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A Survey of Early-Career Speech-Language Pathologists: Determining Perceived Readiness for Clinical Management of Adults with Dysphagia After Completing Graduate School

Abstract

Several studies have identified a recurring trend that speech-language pathologists (S-LPs) in countries such as the United States (Caesar & Kitila, 2020), South Africa (Singh et al., 2015), and Malaysia (Kamal et al., 2012) report lower levels of confidence in dysphagia management, whether in comparison to other practice areas or in certain skill areas within the specialty of dysphagia. No data currently exists exploring self-perceptions of Canadian S-LP graduates with regards to clinical management of adults with dysphagia. Therefore, the purpose of this study was to determine the self-reported readiness of recently graduated Canadian S-LPs who manage dysphagia. Our survey was derived from a modified version of the Dysphagia Competency Verification Tool and distributed to graduates (Classes of 2018-2022) via four Canadian speech-language pathology program offices and direct emailing of graduates in select provinces. Of the 135 individuals who signed up to receive the survey, 92 eligible participants completed the survey. Median scores revealed that respondents perceived themselves to be comfortable with clinical skills related to general knowledge (i.e., educating patients), direct patient care, videofluoroscopic swallowing studies (VFSS), and basic flexible endoscopic evaluation of swallowing studies (FEES) skills. However, many graduates felt uncomfortable with select skills relating to dysphagia rehabilitation (i.e., providing a prognostic statement) and advanced FEES skills. Correlational analyses showed some associations between province of education and reported comfort levels in five of the survey items. Post-hoc comparisons were made between those who graduated pre-COVID and those who graduated post-COVID, the latter group scoring higher on select VFSS skills. Results emphasize the need for further research into S-LPs' preparedness following graduation and highlight potential areas for further development in Canadian graduate programs.

Keywords

dysphagia, competency, pedagogy, COVID-19

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Dysphagia (swallowing impairment) is a highly prevalent condition, impacting one in 25 adults each year and posing a significant economic burden to healthcare systems (Attrill et al., 2018; Bhattacharyya, 2014; Patel et al., 2018). High-quality dysphagia care is essential as the consequences of dysphagia can be profound. They include malnutrition, dehydration, reduced quality of life issues, increased length of hospital stay, aspiration pneumonia, and mortality (Altman et al., 2010; Cabre et al., 2014; Chen et al., 2009; Namasivayam & Steele, 2015). The demand for dysphagia services has grown over the last few decades and speech-language pathologists (SLPs) have since become the primary specialists in dysphagia (Steele et al., 2007). A survey of SLPs providing dysphagia services conducted by the Canadian speech-language pathology professional association, Speech-Language Audiology Canada (SAC), found that 68% of respondents reported the majority of the services they provide are dysphagia-related (SAC, 2017).

Feeding and swallowing disorders are one of nine listed areas for which entry-level SLPs must have knowledge, judgement, and skills (ASHA, 2020; Canadian Alliance of Audiologists and Speech-Language Pathologists Regulators, 2018). With such a wide scope of practice, educators have noted that it is increasingly difficult to cover all the core areas in sufficient depth over the course of a master's degree. It is essential that speech-language pathology students receive appropriate training in graduate programs to ensure they can provide high-quality dysphagia services. When comparing dysphagia management to other service areas within an SLP's scope of practice, there seems to be a greater emphasis on the relationship between mortality and dysphagia, as well as far greater entanglement with ethical and moral issues (Kenny, 2015; Olwen-Smith et al., 2013). Furthermore, there are complexities and challenges associated with assessment and intervention (Tippet, 2011). Dysphagia management is a complex, and at times contentious, area of clinical practice, therefore it is imperative for SLPs to be both highly competent and confident in their ability to provide dysphagia services.

Previous studies have demonstrated that self-efficacy is a predictor of performance (Bandura, 1982; Lee & Schmaman, 1987) and that self-reported levels of preparedness may indicate the quality of education received (Cantor et al., 1993). There has also been research to suggest a strong positive relationship between SLPs' clinical competencies and self-perceptions of their clinical ability (Pasupathy & Bogschutz, 2013). Over the past decade, studies exploring SLPs' self-perceived confidence and training in dysphagia management have been conducted in several countries, such as the United States (Caesar & Kitila, 2020), South Africa (Singh et al., 2015), and Malaysia (Kamal et al., 2012). A common theme found across these studies is that SLPs report lower levels of self-perceived confidence and competence in dysphagia management, whether in comparison to other areas of SLP practice (Singh et al., 2015), or in certain knowledge and skill areas within the specialty of dysphagia (Caesar & Kitila, 2020; Kamal et al., 2012).

Canadian SLP Education and Training

Accredited SLP programs in Canada have standardized curriculum expectations for dysphagia education (CAASPR, 2018; CACUP-ASLP, 2017), although there are some variances in the amount of dysphagia coursework (e.g., one semester vs. two semesters of coursework) and program teaching styles (e.g., didactic instruction vs. problem-based learning [PBL]). In addition to coursework, a minimum of 350 hours of direct clinical practice hours are needed to graduate;

however, there is no minimum required number of hours by disorder category (SAC, n.d.). Following graduation, only a select number of provincial regulatory bodies require a 6-month mentorship period for new clinicians entering practice (CASLPO, 2023). This is in contrast to countries such as the USA and New Zealand, which require that all graduates complete a clinical fellowship to aid in the transition between graduate studies to being an independent provider of clinical services (ASHA, 2020; New Zealand Speech-Language Therapists Association, 2015). Without guaranteed clinical placement hours in dysphagia nor a mandated mentorship period across the country, we sought to investigate whether new SLP graduates in Canada felt prepared to manage dysphagia caseloads in their first year of practice.

Purpose

No data currently exists on Canadian SLP graduates' preparedness to practice in the area of dysphagia, therefore the objectives of this study were to: a) investigate Canadian speech-language pathology graduates' self-perceived competence in dysphagia management; b) determine the clinical skills which graduates report having the least and greatest self-perceived competence in; and c) investigate whether there are certain associations within data collected (e.g., province of education). In examining recent graduates' self-perceptions and identifying areas of need, speech-language pathology programs and clinical educators can be more informed on the perceived quality of dysphagia education in Canada. This study also has the potential to allow educators to understand, and ideally target, any areas where students require additional learning, so that new students can enter the workplace with greater competency and confidence in dysphagia clinical practice.

Methods

This study was reviewed and approved by the Hamilton Integrated Research Ethics Board (HiREB #15267). Sharma et al.'s (2021) checklist for reporting of survey studies was used to ensure transparent reporting.

Survey. The study used a cross-sectional survey study design, collecting data pertaining to SLPs' perceived readiness for managing adults with dysphagia after completing graduate school in Canada. An electronic questionnaire using LimeSurvey software was designed to obtain information on self-reported comfort levels as well as participant demographics. Respondents were asked to reflect on their first year of clinical practice and rate their comfort level on a 5-point Likert-scale (1 = very uncomfortable, 2 = somewhat uncomfortable, 3 = unsure, 4 = somewhat comfortable, 5 = very comfortable) in all practice areas pertaining to dysphagia diagnosis, assessment, treatment, collaboration with other health care professionals, referrals, education, and advocacy. Our survey was based on the Dysphagia Competency Verification Tool (DCVT), a questionnaire used to systematically assess clinical competence for the provision of dysphagia services (ASHA, 2019), developed by the Special Interest Group (SIG) on Swallowing and Swallowing Disorders (Dysphagia; SIG 13) and by the American Board of Swallowing and Swallowing Disorders (AB-SSD) Joint Committee on Dysphagia Competencies. A study by Hazelwood and colleagues (2022) was the first to use a modified version of the DCVT with an ordinal scale to assess the self-perceived competency of speech-language pathology students in dysphagia management. Like Hazelwood and colleagues, our survey expanded the original binary

DCVT scale (“competent” or “inadequate”) to offer a broader range of scoring options. As the DCVT tool focuses on the scope of practice of SLPs in the United States, the items on the DCVT included on our survey were reviewed by two authors (initials redacted) to ensure its applicability within the Canadian context. The following skills were not included, as they required specialized training, were inapplicable to the study, or unsuitable for clinicians to be adequately prepared for in their first year of practice: three questions relating to population/setting specific skills, 14 questions relating to flexible endoscopic evaluation of swallow (FEES) skills, 22 questions relating to high-resolution manometry, and 25 questions relating to specialization and professional development. The final survey included 78 questions divided into four domains, plus an additional nine questions concerning demographic data:

- Clinical Swallow Assessment & Dysphagia Treatment-General Skills – 14 Questions
- Clinical Swallow Assessment & Dysphagia Treatment-Direct Patient Care – 26 Questions
- Videofluoroscopic Swallow Study (VFSS) – 29 Questions
- FEES – 9 Questions
- Demographic Data – 9 Questions

The first two domains (“general skills” and “direct patient care”) consisted of clinical skills necessary to assess swallowing function in a clinical setting. The former domain included tasks such as describing normal swallowing physiology and collaborating with team members regarding patient care, and the latter domain included items such as identifying when swallowing assessment and intervention is appropriate, as well as developing treatment plans based on clinical information. The VFSS and FEES domains include clinical skills related to conducting and interpreting VFSS and FEES, such as the demonstration of appropriate set-up and documenting and interpreting findings to support a treatment plan. Demographic questions queried respondents’ highest degree completed in speech-language pathology, how respondents identify (female, male, non-binary, etc.), province of training, current country of practice, number of years practicing as an SLP, primary work settings, number of clinical hours worked per week, and what area of practice comprises most of their caseload.

