



Dysphagia and Oral Health Concerns in Long-Term Care



Dysphagies et problèmes de santé buccodentaire dans les établissements de soins de longue durée

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Abstract

Swallowing impairment, or dysphagia, is highly prevalent in older people living in long-term care, as are oral health concerns such as missing teeth and periodontitis. Texture-modified diets are frequently prescribed for long-term care residents to manage concerning oral health conditions and dysphagia, but their use is associated with increased risk of malnutrition, dehydration, and reduced quality of life. This survey study was conducted to explore the knowledge and perspectives of long-term care staff pertaining to swallowing disorders, oral health, texture-modified diet use, and barriers and facilitators to identifying and advocating for swallowing and/or oral health assessments for long-term care residents. The survey was developed with input from an advisory panel and refined through two rounds of Delphi-method polling. The survey was administered to staff working in long-term care facilities in roles that involved face-to-face contact with residents in the provinces of Ontario, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. Complete responses were obtained from 148 participants who primarily reported working as nursing assistants, health care aides, or personal support workers in Nova Scotia and New Brunswick. The results suggest that frontline long-term care staff may have limited knowledge of swallowing disorders, and overreliance on texture-modified diets is likely. Instrumental swallowing evaluations and professional oral health assessments appear to be rarely accessed. Speech-language pathologist involvement on long-term care interprofessional teams could be beneficial for educating staff, providing comprehensive management of swallowing impairments, and curbing the overuse of texture-modified diets in long-term care.

Abrégé

Les troubles de la déglutition (dysphagies), de même que les problèmes de santé buccodentaire (p. ex. dents manquantes, parodontites), sont très fréquents chez les personnes âgées vivant dans des établissements de soins de longue durée. Une modification de la texture et de la consistance des aliments est fréquemment prescrite aux résidents de ces établissements pour remédier aux problèmes de santé buccodentaire ou de déglutition. Cependant, cette modification de la texture et de la consistance est associée à un risque accru de malnutrition et de déshydratation, ainsi qu'à une réduction de la qualité de vie. La présente étude avait pour objectif d'explorer les connaissances et les points de vue des employés des établissements de soins de longue durée au sujet des troubles de la déglutition, de la santé buccodentaire, de l'utilisation d'aliments de texture ou consistance modifiée. L'étude visait à explorer également les connaissances concernant les obstacles et les facilitateurs à l'identification et des obstacles et facilitateurs à l'identification des problèmes de déglutition et de santé buccodentaire des résidents de ces établissements et à la promotion de l'évaluation de ces problématiques. Le questionnaire utilisé dans l'étude a été conçu à l'aide de commentaires formulés par les membres d'un groupe consultatif et a été peaufiné à l'aide de la méthode Delphi. Ce questionnaire a ensuite été distribué à des employés d'établissements de soins de longue durée localisés en Ontario, au Nouveau-Brunswick, en Nouvelle-Écosse, à l'Île-du-Prince-Édouard et à Terre-Neuve-et-Labrador qui côtoyaient directement les résidents de par leur emploi. Cent quarante-huit participants ont rempli le questionnaire au complet. La plupart d'entre eux ont déclaré travailler à titre d'aide-infirmier, d'aide-soignant ou de préposé aux services de soutien à la personne en Nouvelle-Écosse et au Nouveau-Brunswick. Les résultats suggèrent que le personnel de première ligne dans les établissements de soins de longue durée ne possède que de connaissances limitées sur les troubles de la déglutition et que l'on utilise probablement trop souvent des aliments de texture ou consistance modifiée. De même, il semble que l'on procède rarement à des évaluations instrumentales de la déglutition et à des examens buccodentaires réalisés par des professionnels. L'intégration d'orthophonistes aux équipes interprofessionnelles des établissements de soins de longue durée pourrait être bénéfique pour la formation du personnel, pour une prise en charge plus complète des troubles de la déglutition et pour diminuer la surutilisation d'aliments de texture ou consistance modifiée dans ces établissements.

There are approximately 6.6 million people aged 65 years and older living in Canada, and approximately 5% of those individuals live in long-term care (LTC) facilities (Public Health Agency of Canada, 2020). That number is expected to increase in the coming years as Canada is experiencing a dramatic increase in the population proportion of older people. Many of these older people will develop physical and cognitive challenges requiring institutional LTC (Jackson et al., 2017). Swallowing impairment, or dysphagia, affects the preparation and transportation of saliva and ingested materials along the digestive tract (Logemann, 1998). The prevalence of dysphagia has been reported to be as high as 53% in people living in LTC (Park et al., 2013).

