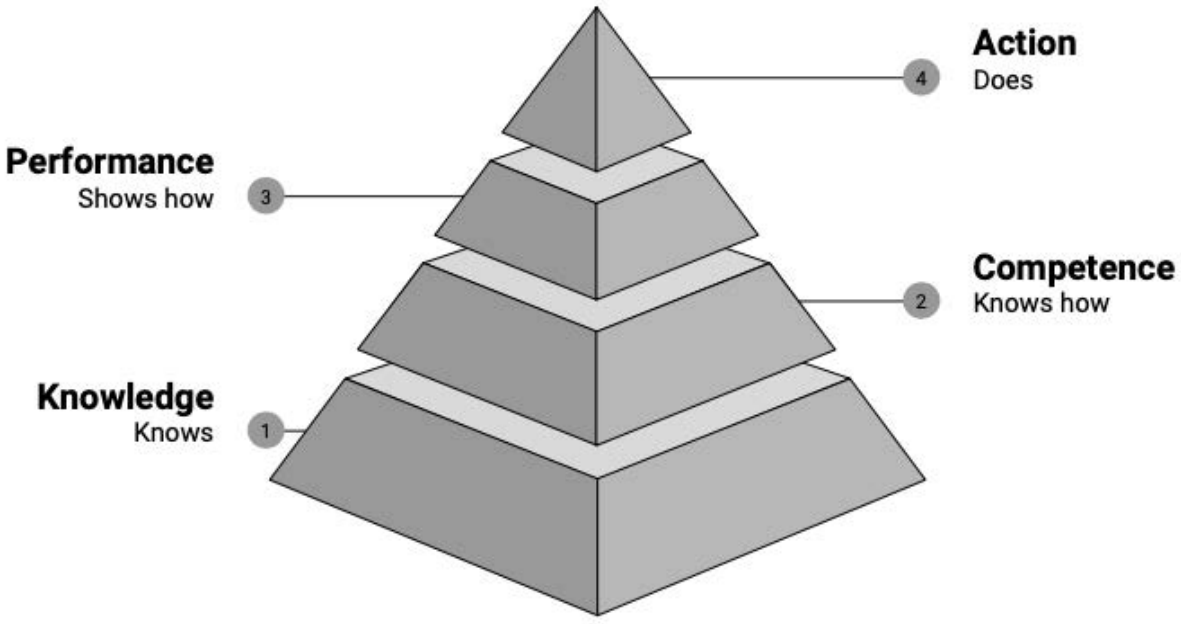
Miller's third concept of his framework is performance, which Miller defines as showing how. While a healthcare provider must be able to demonstrate that s/he knows and knows how to manage dysphagia, the healthcare provider must demonstrate appropriate management of dysphagia when given a patient. Evaluation of performance should be completed under the observation of a supervisor and assessed upon the accuracy of diagnosis and the nature of management provided (Miller, 1990).

Miller defines the final concept of his framework, action, as doing. A healthcare provider will demonstrate action as s/he independently assesses, diagnoses, and treats

patients with dysphagia. Miller admits that this concept is the most difficult to accurately and reliably assess. Miller makes it clear that the infrastructure of this framework alone, which includes knowledge and competence, are not accurate predictors of the concepts of performance and action. However, Miller believes that action and performance likely imply achievement of the infrastructure of the framework. Therefore, performance and action must be incorporated into instructional methods and assessment measures. Because of this, Miller insists that a comprehensive assessment of clinical skills/competence/performance must assess all aspects of the framework to fully and accurately assess the clinical skills/competence/performance of a healthcare provider (Miller, 1990).

Figure 1

Assessment of Clinical Skills/Competence/Performance Framework (Miller, 1990)



Competence in Dysphagia

A lack of competence among healthcare providers in the area of dysphagia management may be due to the lack of provider training in this area and is alarmingly concerning (Bonilha et al., 2014; Marin et al., 2020; Zuercher et al., 2019). While most healthcare providers who manage dysphagia have obtained at least a master's-level education, they have received very little specific training in the area of dysphagia. SLPs must complete dysphagia coursework during their graduate education, complete a total of 400 hours of treatment and assessment across all domains of speech-language pathology, and pass the PRAXIS exam that covers all domains of speech-language pathology (ASHA, 2020). Occupational therapists have a Specialty Certification in Feeding, Eating, and Swallowing (SCFES) program through the American Occupational Therapy Association (AOTA) with 500 clinical hours of experience within 5 years (Graner et al., 2010). Certified nursing assistants (CNAs) receive a high school- or college-level education but have only learned about dysphagia in CNA certification courses (Pelletier, 2004). In a study of 85 dieticians, only 32 (38.8%) of the participants felt they had a sufficient knowledge base of dysphagia (Garipoğlu, 2019). Moreover, 14 (17.6%) of the dieticians surveyed had participated in a dysphagia training, continuing education course, or symposium only during their undergraduate education, and an additional 14 (17.6%) of all participants had participated in a dysphagia training, course, or symposium after their undergraduate education (Garipoğlu, 2019). Because the assessment of dysphagia requires substantial skill and utilizes complex equipment, dysphagia awareness and training opportunities for all healthcare providers in screening, assessment, care, and management of dysphagia must be improved (Attrill et al., 2018; Speyer et al., 2022)

Because dysphagia is a new and growing part of the field of speech-language pathology, there have been few standardized competencies established regarding dysphagia management. Minimal competencies that must be achieved at certain levels of training should be established to demonstrate competence in dysphagia management (ASHA, 2020). Significant differences exist in dysphagia education, care, and management among various professions, healthcare settings, and geographic locations (Speyer et al., 2022). Regardless of these differences, healthcare providers, including SLPs, should focus their attention on receiving adequate training (Vose et al., 2018). Upon an exploration of interprofessional education available to fields other than speech-language pathology, the findings revealed that a growing number of professionals work collaboratively with SLPs to support their primary role in managing dysphagia. Therefore, healthcare providers need a standardized metric that can assess *all* healthcare providers' competence in dysphagia.

Assessment of Competence

As discussed in the *Assessment of Clinical Skills/Competence/Performance* framework, there is not one single assessment metric that can encompass all that a healthcare provider can offer in the delivery of professional services (Miller, 1990). One researcher describes a competence-based assessment as a process to determine if a candidate meets the set standards of performance or competencies (Hager et al., 1994). However, many professions struggle to establish an assessment of competence due to difficulties in developing measurable definitions of competencies within the profession and agreeing upon minimal levels of competence for the numerous levels of professionals at different points in their careers (Lichtenberg et al., 2007). While subjective assessments of competence scored by a supervising clinician may be preferred over objective assessments, the reliability of

objective assessments far exceeds the reliability available for subjective assessment metrics (Lichtenberg et al., 2007). Considering the *Assessment of Clinical Skills/Competence/Performance* framework, many researchers advocate that various assessments should be utilized to assess healthcare providers' competence thoroughly (Miller, 1990). Some proposed categories of assessment are as follows: participatory decision-making, clinical skills, core knowledge, clinical reasoning, technology use, and patient-provider relationship (Epstein & Hundert, 2002; Lichtenberg et al., 2007). McMullan et al., suggest that multiple assessment methods are needed for a full assessment of competence and that a portfolio assessment could serve as a holistic approach to competence assessment (McMullan et al., 2003). Overall, multiple methods of assessment are needed to fully capture all the areas of competence of a healthcare provider in dysphagia management. Given this, a specific methodology or metric has not been identified as the gold standard in any field of study.

Assessment of Competence in Dysphagia Management

As the primary providers for dysphagia care, SLPs have recently raised concerns about the need to assess competence in dysphagia management. The Dysphagia Competency Verification Tool (DCVT), developed in 2019, was designed as a way for SLPs to assess their self-perceived competence in dysphagia management. However, the DCVT is only for use by certified SLPs and has not undergone psychometric testing and its validity and reliability are unknown (ASHA, 2019). While the DCVT is a great progression towards the assessment of competence in dysphagia management, it is not suitable to be used with other healthcare providers or SLP students. To date, a recent paper by Hazelwood et al. in 2022 is the only article published that discusses the DCVT. In their study, the DCVT was modified

to explore how SLP graduate student clinicians' self-perception of competence in dysphagia management changed over time and to determine the impact of clinical practicum experiences. Students rated themselves using a modified methodology of a 5-point scale ranging from Absent (0) to Excellent (4) in four DCVT domains: General Skills for Clinical Swallow Evaluations (CSEs), Direct Patient Skills for CSEs, Videofluoroscopic Swallow Study (VFSS), and Fiberoptic Endoscopic Evaluation of Swallowing (FEES). There was an increase in scores from the beginning of training to graduation. However, these students did not perceive themselves as adequate on most items until their last semester. Students with mostly medical-based experiences reported higher ratings on more DCVT items than those in mostly school-based practicums. Overall, it was concluded that the DCVT ratings could be used to inform SLP graduate students about the areas of dysphagia management that need further development and training. While this study provided positive outcomes, it highlighted that the DCVT is not adequate for student use (Hazelwood et al., 2022).