Respondents. Since there are approximately 350 individuals that graduate from speech-language pathology programs in Canada every year, this gave a potential pool of 1,750 graduates over a five-year span. With a population of 1,750 graduates, a sample of 92 participants was needed to achieve a confidence level of 95% and confidence interval of 10%. The target population for this study was SLPs currently providing dysphagia services, who had recently graduated from a Canadian university. The inclusion criteria were as follows: (a) currently practicing as a speech-language pathologist in Canada; (b) graduated from a Canadian university within the past five years; (c) currently working with adults with dysphagia; and (d) able to read and understand English.

Procedure. Participants were recruited through four speech-language pathology programs across Canada (University of Toronto, University of Western Ontario, McMaster University, Dalhousie University) who agreed to distribute the survey to their alumni list via email. Of note, other Canadian programs either did not respond to investigator emails or chose not to distribute the study information to their alumni. In addition, recruitment emails were sent to SLPs using publicly available databases in Ontario and British Columbia. Many other Canadian provinces have lists of SLPs registered in their provinces through provincial colleges, however, do not have the email

addresses of SLPs publicly available on their websites. Therefore, only clinicians in Ontario and British Columbia were emailed in this manner. A snowball sampling method was used to recruit additional participants, where those who received the survey link were encouraged to forward to other potentially eligible participants. Participants were also recruited through postings on the Speech-Language & Audiology Canada (SAC) website, social media pages (SLP Facebook groups) and using contacts found on SAC public databases.

Mailchimp (The Rocket Science Group, LLC, Atlanta, GA) was used to manage the respondent email list and calculate response rate. Prospective respondents were directed via a link from the recruitment materials to a landing page powered by Mailchimp, where they were asked to submit their email address if interested in participating in the survey. An automatic email with a link to the survey was sent to the email address provided, and a subsequent reminder email was sent one week after sign-up if the survey had still not been completed. The survey software was set to prevent multiple entries by the same participant (one response per token). Participants signaled consent by clicking through the first page of the survey, which included all study information, including inclusion criteria. Participants were also asked screening questions to determine their eligibility for the study.

Statistical Analyses. All statistical analyses were conducted using SPSS software (version 28). Descriptive statistics were used to summarize self-reported comfort levels across the four DCVT domains. Some participants did not answer all the questions, resulting in missing data. As such, missing responses were excluded from the analysis. Fisher's Exact Tests were used to investigate the potential relationship between province of education and self-reported comfort levels (variables chosen a priori). The provinces included were Ontario, British Columbia, Alberta, Nova Scotia, and Quebec, as no other provinces were denoted by participants. For the Fisher's Exact analyses, the original five-point Likert scales were converted to binary variables: 1 = uncomfortable (constituting very uncomfortable, somewhat uncomfortable, and unsure) and 2 = comfortable (very comfortable and somewhat comfortable). As our data had many cells with less than five responses for various questions (meaning a Chi-squared analysis was not appropriate), the binary transformation of this variable was necessary to analyze the data using a Fisher's Exact Test. An α value of 0.05 was adopted for all analyses.

Results

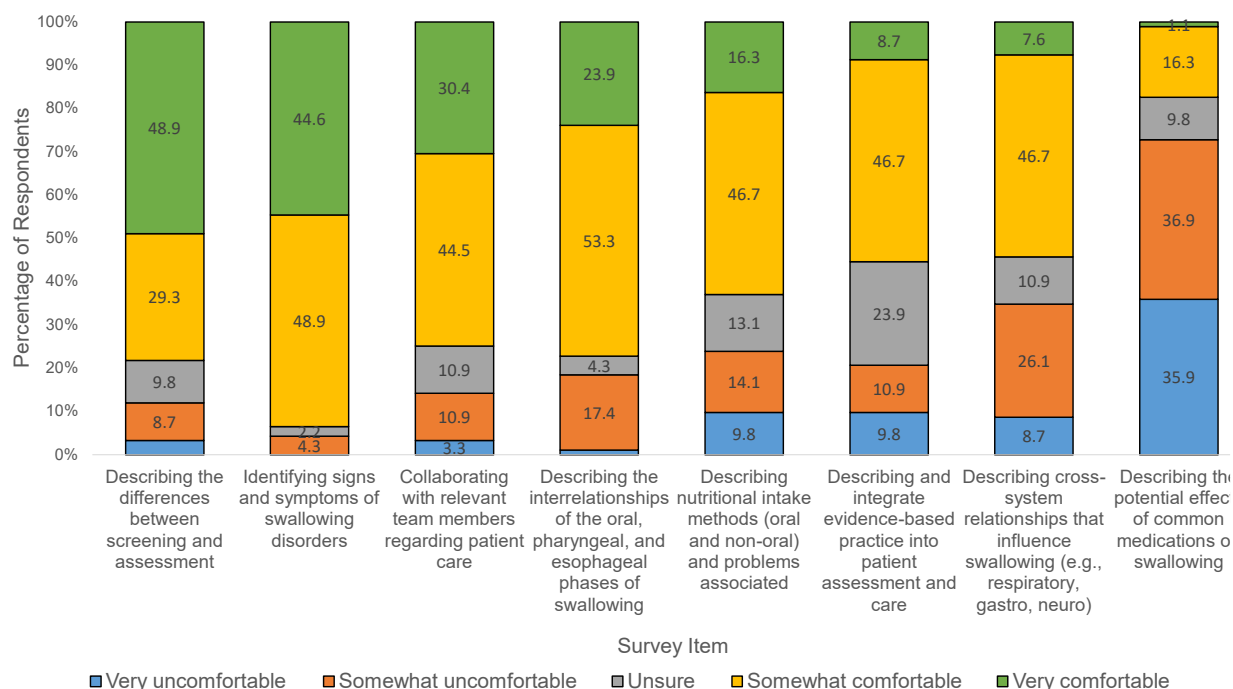
Description of Participants. Within the three-month window that the survey was open, the Mailchimp landing page received 319 visits, and 135 individuals submitted their email address to receive the survey. Although a total of 96 responses were received, only 92 met the criteria for inclusion in this study, with two individuals having graduated more than five years ago and two individuals practicing in the United States, yielding a response rate of 68% (92/135). The majority of SLP respondents completed their graduate education in Ontario (58%), British Columbia (15%), or Alberta (12%), with the remaining respondents having completed their programs in Nova Scotia (11%) and Quebec (4%). The most frequently reported primary employment settings were acute care (56%), private practice (10%), outpatient clinic (10%) and inpatient clinic (10%). Of the SLPs who chose to specify how they identify (female, male, non-binary, etc.), the results revealed a predominantly female respondent pool (93%).

SLP’s Perceived Comfort Levels for Providing Dysphagia Services. Overall, SLP graduates reported being somewhat comfortable providing dysphagia services during their first year of clinical practice. Median scores and interquartile ranges were calculated across the four DCVT domains (General Skills, Direct Patient Skills, VFSS, and FEES). Median scores for general dysphagia management (Mdn = 4, IQR = 3, 4) and skills relating to direct patient care (Mdn = 4, IQR = 2, 4) indicated that respondents were somewhat comfortable with these skill areas. Regarding instrumental assessment and knowledge, respondents were more comfortable with VFSS skills (Mdn = 4, IQR = 2, 4) compared to FEES skills (Mdn = 2, IQR = 1, 3).