Dysphagia is characterized by two primary functional concerns: (a) reduced safety of the swallow, resulting in the misdirection of ingested material into the airway (aspiration); and (b) reduced efficiency of the swallow, resulting in residual material left behind in the throat after the swallow has been completed. A host of negative health consequences are associated with dysphagia. Dysphagia may lead to aspiration, which is associated with aspiration pneumonia. Aspiration pneumonia is generally considered to be an infection of the lung parenchyma that occurs when a substance, such as food or liquid, secretions, or regurgitated contents of the stomach or esophagus enter the lower airways (Bennett & Vella, 2022). Aspiration pneumonia increases the risk of patients requiring ICU admission, mechanical ventilation, longer hospital stays, and mortality (Lanspa et al., 2015). Dysphagia may also increase the risk of a person developing dehydration (Crary et al., 2013; Whelan, 2001) and malnutrition (Namasivayam-MacDonald et al., 2018; Takeuchi et al., 2014). Malnutrition and dehydration in LTC residents are concerning conditions that potentially lead to morbidities such as frailty, muscle wasting, reduced functional status, and poor quality of life (Crogan & Pasvogel, 2003; Cruz-Jentoft et al., 2017; Welch, 2014).

Over the past several decades, the population of older people in Canadian LTC facilities has shifted from being either partially or fully edentulous (i.e., having no teeth) to being partially or fully dentate (i.e., having teeth; Wyatt & Kawato, 2019). The presence of natural teeth requires more prevention and maintenance care needs. This shift in the profile of LTC residents led to a 37% increase in need for oral health services from 2002 to 2010 (Wyatt & Kawato, 2019). Over half (58%) of LTC residents living in Canada have at least one tooth and most LTC residents (80%) experience moderate to severe inflammation in the surrounding tissues (Yoon et al., 2018). LTC residents experiencing oral health concerns, such as missing teeth, often experience

concurrent difficulty chewing or pain when eating, which are risks for malnutrition and poor quality of life (Algra et al., 2021; de Medeiros et al., 2020; Porter et al., 2015; Toniazzo et al., 2018). Furthermore, poor oral health in LTC residents has been identified as a risk factor for the development of aspiration pneumonia (Langmore et al., 1998, 2002).

Texture-modified diets (TMDs) are foods and liquids that have been prepared to be a specific texture or consistency and are frequently prescribed for LTC residents to manage concerning oral health conditions and dysphagia (Robbins et al., 2002; Yoon et al., 2018). Other factors associated with the prescription of TMDs are seen in residents who require a high level of care and include living in LTC for a long time, diagnosis of dementia or cognitive impairment, signs and symptoms of malnutrition such as weight loss, and being dependent on others to complete activities of daily living (Vucea et al., 2019). There is widespread use of TMDs in LTC across Canada despite being disliked by many people and having been found to negatively impact quality of life (Swan et al., 2015). Refusal of TMDs and/or nonadherence to TMD recommendations have been reported (Makhnevich et al., 2023; Shim et al., 2013). Furthermore, TMDs are associated with increased risk of malnutrition and dehydration due to poor intake associated with reduced palatability but also due to the poor nutritional quality of the TMDs themselves (Logemann et al., 2008; Vucea et al., 2018, 2019). A recent study of 32 LTC facilities across Canada, the "Making the Most of Mealtimes (M3)" study, revealed that pureed menus typically provided lower amounts of nutrients compared to the regular texture menus (Vucea et al., 2017).

Although evidence about the appropriateness of TMD prescription is limited, it is thought that TMDs are overused and many residents living in LTC may be on an overly restricted TMD (Groher & McKaig, 1995). Speech-language pathologists (S-LPs) are uniquely qualified to evaluate and manage dysphagia and to identify poor oral health in LTC residents. However, S-LP services are not widely available in LTC facilities in Canada. Given that TMDs are associated with malnutrition, dehydration, and reduced quality of life (Swan et al., 2015), overuse of TMDs is a concern warranting closer scrutiny. Therefore, the aims of this study were to (a) explore the current knowledge, perspectives, and practice patterns of LTC staff pertaining to swallowing disorders, oral health, TMD use, and the barriers and facilitators to identifying and advocating for swallowing and/or oral health assessments for LTC residents; and (b) investigate potential associations between variables of interest identified a priori, including relationships between knowledge and training, years of experience and practice patterns, and years of experience and confidence. We hypothesized that LTC staff

(e.g., nurses, dietitians) and formal caregivers (e.g., nursing assistants, personal support workers) currently recommend TMDs with good intentions (e.g., to manage swallowing difficulties, dentition challenges, and oral health concerns), but do not access skilled assessments to guide these recommendations. Furthermore, we hypothesized that experience and training would be associated with practice patterns and confidence.