The Competency Assessment in Speech Pathology (COMPASS) is a metric designed to assess the competence of speech-language pathology students in their clinical placements (Speech Pathology Australia, 2016). The COMPASS is used by all Australian and New Zealand universities to assess student performance on the practicum component of all topics, including dysphagia. This protocol utilizes a rating system that is completed by both the student and their supervisor. These ratings include a visual analog scale that is recorded for all training levels, from novice students to entry-level students. The COMPASS also includes an overall competency visual analog scale which serves as a summative score measure. The COMPASS consists of four professional competency units and seven competency-based occupational standards (CBOS) (Table 3). The four professional competency units are

reasoning, communication, lifelong learning, and professionalism. The seven CBOS competencies are assessment; analysis and interpretation; planning evidence-based speech pathology practice; implementation of speech pathology practice; planning, providing, and managing speech pathology services; professional and supervisory practice; and lifelong learning and reflective practice (Speech Pathology Australia, 2016). This protocol proved to have strong validity characteristics using Rasch analysis. Additionally, students and supervisors who completed the protocol provided strong, positive feedback (McAllister, 2005).

Table 3

COMPASS © Professional Competency Variables

Professional Competency Units	Competency-Based Occupational Standards
Reasoning	Analysis and Interpretation
Communication	Planning evidence-based speech pathology practice
Lifelong learning	Implementation of speech pathology practice
Professionalism	Planning, providing, and managing speech pathology services
	Professional and supervisory practice
	Lifelong learning and reflective practice

Purpose

Little is known about metrics to measure competence in dysphagia among healthcare providers. By exploring how healthcare professionals are assessing competence in dysphagia management, the results of this study will highlight areas, populations, or settings that require further inquiry in the assessment of competence in dysphagia management and support the development of a standardized metric to assess competence in dysphagia among healthcare

providers. Therefore, the purpose of this study is to identify and describe how competence in dysphagia management is assessed among healthcare providers.

Specific Aims

We will address this purpose through two specific aims. Specific Aim 1 will describe available metrics used by healthcare providers when assessing competence in dysphagia management. Specific Aim 2 will compare available metrics used by healthcare providers when assessing competence in dysphagia management.

Methods

Scoping Review

Scoping reviews map evidence of a topic and to identify the main concepts, theories, sources, and knowledge gaps (Tricco et al., 2018). Given that our research question focuses on discovering the breadth of information known about competence in dysphagia management across multiple disciplines, it was determined this study methodology would be optimal to explore current literature (Page et al., 2020; Tricco et al., 2018). This scoping review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation (Table 4) in order to describe ways competence in dysphagia management is being assessed (Tricco et al., 2018).

Table 4

Checklist Items to be Included in the Report of Scoping Review

Section	Item	PRISMA-ScR Checklist Item	Reported on Page #
TITLE			
Title	1	Identify the report as a scoping review.	i
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable) background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	iv

Section	Item	PRISMA-ScR Checklist Item	Reported on Page #
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	17
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	17
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	N/A
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	23
Information sources	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	21
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	22
Selection of sources of evidence	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	24

Section	Item	PRISMA-ScR Checklist Item	Reported on Page #
Data charting process	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	25
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	25
Critical appraisal of individual sources of evidence	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	N/A
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	26
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	26
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	N/A
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	28
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	39

Section	Item	PRISMA-ScR Checklist Item	Reported on Page #
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	49
Limitations	20	Discuss the limitations of the scoping review process.	53
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	55
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	N/A

Database Search

The research question that guided our search was, "How is competence in dysphagia management assessed among healthcare providers?". To best answer our question, we included databases that would return searches for various types of records, such as published manuscripts, conference proceedings, book chapters, and published dissertations in the areas of healthcare to broaden the search (Christovam et al., 2021). Our targeted search terms aimed to address the main ideas of our research question while considering the unique designs of each database. Our electronic search strategies were designed and tailored for each database with the support of a university librarian. Our search was conducted on February 4, 2023, in the following databases: PubMed (1982-2022), CINAHL (2003-2022), Digital Commons Network (DCN) - Medicine and Health Sciences (1901-2023), and WorldCat (1928-2023). All databases were searched using keywords selected according to the

controlled descriptors for Medical Subject Headings (MeSH) and Exact Subject Heading (MH) if available using Boolean truncation (Table 5). Additionally, reference lists of included articles were reviewed for other potential records following the full-text review. The quality of individual records was not appraised for this review.

Study Eligibility

The title/abstract screening, the full-text review, and the hand search were completed by trained reviewers (Christovam et al., 2021; Miller & Colquhoun, 2020; Wolford et al., 2021). Training on agreement was conducted as a group of three, requiring consensus agreement on five random studies before beginning all phases.

Following our literature search, we screened the titles and abstracts of all the non-duplicated studies resulting from our searches. We applied inclusion criteria and exclusion criteria (Table 6). For the title/abstract screening, records were included if the title or abstract contained terms relating to dysphagia (i.e., deglutiti*, swallow*, dysphag*, etc.) AND competen* (including any variation of the word). Records were excluded if they were not published in English or were an entire book.

Following our title/abstract screening, we reviewed the full text of the remaining records. For the full-text review, records were included if the record describes a protocol used to measure the concept of competence in dysphagia AND the aforementioned protocol is used to measure the concept of competence in dysphagia management of a healthcare provider. Records were excluded if the record was presented as a whole book or if it was impossible to obtain the full text of the record. When the full texts were unavailable, assistance from the library system of Appalachian State University was requested to retrieve the full text.

Table 5

Search Strategy for All Online Databases

Databases	Search Strategy		Record (n)
PubMed	#1	("deglutition"[MeSH Terms] OR "Deglutition Disorders"[MeSH Terms:noexp] OR "deglut*"[Text Word] OR "swallow*"[Text Word] OR "dysphag*"[Text Word])	70,482
	#2	("Professional Competence"[MeSH Terms] OR "Clinical Competence"[MeSH Terms] OR "health knowledge, attitudes, practice"[MeSH Terms] OR "Knowledge"[MeSH Terms])	257,718
	#3	#1 AND #2	259
CINAHL	#1	MH competenc*	10,310
	#2	MH (dysphag* OR deglut* OR swallow*)	12,752
	#3	#1 AND #2	23
Digital Commons Network – Medicine and Health Sciences	#1	(deglutition OR dysphagia)	1,802
	#2	(competence OR competency)	55,403
	#3	#1 AND #2	390
WorldCat Filters: Book: thesis, dissertation; Article, Chapter: Article and Downloadable Article	#1	(Dysphagia OR deglutition)	85,173
	#2	(competency OR competence)	1,861,877
	#3	#1 AND #2	605

Upon completing our full-text review, we conducted a hand search of the records of the included studies. All 3 reviewers independently reviewed all reference lists from all 10 studies and indicated the studies that each reviewer believed should be included for review based on the inclusion and exclusion criteria previously used for the title and abstract

screening. All three reviewers met to come to a consensus on which studies were to advance to the full-text review stage. For the hand search, records were included if the record describes a protocol used to measure the concept of competence in dysphagia and the aforementioned protocol is used to measure the concept of competence in dysphagia management of a healthcare provider. Records were excluded if the record was presented as a whole book or an assessment, or if it was impossible to obtain the full text of the study.

Table 6

Exclusion and Inclusion Criteria

Title/Abstract Screen	
Inclusion Criteria	*Exclusion Criteria*
Keywords related to dysphagia Keywords in any form of competen*	Record not published in English Record not an article, dissertation, or thesis (i.e., book)
Full-Text Review	
Inclusion Criteria	*Exclusion Criteria*
Describes a protocol used to measure the concept of competence in dysphagia Aforementioned protocol is used to measure the concept of competence in dysphagia management of a healthcare provider	Record is not an article, dissertation, or thesis (i.e., book) Unable to obtain the full text after attempting all sources available

Record Selection

All records were stored using the reference management software Zotero (Zotero, 2016). Two reviewers (CAM and GFR) independently assessed all included titles and abstracts and determined the eligibility of the record as “yes” (included) or “no” (excluded). This was completed through Covidence, a systematic review management software (Covidence, 2023). When there was disagreement among the reviewers about the eligibility of any record, conflicts were resolved with a third reviewer (RJH) as the tiebreaker.

Data Extraction

Data extraction was completed by one reviewer (GFR) for full records that met all inclusion criteria. Data extraction included the following factors: author, year, country of publication, type of record, type of data, type of study, author discipline, assessment protocol, assessment protocol scoring, assessment protocol focus, skills assessed, population of interest, sample size, setting, and database (Table 7).

Table 7

Data Extraction Factors Defined

Factor	Operational Definition
Author	Record authors
Year	Record year of print
Country	Corresponding author's country (form correspondence address)
Record Type	Record publication type
Data Type	Record data type (qualitative vs. quantitative)
Study Type	Record research design
Discipline	Discipline of the lead author
Assessment Protocol	Name of protocol utilized to assess competence in dysphagia management
Assessment Protocol Scoring	Scoring procedures for assessment protocol
Assessment Protocol Focus	Area of dysphagia assessed within assessment protocol
Skills Assessed	Skills assessed within assessment protocol
Population of Interest	Discipline(s) of participants
Sample Size	Number of participants
Setting	Setting of participants
Database	Database the record was retrieved from

Results

Specific Aim 1: *Describe Available Metrics*

The scoping review process is summarized in the PRISMA-ScR Flow Chart (Figure 2). Results from our database searches were imported into Covidence (n = 1277); 259 from PubMed, 23 from CINAHL, 290 from DCN, and 605 from WorldCat. 94 total duplicates were removed; 83 were system-detected duplicates, while 11 were manually marked duplicates. Following the removal of duplicates, 1183 abstracts and titles were screened for inclusion. Interrater reliability was high at this step (k = 0.865). After screening titles and abstracts, 83 full-text records were reviewed for inclusion. Interrater reliability was relatively low at this step (k = 0.423). Seventy-three records were excluded because they were not in English (n = 1) and did not meet inclusion criteria (n = 72). Therefore, we included 10 records at the full-text review stage. A hand search was then performed on the references of the 10 included records. Nine additional full-text records were selected to be reviewed for inclusion; 1 record was included following the full-text review. In total, 11 records were included in the data extraction stage. Table 8 displays the completed data extraction table.