Areas of Most and Least Comfort. Furthermore, descriptive analyses were used to determine the clinical skills which graduates report having the greatest and least self-perceived comfort. Figure 1 displays SLPs’ rating of self-perceived comfort in general dysphagia knowledge and skill areas. The proportion of SLPs reporting feeling very or somewhat comfortable was highest for describing the difference between screening and assessment (78%). Conversely, 55% of SLPs reported feeling very or somewhat comfortable with describing and integrating evidence-based practice into patient assessment and care. The skill with lowest (17%) proportion of SLPs reporting feeling comfortable was describing the potential effects of medications on swallowing.

Figure 1

General Knowledge/Skills Which Graduates Reporting Having the Greatest and Least Perceived Comfort

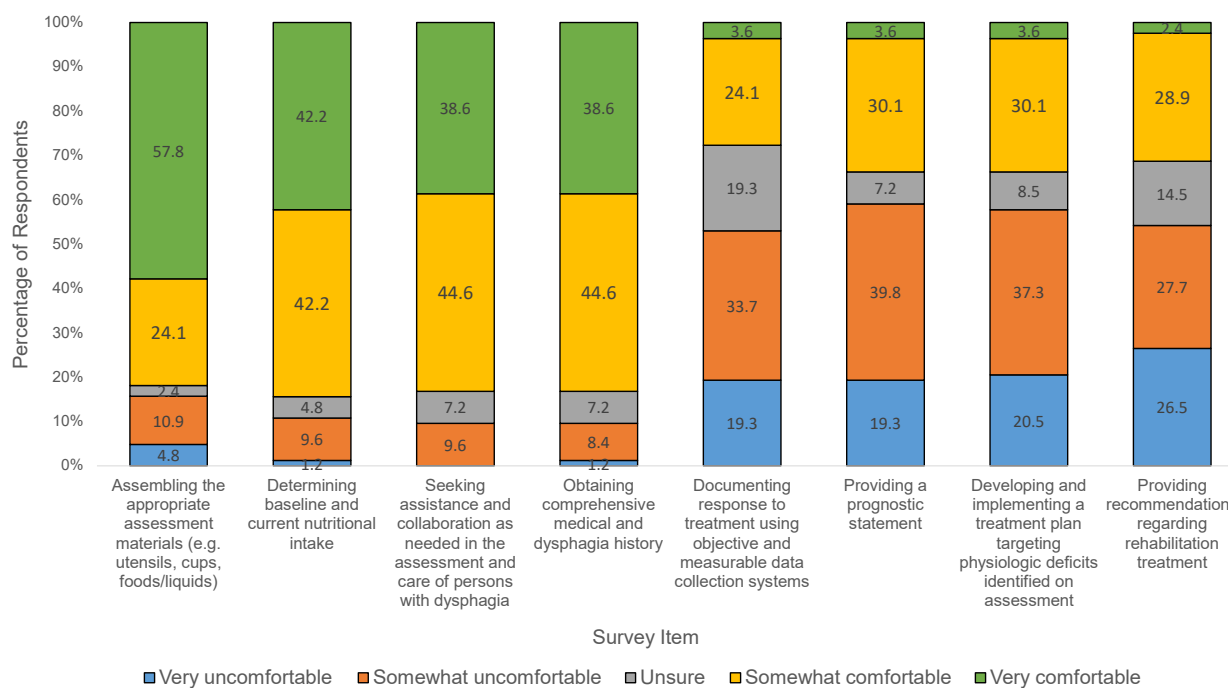


Note. The four columns on the left display survey items with the highest percentage of respondents indicating a “comfortable” comfort level (very or somewhat comfortable) and the four columns on the right display survey items with the highest number of respondents indicating “uncomfortable” (very or somewhat uncomfortable). See Appendix Table 4 for an overview of all survey items.

Results from direct patient care questions are summarized in Figure 2. The highest proportion of respondents reported feeling comfortable with determining baseline and current nutritional intake (84%) and seeking assistance and collaborating with hospital staff (83%). Furthermore, there were select skills in this domain relating to dysphagia rehabilitation that more than 50% of respondents reported feeling uncomfortable with, such as providing a prognostic statement (58% uncomfortable), developing and implementing a treatment plan targeting deficits identified on assessment (58% uncomfortable), providing recommendations regarding rehabilitation treatment targeting deficits identified on assessment (54% uncomfortable), and documenting response to treatment using objective and measurable data collection systems (53% uncomfortable).

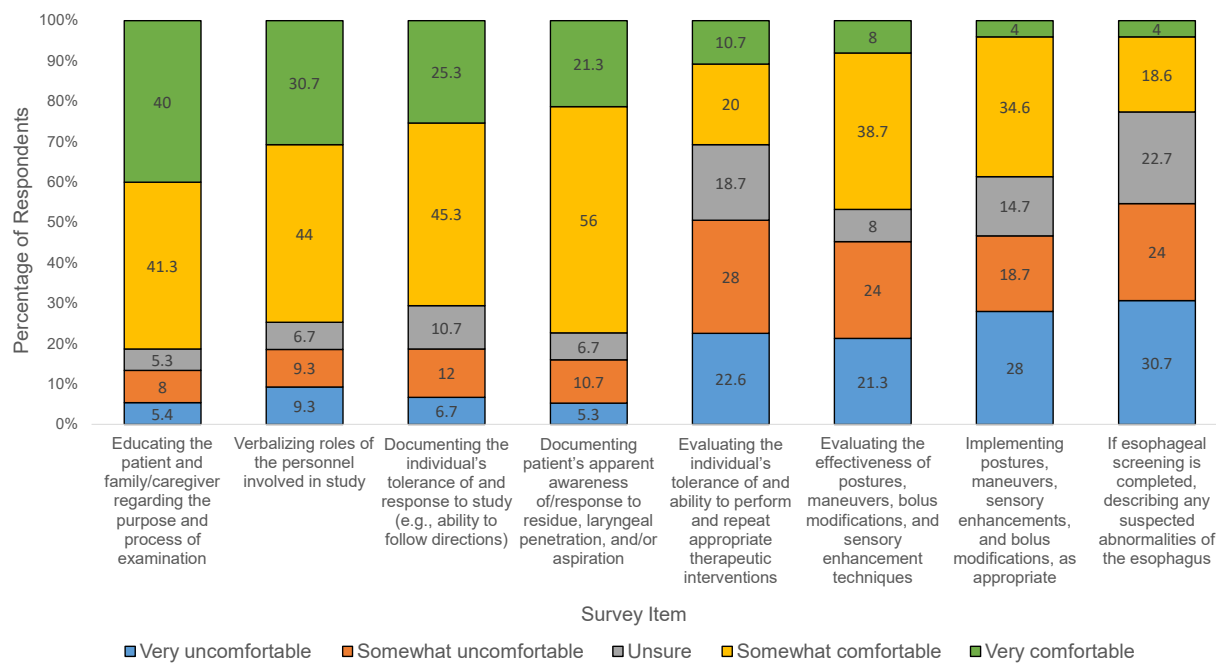
Figure 2

Direct Patient Care Knowledge/Skills Which Graduates Reporting Having the Greatest and Least Perceived Comfort



Note. The four columns on the left display survey items with the highest percentage of respondents indicating a “comfortable” comfort level and the four columns on the right display survey items with the highest number of respondents indicating “uncomfortable” comfort level. See Appendix Table 5 for an overview of all survey items.