Method

A cross-sectional survey study was conducted to explore the knowledge and perspectives of LTC staff pertaining to swallowing disorders, oral health, TMD use, and the barriers and facilitators to identifying and advocating for swallowing and/or oral health assessments for LTC residents. This study was approved by the research ethics boards at Dalhousie University (#2020-5268), University Health Network (#20-6075), and the Hamilton Integrated Research Ethics Board (#12937). Sharma et al.'s (2021) checklist for reporting of survey studies was used to ensure transparent reporting.

Survey Development

The survey instrument was developed during a 1-day meeting with an advisory panel made up of key stakeholders including LTC leadership, frontline nursing staff, dietitians, S-LPs, and researchers. The goal of the meeting was to solicit the opinions and discuss the experiences of the stakeholders on the topics of swallowing disorders, oral health, and TMD use, and to generate a list of relevant topics that were eventually drafted into survey items and refined through two electronic rounds of Delphi-method polling of the advisory group. The final version of the survey consisted of 54 items that were primarily closed-ended questions and was delivered using Opinio (<https://www.objectplanet.com/opinio/>) online survey software in both English and French. The survey included seven items to collect demographic information about the respondents, five items to collect information about the LTC facility, 35 items to collect information on oral health and swallowing knowledge and/or practice patterns, and one item to collect information about the impact of the COVID-19 pandemic on swallowing and oral health care. The remaining items provided respondents with an opportunity to share anything relevant that was not captured by the survey and provide feedback about the survey instrument. A copy of the questionnaire is available from the authors upon request.

Participants

The survey was administered to LTC staff, including but not limited to registered nurses, licensed practical nurses, registered practical nurses, nursing assistants,

health care aides, personal support workers, registered dietitians, clinical dietitians, food service workers, food service managers, recreation therapists, occupational therapy assistants, physical therapy assistants, physical therapists, occupational therapists, and S-LPs. To be eligible to complete the survey, participants had to be currently employed or employed in the last 12 months in a LTC facility in the provinces of Ontario, New Brunswick, Nova Scotia, Prince Edward Island, or Newfoundland and Labrador, in a role that involved face-to-face contact with LTC residents.

Recruitment

Convenience sampling was used to recruit potential participants. Because this was a preliminary investigation and the total number of LTC staff in Canada is unknown, an a priori sample size was not calculated. LTC facilities in the provinces of interest were identified using online searches and an email invitation was sent by a member of the research team (RHA, ANM, CMS) to each facility, describing the study and requesting support with participant recruitment. Twenty LTC facilities in Nova Scotia, ten LTC facilities in New Brunswick, and one LTC facility in Ontario agreed to support participant recruitment and forwarded the study invitation email, in both English and French, to appropriate staff members within the organization using staff email lists. Email invitations were sent out in November and December of 2020 and due to the ongoing challenges associated with the COVID-19 pandemic, email invitations were sent out again in November and December of 2021. Two LTC facilities in Ontario initially agreed to support participant recruitment but were unable to continue participation or forward the study invite to staff members due to the ongoing challenges related to the pandemic.

The email invitation directed potential participants to a landing page powered by mailchimp (<https://mailchimp.com>), where participants submitted their email address to receive the link to the Opinio survey. To prevent multiple participation of participants, the IP address checking feature was enabled in Opinio. The mailchimp landing page was used to manage the respondent email list, calculate a response rate, and send follow-up reminder emails 1 week and 2 weeks after the initial invitation to those who had not completed the survey. The first page of the survey included information about the purpose of the study, ethical considerations, and information about privacy and informant rights. Participants indicated their informed consent by clicking the "start survey" button. Each participant received a \$10 gift card as a token of appreciation for completing the survey. Each participant was also entered into a draw to win an additional \$50 gift card. Only study personnel had access to survey data.

Data Analysis

Raw data were exported from Opinio into Excel for data cleaning and were then analyzed using R (<https://www.r-project.org>). Descriptive analyses were performed, and frequency and percentage were reported for categorical data. Missing responses were excluded from the analysis. Fisher's exact tests were used to investigate potential associations between variables of interest identified a priori, including relationships between knowledge and training, years of experience and practice patterns, and years of experience and confidence. Statistical significance was set at $\alpha = .05$.