Figure 2

PRISMA-ScR Flow Chart Summary of the Scoping Review Process

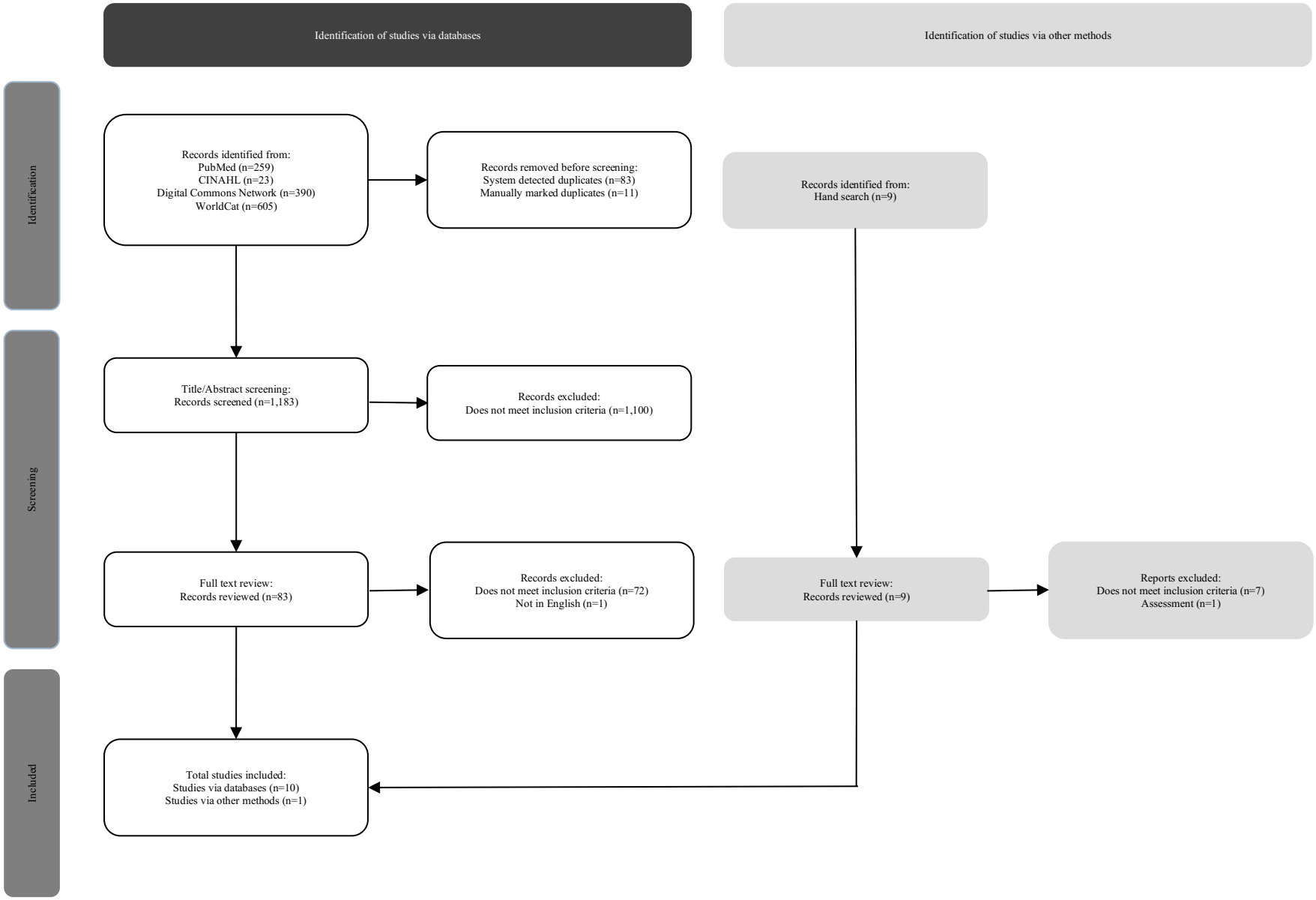


Table 8

Completed Data Extraction Table

Author	Year	Country	Record Type	Data Type	Study Type	Discipline
Arsenault & Atwood	1991	United States	Journal Article	N/A	Not a Study	SLP
Browner & Bessire	2004	United States	Journal Article	Quantitative	Cross-Sectional	RN
Freeland et al.	2015	United States	Journal Article	Quantitative	Cross-Sectional	SLP
Hazelwood et al.	2022	United States	Journal Article	Quantitative	Cross-Sectional	SLP
Hoepner & Hemmerich	2020	United States	Journal Article	Quantitative	Cross-Sectional	SLP
Kennedy et al.	2019	United Kingdom	Journal Article	Qualitative & Quantitative	Mixed-Methods	Nursing Students
Luo et al.	2022	China	Journal Article	Quantitative	Cross-Sectional	Nursing
McAllister	2005	Australia	Doctoral Thesis	Qualitative & Quantitative	Mixed-Methods	SLP
Sharma et al.	2012	Australia	Journal Article	Quantitative	Cross-Sectional	SLP
Urban & Hazelwood	2019	United States	Periodical Article	N/A	Not a Study	SLP
Yoshida et al.	2020	Japan	Journal Article	Quantitative	Descriptive	RNM

Table 8

Continued

Author	Assessment Protocol	Assessment Protocol Scoring
Arsenault & Atwood	MGH protocol for developing independence in the diagnosis and treatment of dysphagia with practicing clinicians (on-the-job-training)	4 Phases: 1) Observation and acquisition of basic skills and knowledge (general knowledge of competency), 2) Directed experience (demonstrates competency on 10 consecutive patients with 90% agreement), 3) Indirect supervision (demonstrated competency on 10 consecutive patients with 100% agreement), and 4) Intermittent supervisory monitoring (demonstrated competency on 10 consecutive patients with 100% agreement).
Browner & Bessire	Competency Fair	Not enough information provided
Freeland et al.	Medical Mannequin Training & Didactic Training and Assessment	Scored by researchers using a pass/fail system; Accurate administration (100%) was defined as correctly performing the six skills. Process was repeated until every trainee reached a score of 100%; Scored immediately after training, at 2 weeks, and at 4 weeks with a medical mannequin. Scored at 6 weeks post-training with standardized patients (SLPs).
Hazelwood et al.	Modified DCVT	5-point ordinal scale (0-absent, 1-dependent, 2-emerging, 3-adequate, 4-excellent); rated/scored by graduate students (self-perceived)
Hoepner & Hemmerich	Video and live competency performance assessment	Scored by authors 1, 2, and another colleague; Not enough information provided.
Kennedy et al.	VAS Tool	Respondent places a mark at a point along a line with endpoints of 1 (little knowledge) to 10 (very good knowledge or skills). The mark on the VAS was measured from the endpoint (1) and calculated arithmetically as a percentage of the total measurement between 1 and 10. Given pre- and post- education on the subject.

Luo et al.	Questionnaire	Pt. 1: qualitative data, Pt. 2: multiple choice questions- incorrect answers scored as 0 and correct answers scored as 5 with a total range from 0 to 100, Pt. 3: 5 point Likert scale with responses 1-5 (completely disagree, disagree, neither agree nor disagree, agree, or completely agree), Pt. 4: 5 point Likert scale with responses 1-5 (never, sometimes, half of the time, most of the time, or always). The higher the score, the stronger the ability of the geriatric nurse regarding dysphagia care.
McAllister	Competency-based assessment – Visual Analog Scale (VAS)	VAS from Novice to Intermediate to Entry Level, box on left end for "not observed", box on right end for "above entry" level; mark made at mid-placement assessment and at end placement assessment; CE and student complete
Sharma et al.	Written assessment and performance assessment by SLPs	Administered immediately after training, post- 15th patient, post-30th patient; 35 item test- 80% accuracy required; Interview with assessors after every 5 patients to discuss competence, rating was given based on this interview and observation of assistant in sessions to indicate perceived competence or not competent; Assistant completes VAS (0= not comfortable performing the tasks using the assessment to 10= very comfortable performing tasks during the assessment).
Urban & Hazelwood	Dysphagia Competency Verification Tool (DCVT)	Information not provided; Completed by self or supervisor
Yoshida et al.	Fiberoptic Endoscopic Evaluation of Swallowing (FEES) education program	Trainees' autonomy scored based on 4 major FEES skills by head of the program. Scoring: 0=physician took over, 1=physician provided guidance, 2=physician sometimes provided guidance, & 3=no guidance needed. Overall evaluation score ranged from 1 (clear failure) to 6 (excellent – equal to level of trainer)