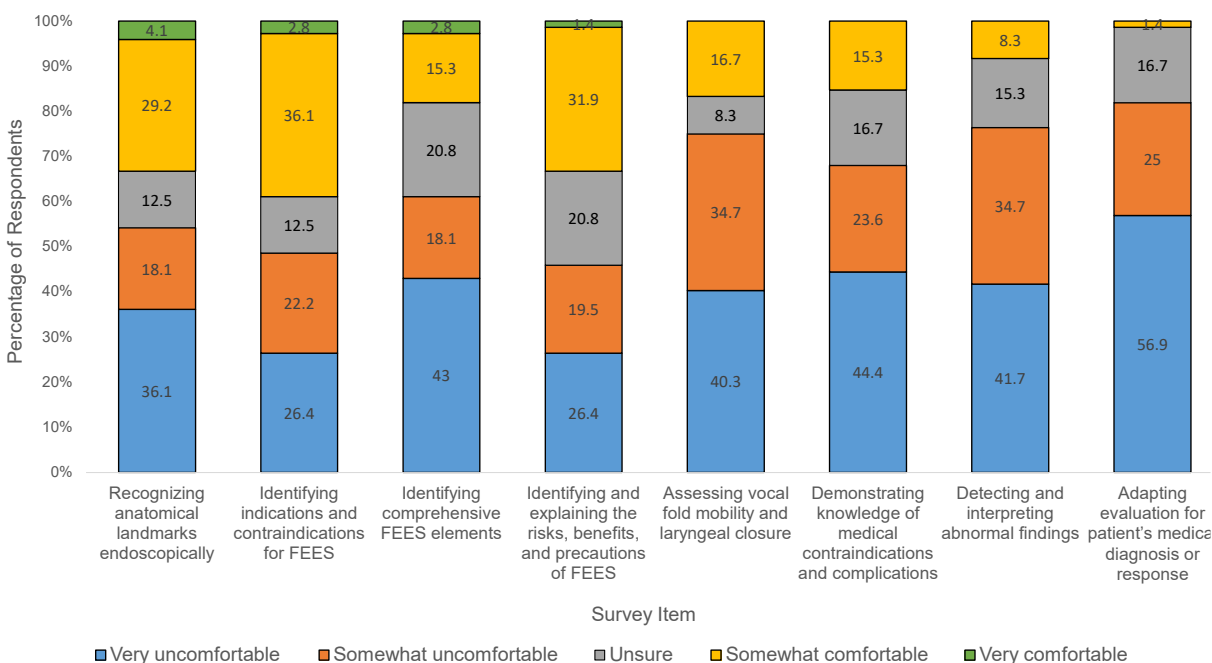
Compared to general skills and direct patient care, respondents indicated relatively reduced comfort in providing instrumental assessments. Figures 3 and 4 summarize the results of VFSS and FEES related skills, respectively. In VFSS related skills (Figure 3), respondents were comfortable with educating patients on the purpose of examination (81%), verbalizing the role of personnel involved (75%), and documenting patient’s awareness of laryngeal penetration or aspiration (77%). Contrastingly, respondents reported less comfort with evaluating the effectiveness of postures, bolus modifications, and sensory enhancement (47%), implementing the aforementioned postures and modifications (39%), and describing suspected abnormalities of the esophagus if screening is completed (23%).

Figure 3*VFSS Skills Which Graduates Reporting Having the Greatest and Least Perceived Comfort*

Note. The four columns on the left display survey items with the highest percentage of respondents indicating a “comfortable” comfort level and the four columns on the right display survey items with the highest number of respondents indicating “uncomfortable” comfort level. See Appendix Table 6 for an overview of all survey items.

In all FEES related skills, more than half of respondents reported feeling either very uncomfortable, somewhat uncomfortable, or unsure (Figure 4). Just over half of respondents (54%) reported that they were uncomfortable to some degree with identifying anatomical landmarks. Furthermore, 49% of respondents were uncomfortable to some degree with identifying indications/contraindications for FEES and 46% of respondents uncomfortable with identifying the risks, benefits, and precautions related to FEES. Table 1 lists FEES questions and the corresponding frequency of responses.

Comfort Level and Province of Education. For five of the survey items, Fisher’s Exact Tests revealed significant associations between province of education and respondents’ reported comfort level (Table 2). Thus, respondents who received training in particular provinces were associated with higher feelings of self-perceived preparedness in these items. In comparison to other provinces, respondents from Ontario consistently reported higher comfort levels in these survey items. For example, for identifying discharge and dismissal criteria, respondents from Ontario (Mdn = 4.0, IQR = 3.0, 4.0) and British Columbia (Mdn = 4.0, IQR = 2.0, 4.0), reported higher feelings of self-perceived confidence. Furthermore, respondents who received training in Ontario (Mdn = 2.0, IQR = 3.0, 4.0) and Nova Scotia (Mdn = 4.0, IQR = 3.0, 4.0) reported higher feelings of self-perceived confidence for educating staff to findings, recommendations, and advocating for swallowing services. All other survey items showed weak correlations.

Figure 4*FEES Skills Which Graduates Reporting Having the Greatest and Least Perceived Comfort*

Note. The four columns on the left display survey items with the highest percentage of respondents indicating a “comfortable” comfort level and the four columns on the right display survey items with the highest number of respondents indicating “uncomfortable” comfort level. See Appendix Table 7 for an overview of all survey items.

Post-Hoc Analysis: Educational Impacts of COVID-19 Analysis. Given the sample included students who graduated prior to the COVID-19 pandemic, in addition to students whose clinical education was impacted by COVID-19, we analyzed how SLP confidence levels differed pre- and post-COVID education. Fischer’s Exact tests were used to examine the relationship between pre-COVID graduates’ and post-COVID graduates’ self-reported comfort levels on individual questions. This analysis included 51 participants who graduated after the COVID-19 pandemic began in 2020 (post-COVID), and 20 participants who graduated prior to the COVID-19 pandemic (pre-COVID). The remaining survey respondents did not answer the question specifying their year of graduation, and thus could not be included in this analysis.

Post-Hoc Analysis Results. The results of this analysis demonstrated that, compared to clinicians who graduated pre-COVID (n=21), post-COVID (n=51) clinicians reported significantly higher comfort levels for all of the five areas of dysphagia clinical skills identified in Table 3. For example, post-COVID graduates felt more confident providing recommendations for oral and non-oral means of nutrition and hydration (Mdn = 4.0, IQR = 3.0, 4.0) when compared to pre-COVID graduates (Mdn = 2.0, IQR = 2.0, 4.0). In addition, post-COVID graduates felt more confident identifying and documenting the impact of anatomical and physiological swallow impairments (Mdn = 4.0, IQR = 2.5, 4.0), compared to their peers educated pre-COVID (Mdn = 2.0, IQR = 2.0, 4.0).

Table 1*List of FEES Survey Items and Corresponding Frequency Values*

Knowledge/Skill Area	Very Uncomfortable % (n)	Somewhat Uncomfortable % (n)	Unsure % (n)	Somewhat Comfortable % (n)	Very Comfortable % (n)
Recognizing anatomical landmarks endoscopically*	36 (26)	18 (13)	13 (9)	29 (21)	4 (3)
Identifying indications and contraindications for FEES*	26 (19)	22 (16)	13 (9)	36 (26)	3 (2)
Identifying and explaining the risks, benefits, and precautions of FEES*	26 (19)	20 (14)	21 (15)	32 (23)	1 (1)
Identifying comprehensive FEES elements	43 (31)	18 (13)	21 (15)	15 (11)	3 (2)
Adapting evaluation for patient's medical diagnosis or response	57 (41)	25 (18)	17 (12)	1 (1)	0 (0)
Demonstrating knowledge of medical contraindications and complications	44 (32)	24 (17)	17 (12)	15 (11)	0 (0)
Detecting and interpreting abnormal findings	42 (30)	35 (25)	15 (11)	8 (6)	0 (0)
Assessing vocal fold mobility and laryngeal closure	40 (29)	35 (25)	8 (6)	17 (12)	0 (0)
Assessing secretion management, pharyngeal residue, and swallow initiation	40 (29)	29 (21)	10 (7)	19 (14)	1 (1)

Note. * Basic FEES skills, as determined by the authors.