Table 8

Continued

Author	Population of Interest	Sample Size	Participant Setting	Database Extraction
Arsenault & Atwood	Speech-language pathology clinicians OR second year SLP graduate students	N/A	Medical SLP setting	WorldCat
Browner & Bessire	All rehabilitation disciplines	95	Rehabilitation setting	PubMed
Freeland et al.	Registered Nurses	32	VA Medical Center	PubMed & WorldCat
Hazelwood et al.	SLP graduate student clinicians	72	Academia	Digital Commons Network
Hoepner & Hemmerich	Graduate students	43	Academia	PubMed & CINAHL
Kennedy et al.	Medical students	197 pre-assessment/ 201 post-assessment	Academia	PubMed
Luo et al.	Geriatric Nurses	782	Hospital	PubMed
McAllister	SLP students	219	Academia	Hand Search
Sharma et al.	Allied Health Assistant	1	Telerehabilitation	PubMed & WorldCat
Urban & Hazelwood	Clinical Fellows, new hires, experienced clinicians, and students within the field of SLP	N/A	Medical SLP setting	WorldCat
Yoshida et al.	Nurses	3	Research facility	WorldCat

Table 8

Continued

Author	Assessment Protocol Focus Groups	Skills Assessed
Arsenault & Atwood	Use/ Knowledge of Instrumentation Theoretical Knowledge of Dysphagia Competency in Treatment Competency of Clinical Swallow Evaluation	History Collection Treatment Programs Information Dissemination Interdisciplinary Communication Theoretical Knowledge Clinical Swallow Evaluation Instrumental and Non-Instrumental Assessment Procedures Appropriate Methods of Documentation Department and Hospital Policies and Procedures Appropriate Referrals Data Interpretation Prevention Methods Patient Education and Counseling Total Management of Dysphagic Caseload
Browner & Bessire	Competency in Treatment	Various Diet Consistencies Restorative Feeding Program Caregiver Education Feeding/ Swallowing Safety
Freeland et al.	Competency with Clinical Swallow Evaluation	Administration and Interpretation of Swallow Screening with Medical Mannequin Administration and Interpretation of Swallow Screening with Standardized Patient Positioning of Patient Appropriate Administration of Swallow Screening Items Appropriate Discontinuation of Screening
Hazelwood et al.	Use/Knowledge of Instrumentation Competency of Clinical Swallow Evaluation Competency in Treatment	Clinical Swallow Assessment and Dysphagia Treatment- General Skills

Author	Assessment Protocol Focus Groups	Skills Assessed
		Clinical Swallow Assessment and Dysphagia Treatment-Direct Patient Care\Videofluoroscopic Swallow Study and Fiberoptic Endoscopic Evaluation of Swallowing
Hoepner & Hemmerich	Competency of Clinical Swallow Evaluation	Administration and Interpretation of OME & CBSE Observations during OME & CBSE Appropriate Documentation and Referrals
Kennedy et al.	Not enough information provided.	Not enough information provided – Six domains of Ageing & Health curriculum: History, Exam, Drug Use, Comorbidities, Nutrition, Swallow
Luo et al.	Theoretical Knowledge of Dysphagia Competency In Treatment Competency of Clinical Swallow Evaluation Competency in Treatment	Theoretical Knowledge of Dysphagia Attitudes Towards Dysphagia Care Management Of Dysphagia in Elderly patients Risk Factors of Dysphagia Clinical Manifestations Assessment Methods Intervention Measures
McAllister	Competency of Clinical Swallow Evaluation Competency in Treatment	Administration and Interpretation of Swallow Assessment Intervention Plan Maintenance and Delivery of Service Professional, Patient, Caregiver, and Community Education Professional Development
Sharma et al.	Competency of Clinical Swallow Evaluation Theoretical Knowledge of Dysphagia Competency in Treatment	Signs/Symptoms and Causes of Dysphagia Role of SLP in Dysphagia Assessment and Management Feeding/ Positioning for Swallow Assessment Theoretical Knowledge
Urban & Hazelwood	Use/Knowledge of Instrumentation Competency of Clinical Swallow Evaluation Competency in Treatment	Clinical Swallow Assessment Dysphagia Treatment Instrumental Assessment (VFSS, FEES, HRM) Specialization and Professional Development

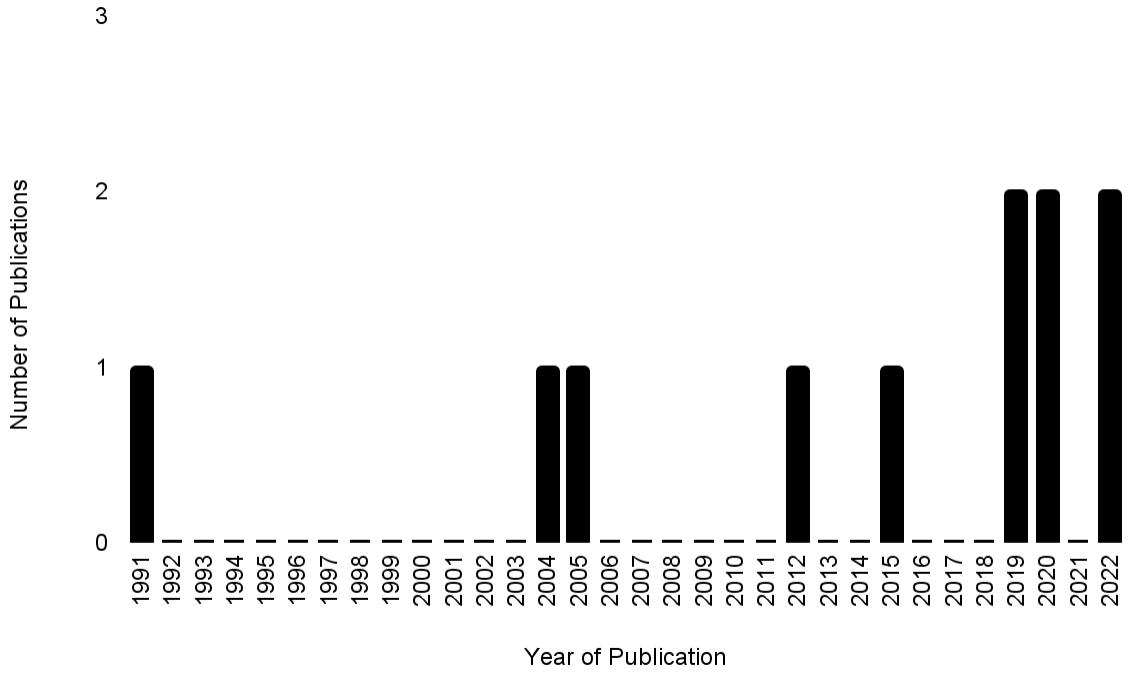
Author	Assessment Protocol Focus Groups	Skills Assessed
Yoshida et al.	Use/Knowledge of Instrumentation	Basic Knowledge of FEES FEES Procedures Cause, Prevention and Care for five Adverse events Clean-Up Methods for FEES Knowledge of Morphology and Function Appropriate Selection of Next Examination Condition of Bolus Swallowing Appropriate Recommendations and Training Plans

Publication Year

The included records ranged in date from 1991 to 2022, with most (7 out of 11 records) published after 2015 (Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Kennedy et al., 2019; Luo et al., 2022; Urban & Hazelwood, 2019; Yoshida et al., 2020) (Figure 3).

Figure 3

Number of Publications by Year



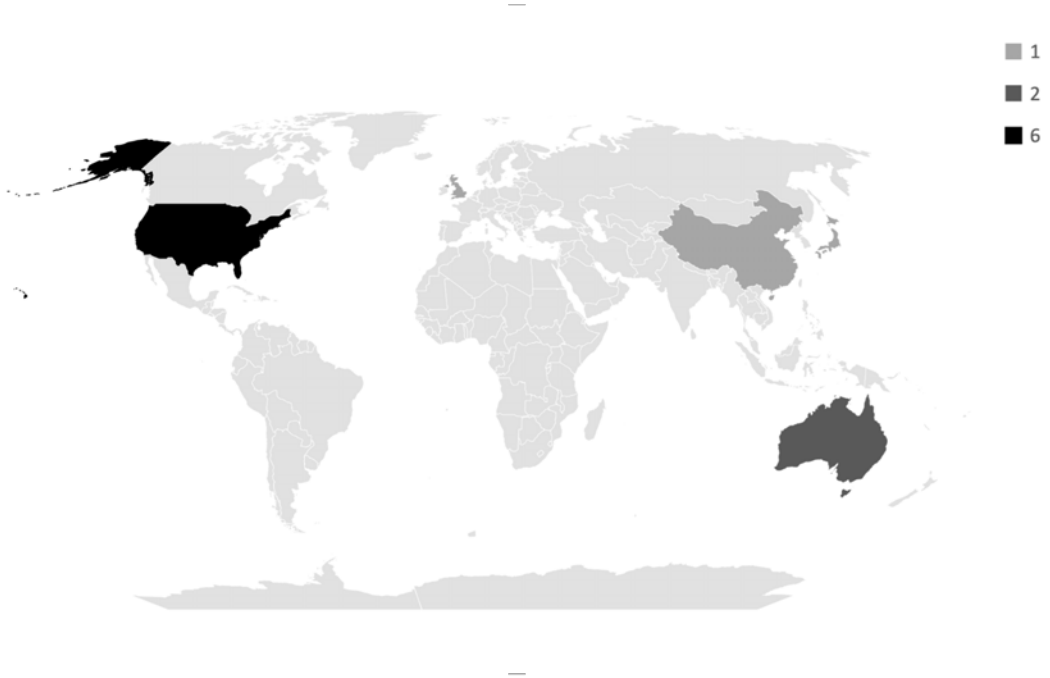
Publication Country

Figure 4 displays the various countries of publication of the included studies. More than half of the records were published in the United States of America (Arsenault & Atwood, 1991; Browner & Bessire, 2004; Freeland et al., 2015; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Urban & Hazelwood, 2019). However, two were published in

Australia (McAllister, 2005; Sharma et al., 2012), one in Japan (Yoshida et al., 2020), one in China (Luo et al., 2022), and one in the United Kingdom (Kennedy et al., 2019).