Table 2*Fisher's Exact Test Associations for Comparisons Between Province of Education and Skill Area*

Survey Item	<i>p</i> value	ON Mdn (IQR)	BC Mdn (IQR)	AB Mdn (IQR)	NS Mdn (IQR)	QB Mdn (IQR)
Describing the interrelationships of the oral, pharyngeal, and esophageal phases of swallowing	0.023	4.0 (4.0, 4.5)	4.0 (3.3, 4.0)	4.0 (2.0, 4.0)	4.0 (2.0, 4.0)	2.0 (3.0, 4.0)
Referring for appropriate diagnostic tests (e.g. instrumental assessments) and consultations when indicated	0.006	4.0 (4.0, 4.0)	4.0 (3.0, 4.0)	3.0 (2.0, 3.3)	4.0 (3.0, 4.5)	2.0 (2.0, 2.5)
Educating staff (e.g., care planning team) to findings and recommendations, and advocating for swallowing-related services	0.016	4.0 (3.0, 4.0)	2.0 (2.0, 3.8)	2.5 (2.0, 3.3)	4.0 (3.0, 4.0)	2.0 (2.0, 2.0)
Identifying discharge/dismissal criteria	0.022	4.0 (3.0, 4.0)	4.0 (2.0, 4.0)	2.0 (1.8, 2.3)	2.0 (2.0, 4.0)	2.0 (1.5, 2.5)
Informing appropriate personnel of special circumstances that might impact the clinician's ability to participate in VFSS exam and ensure personal safety	<0.001	4.0 (3.0, 5.0)	3.0 (2.0, 3.0)	3.5 (2.5, 4.0)	2.0 (2.0, 2.5)	3.0 (3.0, 3.0)

Note: ON = Ontario (n = 39), BC = British Columbia (n = 10), AB = Alberta (n = 8), NS = Nova Scotia (n = 7), QB = Quebec (n = 3).

Table 3

Fisher's Exact Test Associations for Comparisons Between pre-COVID and post-COVID Graduates

Survey Item	<i>p</i> value	pre-COVID (<i>n</i>=21) Mdn (IQR)	post-COVID (<i>n</i>=51) Mdn (IQR)
Providing recommendations for oral and non-oral means of nutrition and hydration	0.015	2.0 (2.0, 4.0)	4.0 (3.0, 4.0)
Educating patients and caregivers regarding assessment findings and relative risks	0.031	4.0 (2.0, 4.0)	4.0 (4.0, 4.0)
Providing ongoing assessment and revising treatment goals as appropriate	0.026	3.0 (2.0, 4.0)	4.0 (3.5, 4.0)
Reviewing recorded VFSS	0.018	4.0 (2.0, 4.0)	4.0 (4.0, 4.0)
Identifying and documenting the impact of anatomical and physiological impairment	0.019	2.0 (2.0,4.0)	4.0 (2.5,4.0)
Identifying and documenting individual's responses to VFSS	0.015	4.0 (2.0, 4.0)	4 (4.0, 5.0)

Discussion

This study provides preliminary information regarding Canadian speech-language pathology graduates' perceived comfort with aspects of dysphagia management. Speech-language pathology graduates reported feeling comfortable with a range of clinical skills, including conducting assessments, educating patients and family/caregivers, advocating for swallowing services to staff, and identifying discharge criteria. This includes graduates who were educated during the COVID-19 pandemic, who reported higher levels of comfort with skills related to instrumental assessment as compared to their peers who were educated pre-COVID. As stated previously, prior research has demonstrated a strong positive relationship between SLPs' clinical competencies and their perceived clinical abilities (Pasupathy & Bogschutz, 2013). Thus, these high levels of self-reported comfort offer reassurance of the quality of training in the basic areas of dysphagia management, as well as encouragement for Canadian students, new graduates, and educators in the field. Findings also suggest that many respondents felt less comfortable with specific skills relating to dysphagia rehabilitation and FEES assessment, indicating possible areas of weakness within training and education. Many respondents seemed uncomfortable with vital clinical skills (e.g., providing recommendations regarding rehabilitation treatment, providing a prognostic statement, describing the potential effects of common medications on swallowing). These findings may have important implications for education in dysphagia, as this information may be helpful to graduate programs as they seek ways of ascertaining that their recent graduates are sufficiently prepared to provide competent dysphagia management.

Survey results also demonstrated that over half of respondents were uncomfortable or unsure in all FEES skills. These findings echo the results of earlier studies that found speech-language pathology graduates in the United States to be less confident in FEES assessments (Caesar & Kitila, 2020). There could be various reasons for this but, in Canada in particular, FEES

administration either requires delegation from a physician in some provinces like Ontario (CASLPO, 2007), or requires additional certification in some provinces, such as Alberta and British Columbia (ACLSPA, 2016, Government of British Columbia, 2008). As an advanced practice area, FEES is not a general skill prioritized in professional Master's programs in Canada; however, there are basic assessment skills, such as knowing when a FEES would be a more appropriate instrumental assessment as compared to VFSS, that were assessed in the DCVT and should also be covered in graduate education. Three authors (initials redacted) determined which survey questions assessed comfort levels in basic FEES skills, namely: recognizing anatomical landmarks viewed endoscopically; identifying indications and contraindications for FEES; and identifying the risks, benefits, and precautions related to FEES. As expected, participants were also uncomfortable with advanced practice areas, such as adapting the evaluation for a patient's medical diagnosis, knowledge of medical contraindication, and assessing vocal fold mobility and laryngeal closure.

Respondents may have also shown less comfort with FEES as there is less availability for FEES in health facilities across Canada, as compared to VFSS. In a survey of Canadian SLPs practicing in the area of dysphagia, FEES was reported to be available in 47% of the Canadian acute care and acute-rehab facilities, while on-site VFSS equipment was reported to be available 84% of the time, with a further 11% of these clinicians reporting that they had privileges to attend and perform VFSS at a nearby hospital (Steele et al., 2007). With VFSS being more accessible within Canadian facilities, naturally graduates may feel more familiar and comfortable with this type of assessments as compared to FEES.

In addition to the lack of availability of FEES across Canadian healthcare facilities, the low comfort with FEES could be associated with the high level of training required, lack of standardized assessment procedures and training available, as well as risks involved in the use of the FEES procedure (CASLPO, 2007). In Canada, SLPs who are interested in gaining skills and knowledge of FEES must complete continuing education coursework and/or facility-specific training to demonstrate competency in the procedure. Future studies should investigate graduates' clinical and employment experiences, and whether respondents have had access to or completed continuing education coursework related to FEES.

Correlational Analyses. Fisher's Exact Tests showed significant associations between reported comfort levels and province of education for select skills (Table 2). Respondents from Ontario consistently reported higher levels of comfort in these select skills, in comparison to other provinces. This may be due to differing mentorship models immediately following graduation, as SLPs in Ontario require **six** months of mentorship with an experienced SLP (CASLPO, 2023), while other provinces do not. However, it should also be noted that a vast majority of respondents completed their education in Ontario (58%), therefore the responses from the other provinces may not be wholly representative of their self-perceived competence.

Educational Impacts of COVID-19. Post-hoc analyses were conducted to examine the effects of the COVID-19 pandemic on dysphagia education after considering that participants in our sample had varying clinical and educational experiences during this time. Programs were forced to provide dysphagia education in an alternate or non-traditional format, such as online, which may have impacted learning. When compared to clinicians who graduated pre-COVID, post-COVID

graduates reported significantly higher comfort levels for: providing recommendations for oral and non-oral means of nutrition and hydration; educating patients and caregivers regarding assessment findings and relative risks; providing ongoing assessment and revising treatment goals as appropriate; reviewing recorded VFSS; identifying and documenting the impact of anatomical and physiological impairment; and identifying and documenting individual's responses to VFSS. This is despite the likelihood that their graduate programs included virtual education opportunities due to restrictions on in-person clinical activities due to the COVID-19 pandemic. One consideration may be that additional virtual opportunities may be beneficial to student learning. For example, there are virtual options to build dysphagia competency such as the Modified Barium Swallow Impairment Profile (MBSImP) student training, which allows students to learn to score swallow physiology on a virtual platform (Martin-Harris et al, 2008). Perhaps the use of virtual learning tools, such as MBSImP and other virtual learning opportunities during the COVID-19 pandemic may have helped to support student learning and build dysphagia competencies. Further research into alternative models for educating and training graduate students (e.g., course-embedded practical experiences, simulation-based training) in the area of dysphagia may prove valuable in bridging the gap between effective graduate-level dysphagia education and adequate preparation for providing dysphagia services after graduation (Caesar & Kitila, 2020; Hoepner, 2018; Miles et al., 2016).

While the COVID-19 pandemic may have resulted in many students having components of their dysphagia education shifted to an online format, the results of this survey show that students in the cohort impacted by the COVID-19 pandemic still report greater comfort with some dysphagia clinical skills as compared to their pre-COVID peers. Greater comfort levels in the COVID-19 cohort could be a positive result of different learning approaches used during the pandemic. With an increase in the use of telehealth to manage dysphagia during and following the pandemic (Sevitz et al., 2023), online training may have facilitated an easier shift to workplaces that used telehealth for dysphagia service delivery. Another consideration is that our study included recent graduates who graduated within five years of taking the survey, therefore, those who were further out from graduation (e.g., pre-COVID cohort) had more difficulty recalling their first year of practice and rated themselves as having lower self-perceived competence. These trends could also be a result of the Dunning-Kruger effect, where a potential lack of knowledge or skill may have resulted in the post-COVID graduates overestimating their own competence (Kruger & Dunning, 1999).