Figure 4

Record Publication Frequency and Location



Citation: Powered by Bing, Australian Bureau of Statistics, GeoNames, Microsoft, Navinfo, Open Places, OpenStreetMap, TomTom, Zenrin

Record Type

Three types of records were found among the 11 included records. Most of the records were journal articles (Arsenault & Atwood, 1991; Browner & Bessire, 2004; Freeland et al., 2015; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Kennedy et al., 2019; Luo et al., 2022; Sharma et al., 2012; Yoshida et al., 2020), while one record was a periodical article (Urban & Hazelwood, 2019), and one record was a doctoral thesis (McAllister, 2005).

Data Type

Two records did not include data (Arsenault & Atwood, 1991; Urban & Hazelwood, 2019). Seven records presented solely quantitative data (Browner & Bessire, 2004; Freeland et al., 2015; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Luo et al., 2022; Sharma et al., 2012; Yoshida et al., 2020), while the remaining two records presented qualitative and quantitative data (Kennedy et al., 2019; McAllister, 2005).

Study Type

Various study designs were included in the final 11 records. Two of the records reported information that was not presented as a study (Arsenault & Atwood, 1991; Urban & Hazelwood, 2019). Additionally, six records were presented as cross-sectional studies (Browner & Bessire, 2004; Freeland et al., 2015; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Luo et al., 2022; Sharma et al., 2012). Two records were presented as mixed methods studies (Kennedy et al., 2019; McAllister, 2005). One record was presented as a prospective, descriptive study (Yoshida et al., 2020).

Author Discipline

Most of the records were authored by a SLP (Arsenault & Atwood, 1991; Freeland et al., 2015; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; McAllister, 2005; Urban & Hazelwood, 2019; Sharma et al., 2012). Three of the records were authored by a nurse (Browner & Bessire, 2004; Luo et al., 2022; Yoshida et al., 2020), and one of the records was authored by a physiology student (Kennedy et al., 2019).

Assessment Protocol

The following protocols were defined: the Dysphagia Competency Verification Tool (DCVT), a modified version of the DCVT, a competency-based assessment utilizing a Visual

Analog Scale (VAS), a Massachusetts General Hospital (MGH) protocol for developing independence in the diagnosis and treatment of dysphagia with practicing clinicians (on-the-job training), a competency fair, a medical mannequin training including didactic training and assessment, a video and live competency performance assessment, a VAS tool, a questionnaire, a written and performance assessment, and a FEES education program. Two of the records were based on the same protocol, the DCVT (Hazelwood et al., 2022; Urban & Hazelwood, 2019).

Assessment Protocol Scoring

Three of the records were based on protocols utilizing a VAS (Kennedy et al., 2019; McAllister, 2005; Sharma et al., 2012), and three other records were based on protocols utilizing a Likert or ordinal scale (Hazelwood et al., 2022; Luo et al., 2022; Yoshida et al., 2020). Two records are based on protocols utilizing a performance assessment (Arsenault & Atwood, 1991; Freeland et al., 2015). Five of the 11 included records were based upon a protocol that could be administered as a self-assessment (Hazelwood et al., 2022; Urban & Hazelwood, 2019; Kennedy et al., 2019; McAllister, 2005; Luo et al., 2022); eight of the 11 records discussed protocols that could be administered by another SLP (Arsenault & Atwood, 1991; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Urban & Hazelwood, 2019; Sharma et al., 2012) or another trained professional (Browner & Bessire, 2004; Freeland et al., 2015; Yoshida et al., 2020). Three records discuss a protocol that can be administered as a self-assessment *or* by a trained professional (Hazelwood et al., 2022; McAllister, 2005; Urban & Hazelwood, 2019). Three records did not provide detailed information on assessment protocol scoring (Browner & Bessire, 2004; Hoepner & Hemmerich, 2020; Urban & Hazelwood, 2019).

Assessment Protocol Focus

Four out of 11 final records assessed the participant on the use or knowledge of instrumentation (Arsenault & Atwood, 1991; Hazelwood et al., 2022; Urban & Hazelwood, 2019; Yoshida et al., 2020). The protocol described in Urban and Hazelwood's record assesses the competency of the study participant for VFSS, FEES, and HRM. Urban and Hazelwood's record is the only record to describe a protocol that assesses the competency of the participant's knowledge and clinical skills of HRM (Urban & Hazelwood, 2019). The protocol discussed by Hazelwood et al. (2022) assesses competency of the participant with VFSS and FEES, regarding instrumentation. The protocol discussed in Arsenault and Atwood's record assesses the competency of the participant's use and knowledge of Modified Barium Swallow Studies (MBSS), also known as VFSS (Arsenault & Atwood, 1991). Yoshida et al. discuss a protocol that assesses the competency of the participant's use and knowledge of FEES (Yoshida et al., 2020). Many records describe protocols that are utilized to measure the subject's competency with clinical swallow evaluations (Arsenault & Atwood, 1991; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; McAllister, 2005; Sharma et al., 2012; Urban & Hazelwood, 2019). Three records discuss protocols that address understanding theoretical knowledge of dysphagia, including signs and symptoms (Arsenault & Atwood, 1991; Luo et al., 2022; Sharma et al., 2012). Seven records discuss metrics that assess the participant's competency in the treatment of dysphagia (Arsenault & Atwood, 1991; Browner & Bessire, 2004; Hazelwood et al., 2022; Luo et al., 2022; McAllister, 2005; Sharma et al., 2012; Urban & Hazelwood, 2019). Browner and Bessire and Kennedy et al.'s records discuss protocols that assess areas of speech-language pathology

other than dysphagia, including nutrition, aphasia, and dysarthria (Browner & Bessire, 2004; Kennedy et al., 2019).

Skills Assessed

A wide variety of skills were assessed within the 11 assessment protocols. Administration and/or understanding of swallow screenings and clinical swallow evaluations were assessed within five assessment protocols (Arsenault & Atwood, 1991; Freeland et al., 2015; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Urban & Hazelwood, 2019). Administration and/or understanding of instrumental and non-instrumental assessments were assessed within multiple assessment protocols (Arsenault & Atwood, 1991; Hazelwood et al., 2022; Luo et al., 2022; McAllister, 2005; Sharma et al., 2012; Urban & Hazelwood, 2019; Yoshida et al., 2020). Yoshida et al. (2020) assessed skills pertaining only to FEES. Three records discussed assessment protocols that assessed the participant's knowledge and understanding of the theoretical knowledge of dysphagia (Arsenault & Atwood, 1991; Luo et al., 2022; Sharma et al., 2012). Arsenault and Atwood (1991) and Hoepner and Hemmerich (2020) presented assessment protocols that assessed the participants on timely and appropriate documentation skills. Also, two assessment protocols assessed the participant's ability to effectively communicate with interdisciplinary professionals, including referral of the patient to the appropriate provider (Arsenault & Atwood, 1991; Hoepner & Hemmerich, 2020). Additionally, three assessment protocols assess the participant's knowledge and/or ability to educate and counsel patients, caregivers, and other professionals on the prevention, management, and treatment of dysphagia (Arsenault & Atwood, 1991; Browner & Bessire, 2004; McAllister, 2005). Furthermore, seven assessment protocols assess the participants' knowledge and/or implementation of appropriate treatment techniques and programs for

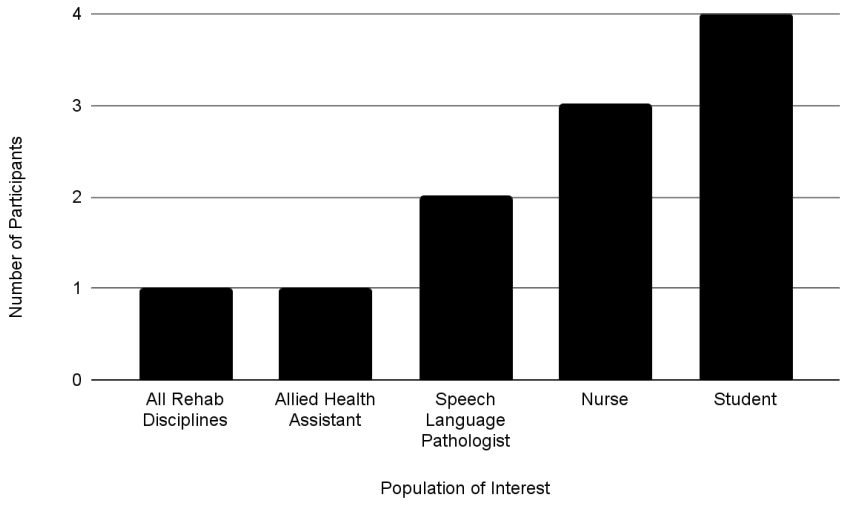
individual patients (Arsenault & Atwood, 1991; Browner & Bessire, 2004; Hazelwood et al., 2022; Luo et al., 2022; McAllister, 2005; Sharma et al., 2012; Urban & Hazelwood, 2019). However, the records did not describe the depth or specific skills assessed regarding the participant's knowledge or implementation of the treatment techniques and programs.