Self-assessment of Competency in Other Areas of Practice. Self-perceived confidence has been investigated in other areas of SLP practice, such as AAC (Barman et al., 2023, Biggs et al., 2022; Conlon et al., 2024; Gohsman & Johnson, 2023; Kovacs, 2021; Sanders et al., 2021), counseling (Mand et al., 2023; Phillips & Mendel, 2008; Sekhon et al., 2015), and cognitive communication disorders (Morrow et al., 2021). Our survey results are consistent with the mixed reports of confidence that SLPs show in other areas of practice, highlighting the potentially rigorous standards that SLPs hold themselves to. A survey of 726 SLP students found that approximately 40% of students did not feel prepared to work with AAC users after graduation and that 52% felt that they were not confident in their skills to assess and treat AAC clients (Barman et al., 2023). Training experiences, work setting, and AAC caseload were cited as factors impacting self-perceived preparedness in AAC (Barman et al., 2023; Conlon et al., 2024; Gohsman & Johnson, 2023). In the area of counseling, some studies show that most SLPs are confident in their ability to counsel clients and family members (Mand et al., 2023), while others report that over half of

SLPs felt under skilled in addressing psychological well-being (Sekhon et al., 2015). Some factors affecting competency in counselling were hours of counseling provided, work setting, and differing counseling curricula between SLP programs. Morrow et al. (2021) also reported inconsistent confidence and training in SLPs managing cognitive communication disorders and focused on providing actionable avenues for improving graduate education in this area of practice.

Implications for Educators. Given the practical limitations to the length of graduate training, the goal of improving comfort and competence in early career clinicians is complex. Considering the dynamic and widespread nature of an SLP's profession, a key skill that SLPs should work towards during graduate school is the ability to evolve with the growing diversity of cultures, attitudes, and scientific evidence. Reflection and reflective practice are concepts being employed in numerous health disciplines, such as nursing (Patel & Meterskym, 2022; Schwind & Manankil-Rankin, 2020), occupational therapy (Bannigan & Moores, 2009), physiotherapy (Plack & Santasier, 2004), and medicine (Mamede & Schmidt, 2004), as it helps professionals develop their knowledge and expertise, leads to questioning of assumptions, and stimulates critical thinking (Ng, 2012). SLP programs could increase students' self-awareness of competency in dysphagia by incorporating self-evaluation and reflection of dysphagia skills after completing their dysphagia coursework, then again at graduation. For example, Hazelwood et al. (2022) used a modified DCVT checklist to explore how speech-language pathology student clinicians' self-perception of competency in dysphagia changed over their graduate coursework and clinical experiences. In completing a standardized metric to assess self-perceived competency, students may become more aware of the gaps in their knowledge and skill areas and seek out ways to remediate them. Such an initiative might also prompt students to submit more meaningful feedback during course evaluations to help programs target specific areas of need in subsequent years. At graduation, students would benefit from re-assessing their self-perceived competency after all practicums have been completed, to identify further areas of need that could be remediated by consulting colleagues and accessing continuing education. There is still considerable need for empirical research that supports university-based educational initiatives involving reflective practice in speech-language pathology. A scoping review by Caty et al. (2015) expands more on the gaps and future directions that can be taken by researchers and universities to improve reflective practices in SLPs.

SLP programs may also wish to consider incorporating methods of instruction alternative to traditional didactic instruction, such as PBL. PBL has been studied in speech-language pathology education over the years and utilized in both in graduate programs and continuing education (Burda & Hageman, 2015; Mok et al., 2008, Overby & Rusiewicz, 2018). Using PBL, students work in small groups to examine problems similar to those they may encounter in the real world (Hamilton et al., 2019). In the process of doing so, they identify learning needs, developing strategies to fill these gaps and take greater ownership of their learning (Hmelo-Silver, 2004). A study by Affoo et al. (2020) investigated the impact of a newly revised active learning-based dysphagia course, which included aspects of PBL in its course structure. This active learning structure prompted students to take greater responsibility of their learning and the learning of their peers, and this was reflected in exam and course grades. Through interviews with clinical educators, preliminary evidence from this study also suggested that the skills in the classroom were translated into clinical practice. Further investigation into the impact of alternative dysphagia course formats is needed.

Additionally, simulated learning environments were mentioned previously as a potential method of training graduates, and the benefits of this training include skill acquisition in a safe environment, standardization of experiences, as well as the ability for repetition, reflection, and feedback from educators (Miles et al., 2016). Patient simulation training has also been shown to improve confidence and reduce anxiety about working clinically in a group of SLP students prior to beginning dysphagia clinical placements (Ward et al., 2015). A recent study by Hewat et al. (2020) outlines a framework for the development of simulation-based learning programs to support SLP student competency in adult care.

Limitations

Despite the significance of the findings of this research study, the results may require cautious interpretation. This study is limited by reporting on new graduates' self-perceived comfort levels, which may be different from actual tested preparedness for practice or confidence, which is subject to biases associated with memory and recall (Lieberman & Hilliard, 2006). Moreover, those who are more comfortable or confident with dysphagia management could have been more likely to click on the survey link, contributing to response bias.

Furthermore, anecdotal clinical reports and studies suggest that most graduates are insecure about their skills in their first year of clinical practice. As mentioned previously, Barman et al. (2023) found that around half of SLP students did not feel confident in their skills to assess and treat AAC clients after graduation. Thus, there is an uncontrolled confound between overall comfort in clinical practice and abilities in swallowing evaluation and intervention.

Studies investigating the self-perceived confidence of SLPs in other areas of practice such as AAC, counseling, and dysphagia have stated that training, education, work setting, and caseload have an influence on confidence ratings (Barman et al., 2023; Conlon et al., 2024; Mand et al., 2023; O'Donoghue & Dean-Claytor, 2008; Sekhon et al., 2015). Additionally, clinical externship experiences were shown to positively affect SLP students' level of self-rating of knowledge and skill independence. Future studies would benefit from surveying the number of hours of coursework and clinical practice experience dedicated to dysphagia, continuing education courses or certifications, caseload, and the effects of mentoring received during first year working. Moreover, our inclusion criteria and survey did not consider what primary employment setting graduates were in during their first year of practice, and only ensured that they currently worked with an adult dysphagia population. Inclusion criteria for future studies with similar methods should also consider how primary employment setting during graduates' first year relate to their self-reported competence levels. An additional consideration for future research could include comparing dysphagia competency to competency in other areas of practice.

Of note, the survey was not pre-tested, nor measured for validity or reliability. As there are currently no other tools to assess dysphagia competency in this manner, a novel approach was required and thus the modified DCVT tool ratings have not been psychometrically tested. This study utilized a modified version of the DCVT survey, which was originally developed as a tool for clinicians, employers, and supervisors to evaluate and document clinical skills (ASHA, 2019). The DCVT has not yet been validated as a tool for evaluating speech-language pathology graduate student clinicians' preparedness. Thus, future research may also be undertaken to verify measures

of dysphagia preparedness and competency, by investigating the relationship between SLPs' perceptions of their preparation and more objective outcome measures (e.g., supervisor evaluation; Hazelwood et al., 2022).

In addition, not all Canadian graduate programs circulated the survey to their alumni, thus the sample of respondents may not be wholly representative of the graduate population in Canada and biased towards the schools that chose to share our survey. While additional recruitment efforts were made to ensure as many new graduate clinicians received the survey as possible, such as using social media to share the survey link and emailing clinicians through public databases (Ontario and British Columbia), there were likely new clinicians who did not receive our survey. Overall, our study sample size represents a small number of graduates; however, it provides preliminary evidence which may prove useful to future studies regarding graduate education in dysphagia.

Lastly, the present study only allowed for respondents to indicate their comfort level and did not allow respondents to explain their rating using a free text response. Qualitative data may help us to further understand factors relating to comfort and clinical competency in dysphagia assessment and treatment. Further qualitative studies are needed to gain a fulsome understanding of speech-language pathology graduate competency (e.g., focus groups and interviews of graduates, educators, etc.).

Conclusion

It is imperative that speech-language pathology graduates feel comfortable and competent in their ability to provide dysphagia services. Overall, SLPs who recently graduated report feeling comfortable with offering a wide range of dysphagia services, including general, direct patient care, VFSS skills, and basic FEES skills. However, respondents were not comfortable with select skills relating to dysphagia rehabilitation, as well as advanced FEES skills. Consideration may be given to developing dysphagia curricula that includes a larger emphasis on dysphagia rehabilitation and incorporates student clinician self-assessments to determine perceptions of competency. Doing so would allow students to reflect on their areas of strengths and weaknesses and allow instructors to target areas that may require additional strengthening. If Canadian facilities increase the adoption of FEES, a system to support practicing clinicians to develop more advanced instrumental assessment competencies is advised.

Disclosures

No conflicts of interest, financial or otherwise, are declared by the authors.

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Appendix

Survey Items and Perceived Comfort Levels

Respondents were asked to reflect on their first year of clinical practice and rate their comfort level with each of the following statements.

Table 4

Descriptive Data for Items 1-14, SLP Graduates' Perceived Levels of Comfort with General Knowledge and Skills

Knowledge/skill area	Very uncomfortable % (n)	Somewhat uncomfortable % (n)	Unsure % (n)	Somewhat comfortable % (n)	Very comfortable % (n)
1. Describing current and relevant research on normal swallowing (n=92)	7.6 (7)	21.8 (20)	5.4 (5)	50.0 (46)	15.2 (14)
2. Explaining strengths and limitations of clinical examination (n=92)	5.4 (5)	13.0 (12)	7.6 (7)	47.8 (44)	26.1 (24)
3. Describing the etiology contributing to swallowing disorders (n=92)	5.4 (5)	19.6 (18)	9.8 (9)	47.8 (44)	17.4 (16)
4. Identifying cognitive, communication, behavioral, and psychological factors contributing to swallowing (n=92)	1.1 (1)	19.6 (18)	5.4 (5)	54.3 (50)	19.6 (18)
5. Describing the potential effects of common medications on swallowing (n=92)	35.9 (33)	36.9 (34)	9.8 (9)	16.3 (15)	1.1 (1)
6. Describing the interrelationships of the oral, pharyngeal, and esophageal phases of swallowing (n=92)	1.1 (1)	17.4 (16)	4.3 (14)	53.3(49)	23.9 (22)
7. Describing cross-system relationships that influence swallowing (e.g., respiratory, gastro, neuro) (n=92)	8.7 (8)	26.1 (24)	10.9 (10)	46.7 (43)	7.6 (7)
8. Identifying signs and symptoms of swallowing disorders (n=92)	0 (0)	4.3 (4)	2.2 (2)	48.9 (45)	44.6 (41)
9. Describing nutritional intake methods (oral and non-oral) and problems associated (n=92)	9.8 (9)	14.1 (13)	13.1 (12)	46.7 (43)	16.3 (15)
10. Collaborating with relevant team members regarding patient care (n=92)	3.3 (3)	10.9 (10)	10.9 (10)	44.5 (41)	30.4 (28)

Table 4 (continued)

11. Describing and integrate evidence-based practice into patient assessment and care (n=92)	9.8 (9)	10.9 (10)	23.9 (22)	46.7 (43)	8.7 (8)
12. Recognizing medical contraindications of direct assessment, signs of patient distress, and necessary response (n=92)	4.3 (4)	18.5 (17)	13.1 (12)	41.3 (38)	22.8 (21)
13. Describing the differences between screening and assessment (n=92)	3.3 (3)	8.7 (8)	9.8 (9)	29.3 (27)	48.9 (45)
14. Describing the indications and contraindications for instrumental swallow study referral (n=92)	6.5 (6)	13.1 (12)	5.4 (5)	50.0 (46)	25.0 (23)

Table 5

Descriptive Data for Items 15-40, SLP Graduates' Perceived Levels of Comfort with Direct Patient Care

Knowledge/skill area	Very uncomfortable % (n)	Somewhat uncomfortable % (n)	Unsure % (n)	Somewhat comfortable % (n)	Very comfortable % (n)
15. Obtaining comprehensive medical and dysphagia history (n=83)	1.2 (1)	8.4 (7)	7.2 (6)	44.6 (37)	38.6 (32)
16. Determining baseline and current nutritional intake (n=83)	1.2 (1)	9.6 (8)	4.8 (4)	42.2 (35)	42.2 (35)
17. Identifying when swallowing assessment and intervention is appropriate (n=83)	1.2 (1)	12.0 (10)	7.2 (6)	45.8 (38)	33.8 (28)
18. Conducting an oral, pharyngeal, laryngeal, cranial nerve, and respiratory function examination (n=83)	1.2 (1)	22.9 (19)	6.0 (5)	57.9 (48)	12.0 (10)
19. Identifying abnormal/atypical structure and function (n=83)	3.6 (3)	28.9 (24)	12.1 (10)	45.8 (38)	9.6 (8)
20. Assembling the appropriate assessment materials (e.g., utensils, cups, foods/liquids) (n=83)	4.8 (4)	10.9 (9)	2.4 (2)	24.1 (20)	57.8 (48)
21. Identifying significant signs, symptoms, medical conditions, and medications during clinical assessment (n=83)	6.0 (5)	15.7 (13)	6.0 (5)	50.6 (42)	21.7 (18)

Table 5 (continued)

22. Recognizing clinical signs and symptoms of airway compromise (n=83)	1.2 (1)	13.3 (11)	3.6 (3)	54.2 (45)	27.7 (23)
23. Testing interventions (e.g. postural changes, behavioral changes) to improve safety of swallow and trials (n=83)	10.8 (9)	22.9 (19)	9.6 (8)	39.8 (33)	16.9 (14)
24. Referring for appropriate diagnostic tests (e.g. instrumental assessments) and consultations when indicated (n=83)	2.4 (2)	18.1 (15)	12.0 (10)	50.6 (42)	16.9 (14)
25. Providing recommendations regarding delivery of nutrition and hydration (oral, non-oral, or combination) (n=83)	8.4 (7)	21.7 (18)	10.8 (9)	47.0 (39)	12.1 (10)
26. Providing recommendations regarding specific oral intake modifications (e.g., volume, viscosity, texture, etc.) (n=83)	6.0 (5)	13.3 (11)	4.8 (4)	53.0 (44)	22.9 (19)
27. Providing recommendations regarding compensatory and feeding precautions (e.g., strategies, positioning, etc.) (n=83)	3.6 (3)	12.1 (10)	4.8 (4)	49.4 (41)	30.1 (25)
28. Providing recommendations regarding rehabilitation treatment (evidence-based) (n=83)	26.5 (22)	27.7 (23)	14.5 (12)	28.9 (24)	2.4 (2)
29. Integrating and adapting a plan of care to include patient's cultural and personal preferences (n=83)	6.0 (5)	20.5 (17)	12.0 (10)	45.8 (38)	15.7 (13)
30. Providing a prognostic statement (n=83)	19.3 (16)	39.8 (33)	7.2 (6)	30.1 (25)	3.6 (3)
31. Educating the patient and family/caregiver to the findings and recommendations (include options, risks/benefits) (n=83)	2.4 (2)	16.9 (14)	4.8 (4)	53.0 (44)	22.9 (19)
32. Educating the staff (e.g., care planning team) of findings and recommendations (n=83)	4.8 (4)	30.1 (25)	8.4 (7)	41.0 (34)	15.7 (13)
33. Generating documentation that is clear, concise, and interpretive (e.g., assessment performed/findings) (n=83)	8.4 (7)	21.7 (18)	6.0 (5)	43.4 (36)	20.5 (17)
34. Identifying necessary follow-up care, including frequency of treatment, monitoring, and/or re-evaluation (n=83)	10.8 (9)	21.7 (18)	10.8 (9)	49.4 (41)	7.3 (6)
35. Providing ongoing assessment and revising treatment goals as appropriate, based on patient response (n=83)	1.2 (1)	25.3 (21)	7.2 (6)	48.2 (40)	18.1 (15)
36. Developing and implementing a treatment plan targeting physiologic deficits identified on assessment (n=83)	20.5 (17)	37.3 (31)	8.5 (7)	30.1 (25)	3.6 (3)
37. Documenting response to treatment using objective and measurable data collection systems (n=83)	19.3 (16)	33.7 (28)	19.3 (16)	24.1 (20)	3.6 (3)