Population of Interest

Six of the final records examined students (Arsenault & Atwood, 1991; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Kennedy et al., 2019; McAllister, 2005; Urban & Hazelwood, 2019), three records focused on nurses (Freeland et al., 2015; Luo et al., 2022; Yoshida et al., 2020), two focused on SLPs (Arsenault & Atwood, 1991; Urban & Hazelwood, 2019), one focused on all rehabilitation disciplines (e.g., occupational therapy, physical therapy, speech therapy, nursing, and other unspecified rehabilitation disciplines) (Browner & Bessire, 2004), and one focused on allied health assistants (Sharma et al., 2012) (Figure 5).

Figure 5

Final Records Population of Interest



Sample Size

Nine out of the 11 final records included human subject participants (Browner & Bessire, 2004; Freeland et al., 2015; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Kennedy et al., 2019; Luo et al., 2022; McAllister, 2005; Sharma et al., 2012; Yoshida et al., 2020). Of these nine studies, the mean sample size was 160.4 participants. The median sample size was 72 participants, and the range was 781 participants (ranging from 1 to 782).

Participant Setting

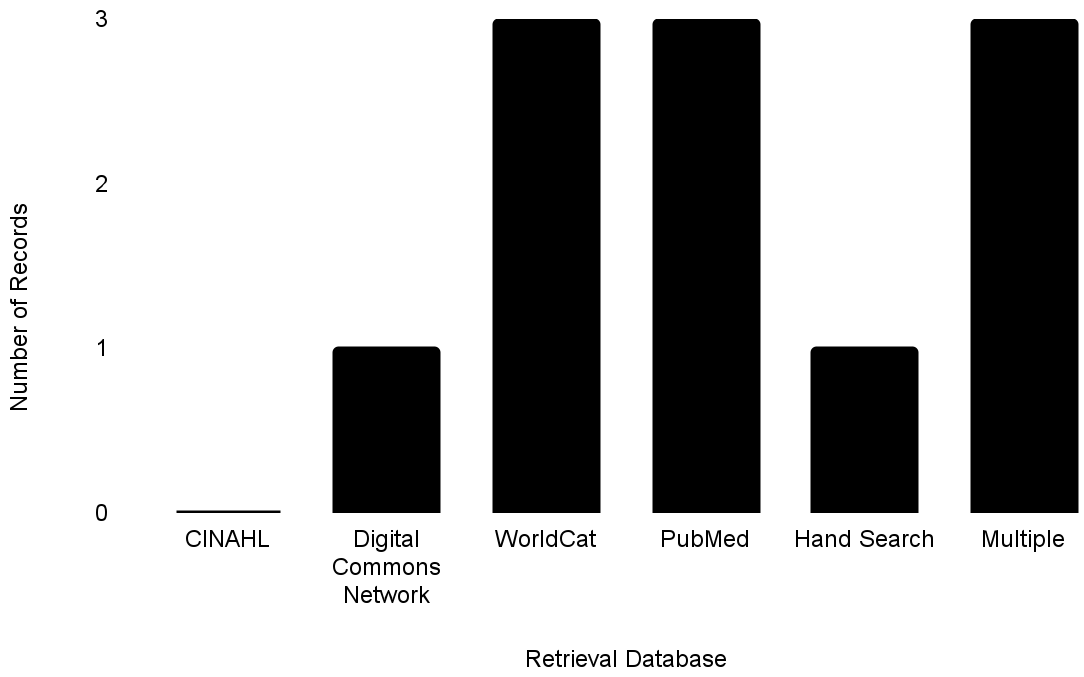
The participant setting varied greatly. Most studies were conducted in medical (Arsenault & Atwood, 1991; Freeland et al., 2015; Luo et al., 2022; Urban & Hazelwood, 2019; Yoshida et al., 2020) and university (Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Kennedy et al., 2019; McAllister, 2005) settings. One study was conducted in a rehabilitation setting (Browner & Bessire, 2004), and one other study utilized telerehabilitation (Sharma et al., 2012).

Database Extraction

All records retrieved from CINAHL were also retrieved from other databases. One record each was retrieved from both Digital Commons Network (Hazelwood et al., 2022) and the hand search (McAllister, 2005). Also, three records were retrieved from WorldCat (Arsenault & Atwood, 1991; Urban & Hazelwood, 2019; Yoshida et al., 2020) and PubMed (Browner & Bessire, 2004; Kennedy et al., 2019; Luo et al., 2022). Three records were also retrieved from multiple databases: Freeland et al. was retrieved from PubMed and WorldCat, Hoepner and Hemmerich's record was retrieved from PubMed and CINAHL, and Sharma et al. was retrieved from PubMed and WorldCat (Freeland et al., 2015; Hoepner & Hemmerich, 2020; Sharma et al., 2012).

Figure 6

Number of Records by Retrieval Database



Discussion

Specific Aim 2: *Compare Metrics*

The findings of this scoping review suggest that a standardized metric to assess competence in dysphagia among healthcare providers is needed to improve the training and maintain healthcare providers' competence in dysphagia management. This study confirmed that there is no standardized protocol developed for assessing competence in dysphagia among healthcare providers. Additionally, there is no single standardized methodology used to collect data regarding competence variables among the records reviewed, nor is there evidence for the validity and reliability of these records. Future standardized protocols that are created should consider the assessment of not only speech-language pathologists but also all other interdisciplinary healthcare providers who are involved in the management of dysphagia. Doing so will allow healthcare providers to improve education opportunities to meet appropriate competence standards, which will lead to better patient care and health outcomes.

Miller states that there is not one methodological type of test, whether subjective or objective, that can fully encompass and assess all areas in which a healthcare provider is competent (Miller, 1990). The COMPASS, as previously discussed, offers an assessment of competence that includes a subjective *and* objective format; however, this assessment of competence measures multiple areas of speech-language pathology, rather than dysphagia management alone and is designed to assess only students (Speech Pathology Australia, COMPASS). While the DCVT, as discussed in the beginning, is an assessment of competence, this assessment only contains an objective format; therefore, missing the

subjective assessment measures that help to further gather information about the participant (ASHA, 2019; Hazelwood et al., 2022).

Three records discuss the theoretical knowledge of dysphagia (Arsenault & Atwood, 1991; Luo et al., 2022; Sharma et al., 2012): therefore, assessing the first level of Miller's hierarchy, knowledge. Four of the records described assessment metrics that assess the competency of the participant regarding the use and/or knowledge of instrumentation (Hazelwood et al., 2022; Luo et al., 2022; Sharma et al., 2012; Urban & Hazelwood, 2019); therefore, assessing the foundational concepts of Miller's hierarchy, which are knowledge and competence. Five of the final records described assessment metrics that assess the competence of the participant regarding clinical swallow evaluations (Hazelwood et al., 2022; Luo et al., 2022; McAllister, 2005; Sharma et al., 2012; Urban & Hazelwood, 2019); therefore, assessing the foundational concepts of Miller's hierarchy. Six of the assessment metrics assessed the participant's competency and understanding of treatment programs and techniques (Browner & Bessire, 2004; Hazelwood et al., 2022; Luo et al., 2022; McAllister, 2005; Sharma et al., 2012; Urban & Hazelwood, 2019); once again assessing the foundational concepts of Miller's hierarchy, knowledge and competence. Five of the final 11 assessment metrics assess the participant according to the third and fourth levels of Miller's hierarchy of performance and action. Five assessment metrics assess the participants' skills during the administration of swallowing screenings and/or assessment measures (Arsenault & Atwood, 1991; Freeland et al., 2015; Hoepner & Hemmerich, 2020; Sharma et al., 2012; Yoshida et al., 2020). Two assessment metrics assess the participants' treatment skills during the duration of a treatment session (Arsenault & Atwood, 1991; Sharma et al., 2012).

Eight records describe assessment metrics that are subjective assessments (Arsenault & Atwood, 1991; Freeland et al., 2015; Hazelwood et al., 2022; Hoepner & Hemmerich, 2020; Kennedy et al., 2019; McAllister, 2005; Urban & Hazelwood, 2019; Yoshida et al., 2020). Zero records describe assessment metrics that are objective assessments alone. Two records describe assessment metrics that are both, subjective and objective assessments (Luo et al., 2022; Sharma et al., 2012). One record did not provide enough information regarding the scoring and the type of assessment metric (Browner & Bessire, 2004).

Sharma et al. (2012) discussed the written assessment and performance assessment by SLPs. This assessment protocol contained the following: written assessment, multiple interviews, and performance assessments. The assessment protocol assessed by Sharma et al. (2012) was designed to assess an allied health assistant in the following areas: theoretical knowledge of dysphagia; signs, symptoms, and causes of dysphagia; understanding of the role of the SLP in dysphagia; dysphagia assessment and management; and patient positioning for swallow assessment.

Luo et al. (2022) discussed a questionnaire-based assessment protocol. This assessment protocol contained the following: personal qualitative information, multiple choice questions, and multiple Likert scales. The assessment protocol assessed by Luo et al. (2022) was designed to assess geriatric nurses in the following areas: theoretical knowledge of dysphagia, attitudes towards dysphagia care, management of dysphagia in the elderly patient, risk factors of dysphagia, and assessment and intervention measures.

While Sharma et al. (2012) and Luo et al. (2022) both describe an assessment protocol that is both, objective and subjective, the assessment protocol described in Luo et al. (2022) does not assess the third or fourth levels of Miller's hierarchy, performance and

action. However, Sharma assesses the participant on various levels of Miller's hierarchy from knowledge to action. According to Miller's ideology, the assessment metric described by Sharma et al. most effectively and accurately assesses the competence of the healthcare provider in dysphagia management due to the objective and subjective format of the assessment metric and the assessment of various levels of Miller's hierarchy and could be utilized as a basis for future development of a standardized metric to assess healthcare provider's competence in dysphagia management (Sharma et al., 2012).

Many researchers and theorists believe that multiple methods of assessment are needed to fully assess all the areas of competence of a healthcare provider (Hager et al., 1994; Lichtenberg et al., 2007; Miller, 1990). However, in order to create an assessment of competence, two things are needed: a definition of competence and the various competencies to be assessed. While this study operationally defines competence using Moghabghab et al.'s definition of competence, many definitions exist (Moghabghab et al., 2018). For example, Epstein and Hundert propose the following definition: "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and the community being served" (Epstein & Hundert, 2002). A universal definition of competence must be understood as the basis of an assessment of competence. Furthermore, a measurable set of competencies and minimal levels of competence for the various levels of healthcare providers must be contrived before moving forward in the development of an assessment of competence (Hager et al., 1994; Lichtenberg et al., 2007).

Limitations

This study has four major limitations. The search was limited to records published in English, which significantly reduced the number of records included in this scoping review and decreased geographical and linguistic diversity. This may show how our findings regarding the assessment of competence in dysphagia management among healthcare providers are not represented globally. Additionally, there is an inherent bias in the research question because it is assumed that competence in dysphagia management is, in fact, being assessed among healthcare providers. If providers are not applying or reporting self-assessment in their clinical practice of dysphagia management, then no evidence for standardized metrics to assess competence in dysphagia would have been generated in our literature search. Also, if internal metrics are being used within facilities, these metrics were most likely not reported in peer-reviewed literature. Therefore, no evidence for these internal metrics would have been generated in our literature search. Furthermore, an additional limitation was discovered within the search for records due to the lack of a universal definition of competence. Reviewers displayed more difficulty with agreement during the full text review due to the word “competence” being written as “competency”, “skills checklist”, “knowledge, attitude, and skills”, etc. Lastly, a limitation identified within the results of our study is the lack of detail regarding specific skills that many articles provided. This limited our discussion, as one article did not provide specific skills assessed and others did not provide a detailed list of skills assessed.

Future Studies

The findings of this scoping review will help to inform future studies by supporting the development of a standardized metric to assess competence in dysphagia management among healthcare providers.

Conclusion

This scoping review identified and explored current literature related to the assessment of competence in dysphagia management among healthcare providers. Existing research on this topic is limited. The records explored in this scoping review discussed multiple assessments of competence in dysphagia management among healthcare providers. There is no current evidence of a standardized protocol or methodology utilized by healthcare providers for dysphagia management. The findings of this scoping review will aid in the development of a standardized metric to assess competence in dysphagia management among healthcare providers, which will inform professional practice patterns in the area of dysphagia management.

References

Abdel Jalil, A. A., Katzka, D. A., & Castell, D. O. (2015). Approach to the patient with dysphagia. *The American Journal of Medicine*, *128*(10). https://doi.org/10.1016/j.amjmed.2015.04.026

American Speech-Language-Hearing Association (ASHA). (2020). 2020 Standards and Implementation Procedures for the Certificate of Clinical Competence in Speech-Language Pathology. American Speech-Language-Hearing Association. https://www.asha.org/certification/2020-slp-certification-standards/

Arsenault, J., & Atwood, J. (1991). Development of a competency-based training model for dysphagia management in a medical setting. *Seminars in Speech and Language, 12(03), 236–245.* https://doi.org/10.1055/s-2008-1064225

Attrill, S., White, S., Murray, J., Hammond, S., & Doeltgen, S. (2018). Impact of oropharyngeal dysphagia on healthcare cost and length of stay in hospital: a systematic review. *BMC Health Services Research*, *18*(1), 594. https://doi.org/10.1186/s12913-018-3376-3

Azer, S. A., Kanugula, A. K., & Kshirsagar, R. K. (2023). Dysphagia. In *StatPearls*. StatPearls Publishing.

Bernardes, R. A., Cruz, A., Neves, H., Parola, V., & Catela, N. (2022). Screening tools designed to assess and evaluate oropharyngeal dysphagia in adult patients: A scoping review. *Nursing Reports (Pavia, Italy)*, *12*(2), 245–258. https://doi.org/10.3390/nursrep12020025

Boczko, F., & Feightner, K. (2007). Dysphagia in the older adult. *Topics in Geriatric Rehabilitation*, *23*(3), 220–227. https://doi.org/10.1097/01.tgr.0000284766.30549.06

Browner, C. M., & Bessire, G. D. (2004). Developing and implementing transdisciplinary rehabilitation competencies. *Spinal Cord Injury Nursing, 21(4), 198–205.* Accessed at: https://europepmc.org/article/med/15794419

Christovam, C. A., Manica, D., Schweiger, C., Sekine, L., Miranda, P. P., & Levy, D. S. (2021). Instrumental swallowing assessments in the neonatal and pediatric populations: A systematic review. *Dysphagia*, *37(5), 1183–1200.* https://doi.org/10.1007/s00455-021-10379-0

Clark, G. F., Avery-Smith, W., Wold, L. S., Anthony, P., & Holm, S. E., Eating and Feeding Task Force, & Commission on Practice (2007). Specialized knowledge and skills in feeding, eating, and swallowing for occupational therapy practice. *The American Journal of Occupational Therapy: Official Publication of the American Occupational Therapy Association*, *61*(6), 686–700. https://doi.org/10.5014/ajot.61.6.686

Clavé, P., & Shaker, R. (2015). Dysphagia: Current reality and scope of the problem. *Nature Reviews Gastroenterology & Hepatology*, *12*(5), 259–270. https://doi.org/10.1038/nrgastro.2015.49

Covidence systematic review software, Veritas Health Innovation, Melbourne, Australia. Available at www.covidence.org

DePippo, K. L., Holas, M. A., & Reding, M. J. (1992). Validation of the 3-oz water swallow test for aspiration following stroke. *Archives of Neurology*, *49*(12), 1259–1261. https://doi.org/10.1001/archneur.1992.00530360057018

Ekberg, O., Hamdy, S., Woisard, V. Wuttge-Hanning, A., & Ortega, P. (2022). Social and psychological burden of dysphagia: its impact on diagnosis and treatment. *Dysphagia,* 17, 139–146. https://doi.org/10.1007/s00455-001-0113-5

Epstein, R. M., & Hundert, E. M. (2002). Defining and assessing professional competence. *JAMA*, *287*(2), 226. https://doi.org/10.1001/jama.287.2.226

Freeland, T., Pathak, S., Garrett, R., Anderson, J., & Daniels, S. (2015). Using medical mannequins to train nurses in stroke swallowing screening. *Dysphagia, 31*(1)*, 104–110.*

https://doi.org/10.1007/s00455-015-9666-6

Garand, K. L. F., McCullough, G., Crary, M., Arvedson, J. C., & Dodrill, P. (2020). Assessment across the life span: The clinical swallow evaluation. *American Journal of Speech-Language Pathology*, *29*(2S), 919–933. https://doi.org/10.1044/2020_AJSLP-19-00063

Garipoğlu, Gökçen. (2019). Dysphagia awareness among dietitians. *Progress in Nutrition. 21*. https://doi.org/10.23751/pn.v21i2.7587

Graner, D., Pressman, H., & Wagner, L. C. (2010). Maintaining slps as the preferred providers of dysphagia services: A call to action. *Perspectives on Swallowing and Swallowing Disorders (Dysphagia)*, *19*(4), 121–125. https://doi.org/10.1044/sasd19.4.121

Hager, P., Gonczi, A., & Athanasou, J. (1994). General issues about assessment of competence. *Assessment & Evaluation in Higher Education*, *19*(1), 3–16. https://doi.org/10.1080/0260293940190101

Hazelwood, R. J., Bouldin, E. D., Burford, I. R., and Steffen, E. A. (2022). Speech-language pathology graduate student clinicians' self-perceived competency in dysphagia management. *Teaching and Learning in Communication Sciences & Disorders, 6*(3)*, Article 4.* https://doi.org/10.30707/TLCSD6.3.1664996985.113836

Hoepner, J. K., & Hemmerich, A. L. (2020). Using formative video competencies and summative in-person competencies to examine preparedness for entry-level professional practice. *Seminars in Speech and Language, 41*(04)*, 310–324.* https://doi.org/10.1055/s-0040-1713782

Jean, A. (2001). Brain stem control of swallowing: Neuronal network and cellular mechanisms. *Physiological Reviews*, *81*(2), 929–969. https://doi.org/10.1152/physrev.2001.81.2.929

Kennedy, G., Rea, J. N., & Rea, I. M. (2019). Prompting medical students to self–assess their

learning needs during the ageing and health module: A mixed methods study. *Medical Education Online, 24(1), 1579558.* https://doi.org/10.1080/10872981.2019.1579558

Lancaster J. (2015). Dysphagia: its nature, assessment and management. *British Journal of Community Nursing*, *Suppl Nutrition*, S28–S32. https://doi.org/10.12968/bjcn.2015.20.Sup6a.S28

Langmore, S. E., Schatz, K., & Olson, N. (1991). Endoscopic and videofluoroscopic evaluations of swallowing and aspiration. *The Annals of Otology, Rhinology, and Laryngology*, *100*(8), 678–681. https://doi.org/10.1177/000348949110000815

Lichtenberg, J. W., Portnoy, S. M., Bebeau, M. J., Leigh, I. W., Nelson, P. D., Rubin, N. J., Smith, I. L., & Kaslow, N. J. (2007). Challenges to the assessment of competence and competencies. *Professional Psychology: Research and Practice, 38*(5), 474–478. https://doi.org/10.1037/0735-7028.38.5.474

Logemann, J.A. (1986). Manual for the videofluorographic study of swallowing. Little, Brown.