Table 5 (continued)

38. Adjusting the treatment plan, content and delivery to the level of the person being educated, counseled, or trained (n=83)	8.4 (7)	21.7 (18)	10.9 (9)	49.4 (41)	9.6 (8)
39. Identifying discharge/dismissal criteria (n=83)	12.0 (10)	24.1 (20)	9.6 (8)	43.4 (36)	10.9 (9)
40. Seeking assistance and collaboration as needed in the assessment and care of persons with dysphagia (n=83)	0 (0)	9.6 (8)	7.2 (6)	44.6 (37)	38.6 (32)

Table 6

Descriptive Data for Items 41-69, SLP Graduates' Perceived Levels of Comfort with VFSS Skills

VFSS Knowledge/Skill Area	Very uncomfortable % (n)	Somewhat uncomfortable % (n)	Unsure % (n)	Somewhat comfortable % (n)	Very comfortable % (n)
41. Verbalizing the indications, contraindications, risks, benefits, and precautions (e.g., radiation exposure) for VFSS (n=76)	14.5 (11)	18.4 (14)	10.5 (8)	35.6 (27)	21 (16)
42. Identifying patients who are and are not appropriate for VFSS (n=76)	9.2 (7)	22.4 (17)	9.2 (7)	43.4 (33)	15.8 (12)
43. Describing the elements of a comprehensive exam and facility-specific protocol (n=75)	12 (9)	22.7 (17)	10.7 (8)	33.3 (25)	21.3 (16)
44. Verbalizing roles of the personnel involved in study (n=75)	9.3 (7)	9.3 (7)	6.7 (5)	44 (33)	30.7 (23)
45. Demonstrating appropriate setup for VFSS (n=75)	21.4 (16)	9.3 (7)	6.7 (5)	29.3 (22)	33.3 (25)
46. Educating the patient and family/caregiver regarding the purpose and process of examination, as appropriate (n=75)	5.4 (4)	8 (6)	5.3 (4)	41.3 (31)	40 (30)
47. Communicating the reason for the exam to the radiologist or other medical staff (n=75)	8 (6)	14.7 (11)	9.3 (7)	37.3 (28)	30.7 (23)
48. Identifying radiographic anatomical landmarks, including typical and atypical anatomy (n=75)	6.7 (5)	20 (15)	12 (9)	48 (36)	13.3 (10)
49. Following a standardized protocol for bolus presentation (n=75)	16 (12)	13.4 (10)	16 (12)	33.3 (25)	21.3 (16)
50. Evaluating the integrity of airway protection before, during, and after swallowing (n=75)	9.3 (7)	22.6 (17)	14.7 (11)	38.7 (29)	14.7 (11)

Table 6 (continued)

51. Obtaining lateral and anterior–posterior views, as able (n=75)	12 (9)	22.6 (17)	16 (12)	30.7 (23)	18.7 (14)
52. Implementing postures, maneuvers, sensory enhancements, and bolus modifications, as appropriate (n=75)	28 (21)	18.7 (14)	14.7 (11)	34.6 (26)	4 (3)
53. Evaluating the effectiveness of postures, maneuvers, bolus modifications, and sensory enhancement techniques, as appropriate (n=75)	21.3 (16)	24 (18)	8 (6)	38.7 (29)	8 (6)
54. Evaluating the individual's tolerance of and ability to perform and repeat appropriate therapeutic interventions as appropriate (n=75)	22.6 (17)	28 (21)	18.7 (14)	20 (15)	10.7 (8)
55. Conducting the examination in a timely manner to minimize radiation exposure (n=75)	20 (15)	24 (18)	13.4 (10)	25.3 (19)	17.3 (13)
56. Monitoring possible adverse reactions to the examination (e.g., changes in breathing pattern, level of alertness, pallor, etc.) (n=75)	10.7 (8)	22.7 (17)	14.7 (11)	38.6 (29)	13.3 (10)
57. Reviewing the recorded VFSS	12 (9)	12 (9)	5.3 (4)	49.3 (37)	21.4 (16)
58. Identifying and documenting the physiologic components of swallowing (n=75)	13.3 (10)	13.3 (10)	10.7 (8)	48 (36)	14.7 (11)
59. Identifying and documenting the impact of anatomic and physiologic impairment (e.g., residue, laryngeal penetration, % chance of aspiration etc.) (n=75)	10.7 (8)	22.7 (17)	9.3 (7)	42.7 (32)	14.6 (11)
60. Documenting patient's apparent awareness of/response to residue, laryngeal penetration, and/or aspiration (e.g., cough, throat clear) (n=75)	5.3 (4)	10.7 (8)	6.7 (5)	56 (42)	21.3 (16)
61. Documenting compensatory postures, maneuvers, delivery methods, and bolus modifications attempted—and their effectiveness (n=75)	16 (12)	17.3 (13)	14.7 (11)	41.3 (31)	10.7 (8)
62. Documenting the individual's tolerance of and response to study (e.g., ability to follow directions, fatigue factor) (n=75)	6.7 (5)	12 (9)	10.7 (8)	45.3 (34)	25.3 (19)
63. If esophageal screening is completed, describing any suspected anatomic and/or physiologic abnormalities of the esophagus (n=75)	30.7 (23)	24 (18)	22.7 (17)	18.6 (14)	4 (3)
64. Formulating treatment and management strategies based on patient performance and integrates patient, family, and caregiver input (n=75)	13.3 (10)	26.7 (20)	8 (6)	37.3 (28)	14.7 (11)
65. Interpreting and documenting findings in a written report, including diagnosis, severity, prognosis, recommendations, and goals (n=75)	14.6 (11)	22.7 (17)	8 (6)	38.7 (29)	16 (12)
66. Discussing the results and consulting with appropriate medical personnel in a collaborative model, as possible (n=75)	8 (6)	18.7 (14)	10.6 (8)	46.7 (35)	16 (12)

Table 6 (continued)

67. Referring for additional instrumental swallowing examinations (e.g., FEES), as appropriate, based on findings (n=75)	16 (12)	29.4 (22)	25.3 (19)	17.3 (13)	12 (9)
68. Incorporating radiation safety techniques (e.g., time, distance, shielding) for all individuals within the radiology suite during the examination (n=75)	12 (9)	22.6 (17)	6.7 (5)	32 (24)	26.7 (20)
69. Informing appropriate personnel of any special circumstances that might impact the clinician's ability to participate in VFSS examination (n=75)	13.3 (10)	16 (12)	18.7 (14)	33.3 (25)	18.7 (14)

Table 7

Descriptive Data for Items 70-78, SLP Graduates' Perceived Levels of Comfort with FEES Skills

Knowledge/Skill Area	Very uncomfortable % (n)	Somewhat uncomfortable % (n)	Unsure % (n)	Somewhat comfortable % (n)	Very comfortable % (n)
70. Recognizing anatomical landmarks endoscopically (n=72)	36.1 (26)	18.1 (13)	12.5 (9)	29.2 (21)	4.1 (3)
71. Identifying indications and contraindications for FEES (n=72)	26.4 (19)	22.2 (16)	12.5 (9)	36.1 (26)	2.8 (2)
72. Identifying and explaining the risks, benefits, and precautions of FEES (n=72)	26.4 (19)	19.5 (14)	20.8(15)	31.9 (23)	1.4 (1)
73. Identifying comprehensive FEES elements (n=72)	43 (31)	18.1 (13)	20.8 (15)	15.3 (11)	2.8 (2)
74. Adapting evaluation for patient's medical diagnosis or response (n=72)	56.9 (41)	25 (18)	16.7 (12)	1.4 (1)	0 (0)
75. Demonstrating knowledge of medical contraindications and complications (n=72)	44.4 (32)	23.6 (17)	16.7 (12)	15.3 (11)	0 (0)
76. Detecting and interpreting abnormal findings (n=72)	41.7 (30)	34.7 (25)	15.3 (11)	8.3 (6)	0 (0)
77. Assessing vocal fold mobility and laryngeal closure (n=72)	40.3 (29)	34.7 (25)	8.3 (6)	16.7 (12)	0 (0)
78. Assessing secretion management, pharyngeal residue, and swallow initiation (n=72)	40.3 (29)	29.2 (21)	9.7 (7)	19.4 (14)	1.4 (1)