Luo, C.-R., Wei, J.-Y., & Zhang, X.-M. (2022). A multicenter cross-sectional survey of the knowledge, attitudes, and practices of geriatric nurses regarding dysphagia care. *Annals of Palliative Medicine, 11(1), 16–25.* https://doi.org/10.21037/apm-21-3672

Martin-Harris, B. (2015). *Standardized training in swallowing physiology: Evidence-based assessment using the modified barium swallow impairment profile (MBSImP) approach.* Northern Speech Services.

Martin-Harris, B., Brodsky, M. B., Michel, Y., Castell, D. O., Schleicher, M., Sandidge, J., Maxwell, R., & Blair, J. (2008). MBS measurement tool for swallow impairment—MBSImP: Establishing a standard. *Dysphagia, 23(4), 392–405*. https://doi.org/10.1007/s00455-008-9185-9

McAllister, S. (2005). Competency based assessment of speech pathology students' performance in the workplace. [Thesis, The University of Sydney]. *The University of Sydney.*

McMullan, M., Endacott, R., Gray, M. A., Jasper, M., Miller, C. M. L., Scholes, J., & Webb, C. (2003). Portfolios and assessment of competence: A review of the literature. *Journal of Advanced Nursing, 41(3), 283–294*. https://doi.org/10.1046/j.1365-2648.2003.02528.x

Miles, A., McFarlane, M., Kainth, P., & Parmar, P. (2014). Interdisciplinary management of dysphagia. *Nursing and Residential Care*, *16*(10), 561–567. https://doi.org/10.12968/nrec.2014.16.10.561

Miller, E., & Colquhoun, H. (2020). The importance and value of reporting guidance for scoping reviews: A rehabilitation science example. *Australian Journal of Advanced Nursing*, *37*(4). https://doi.org/10.37464/2020.374.148

Miller, G. E. (1990). The assessment of clinical skills/competence/performance. *Academic Medicine*, *65*(9). https://doi.org/10.1097/00001888-199009000-00045

Moghabghab, R., Tong, A., Hallaran, A., & Anderson, J. (2018). The difference between competency and competence: A regulatory perspective. *Journal of Nursing Regulation*, *9*(2), 54–59. https://doi.org/10.1016/s2155-8256(18)30118-2

Molfenter, S. M., Amin, M. R., Balou, M., Herzberg, E. G., & Frempong-Boadu, A. (2023). A scoping review of the methods used to capture dysphagia after anterior cervical discectomy and fusion: The need for a paradigm shift. *European Spine Journal*, *32*(3), 969–976. https://doi.org/10.1007/s00586-022-07515-1

Nawaz, S., & Tulunay-Ugur, O. E. (2018). Dysphagia in the older patient. *Otolaryngologic Clinics of North America, 51(4), 769–777*. https://doi.org/10.1016/j.otc.2018.03.006

Neubauer, N. P. (2019). Dysphagia management in the public-school setting: The education and

training needs of public-school speech-language pathologists. Seton Hall University Dissertations and Theses (ETDs).

Page, M. J., McKenzie, J., Bossuyt, P., Boutron, I., Hoffmann, T., Mulrow, C., Shamseer, L., Tetzlaff, J., Akl, E., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E., Mayo-Wilson, E., McDonald, S., … Moher, D. (2020). The prisma 2020 statement: An updated guideline for reporting systematic reviews. *British Medical Journal, 372,* n71. https://doi.org/10.31222/osf.io/v7gm2

Pelletier, C. A. (2004). What do certified nurse assistants actually know about dysphagia and feeding nursing home residents? *American Journal of Speech-Language Pathology*, *13*(2), 99–113. https://doi.org/10.1044/1058-0360(2004/012)

Roy Rosenzweig Center for History and New Media. (2016). Zotero [Computer software]. Retrieved from: www.zotero.org/download

Sharma, S., Ward, E. C., Burns, C., Theodoros, D., & Russell, T. (2012). Training the allied health assistant for the telerehabilitation assessment of dysphagia. *Journal of Telemedicine and Telecare, 18(5), 287–291.* https://doi.org/10.1258/jtt.2012.111202

Shune, S. E., & Namasivayam-MacDonald, A. (2020). Dysphagia-related caregiver burden: moving beyond the physiological impairment. *Perspectives of the ASHA Special Interest Groups*, *5*(5), 1282–1289. https://doi.org/10.1044/2020_persp-20-00067

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. *British Medical Journal Open*, *13*(2). https://doi.org/10.1136/bmjopen-2022-065121

Speech Pathology Australia. (2016). Compass®.

https://www.speechpathologyaustralia.org.au/SPAweb/Resources_For_Speech_Pathologists/COMPASS/SPAweb/Resources_for_Speech_Pathologists/COMPASS/COMPASS.aspx?hkey=b3f7f01e-5e73-4026-9ec5-3eb546a2d18a

Suiter, D. M., Sloggy, J., & Leder, S. B. (2014). Validation of the yale swallow protocol: A prospective double-blinded videofluoroscopic study. *Dysphagia*, *29*(2), 199–203. https://doi.org/10.1007/s00455-013-9488-3

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., … Straus, S. E. (2018). Prisma extension for scoping reviews (PRISMA-SCR): Checklist and explanation. *Annals of Internal Medicine, 169(7), 467–473.* https://doi.org/10.7326/m18-0850

Urban, M., & Hazelwood, R. J. (2019). Are you ready to manage dysphagia? *The ASHA Leader, 24(7), 38–39*. https://doi.org/10.1044/leader.otp.24072019.38

Vesey, S. (2013). Dysphagia and quality of life. *British Journal of Community Nursing, 18(Sup5*). https://doi.org/10.12968/bjcn.2013.18.sup5.s14

Vose, A. K., Kesneck, S., Sunday, K., Plowman, E., & Humbert, I. (2018). A Survey of clinician decision making when identifying swallowing impairments and determining treatment. *Journal of Speech, Language, and Hearing Research*, *61*(11), 2735–2756. https://doi.org/10.1044/2018_JSLHR-S-17-0212

Wieseke, A., Bantz, D., Siktberg, L., & Dillard, N. (2008). Assessment and early diagnosis of dysphagia. *Geriatric Nursing*, *29*(6), 376–383. https://doi.org/10.1016/j.gerinurse.2007.12.001

Wilmskoetter, J., Daniels, S. K., & Miller, A. J. (2020). Cortical and subcortical control of

swallowing—can we use information from lesion locations to improve diagnosis and treatment for patients with stroke? *American Journal of Speech-Language Pathology*, *29*(2S), 1030–1043. https://doi.org/10.1044/2019_ajslp-19-00068

Wolford, G., Fissel Brannick, S., & Strother, S. (2021). Clinical education outcomes and research directions in speech-language pathology: A scoping review. *Teaching and Learning in Communication Sciences and Disorders*, *5*(2). https://doi.org/10.30707/tlcsd5.2.1624983591.656565

Yoshida, M., Kagaya, H., Kamakura, Y., Miura, Y., Saitoh, E., Okawa, Y., & Sanada, H. (2020). Safety and the effectiveness of a new education program for nurses to assess swallowing function using fiberoptic endoscopic evaluation of swallowing (fees). *Japan Journal of Nursing Science, 17(2).* https://doi.org/10.1111/jjns.12313

Vita

Garnet Faith Robinson was born in 2000 to Cynthia (Cindy) and Robert (Casey) Robinson. She and her brother, Parker Robinson, grew up in Camden, South Carolina. Ms. Robinson graduated from Camden High School in May of 2018. In the fall of 2018, Ms. Robinson entered the University of South Carolina as a freshman. In May of 2021, three years later, she earned a Bachelor of Arts in Experimental Psychology.

Ms. Robinson began her graduate studies at Appalachian State University in August of 2021. For two years she served as a Graduate Assistant to Dr. Jordan Hazelwood, assisting with the research that prompted this thesis study. Ms. Robinson earned a Master of Science in Speech-Language Pathology in December of 2023. She plans to work as a medical speech-language pathologist in an outpatient pediatric setting.