For free-text response items, thematic analysis was used to code and identify response trends (Vaismoradi et al., 2013). A semiductive thematic analysis was conducted according to a six-step process described by Braun and Clarke (2014). Common and unique responses were included in the analysis. Responses were coded systematically according to relevant features by RHA and ANM. The coded responses were then collated into themes, reviewed, and interpreted for final reporting. Any discrepancies between raters were discussed to consensus.

Results

Description of Participants

During the data collection period, the mailchimp landing page received a total of 379 visits and 215 individuals submitted their email addresses to receive the link to the Opinio survey. Of the 178 survey participants, 30 participants were removed from analysis due to incomplete or missing data, resulting in a total of 148 participants (response rate of $178/379 = 47\%$). All respondents except one (99%) reported currently working in a LTC facility. Respondents were primarily English-speaking (88%), identified as female (87%), worked in Nova Scotia (75%), and reported being involved in mealtimes in some way at their LTC facility (93%). Nursing assistant/health care aide/personal support worker was the most commonly reported role (39%). The next most common roles were licensed practical nurse (22%) and registered nurse (17%). The respondents most commonly reported having more than 10 years of experience working in LTC (38%). A complete description of the participants is reported in **Table 1**.

Knowledge, Perceptions, and Practice Patterns

About one third of respondents (36%) reported that the prevalence of swallowing difficulty on their unit was 25% to 50% (**Figure 1**). When asked to identify clinical signs of a swallowing disorder, respondents were generally able to identify at least one correct response (**Figure 2**). The most

frequently selected signs included choking (14%) and food refusal (13%). Surprisingly, only 8% of respondents indicated that coughing during meals is a sign that a person has difficulty swallowing. Similarly, when asked to identify signs that a resident may require a TMD, respondents selected a range of responses including coughing at meals (18%), poor intake (14%), and taking a long time to chew (13%; see **Figure 3**). The majority of respondents (66%) had not heard of or did not know about the international dysphagia diet standardization initiative (IDDSI).

When asked about the types of mealtime assistance that the respondents typically provided to residents, they reported a variety of aids, including assistance with transporting food and drink to the mouth, providing encouragement and instructions, cutting food into small pieces, and providing reminders to use recommended eating strategies. The most commonly reported management strategy used when observing a resident coughing during a meal was to encourage them to cough (43%; **Figure 4**). When respondents observed individuals experiencing difficulty chewing, they reported cutting food into smaller pieces (24%), reporting it to someone else who would decide how to help (such as the dietitian; 23%), or suggesting to the team that the person may need pureed food (18%; **Figure 5**). Respondents reported that they received training to support residents with their meals in school (36%) or during new staff orientation (30%), and most respondents reported feeling very confident about their ability to act upon suspected swallowing disorders (63%) and in recommending the use of TMDs (62%).

The majority of respondents (57%) reported that more than half of the residents on their unit required assistance with mouth care, however the most common response was that respondents did not support residents with their oral care (21%; **Figure 6**). For those that did report supporting residents with their oral care, the average time spent was most commonly reported to be between 5 and 10 min per day (17%), and some types of denture or mouth care assistance provided by respondents included assistance with brushing teeth or dentures, assistance with rinsing the mouth, and providing encouragement or instructions to clean the mouth or dentures. The most commonly reported management strategy when oral health concerns were suspected was to report them to someone (24%), however, respondents reported feeling very confident about their ability to provide oral care to residents (61%; **Figure 7**).

Swallowing and/or Oral Health Assessments

Occupational therapists were the most commonly reported health professional performing swallowing

Table 1		
Description of Participants (N = 148)		
Label	Variable	n (%)
Primary language	English	130 (87.8)
	French	1 (0.7)
	Other language	15 (10.1)
	Prefer not to answer	2 (1.4)
Title and role	Food service manager	2 (1.4)
	Food service worker	2 (1.4)
	Licensed practical nurse	32 (21.8)
	Nursing assistant/health care aide/personal support worker	57 (38.8)
	Occupational therapist	1 (0.7)
	Occupational therapy assistant	2 (1.4)
	Prefer not to answer	1 (0.7)
	Recreation therapist	4 (2.7)
	Registered dietitian	7 (4.8)
	Registered nurse	25 (17.0)
	Other ^a	14 (9.5)
Number of beds	1–96 beds	73 (49.7)
	97–160 beds	27 (18.4)
	More than 160 beds	46 (31.3)
	Prefer not to answer	1 (0.7)
Location of facility	New Brunswick	34 (23.1)
	Nova Scotia	110 (74.8)
	Ontario	3 (2.0)
Community population over 100,000	No	51 (34.7)
	Yes	79 (53.7)
	Prefer not to answer	17 (11.6)
Private or not-for-profit	I don't know	32 (21.8)
	Prefer not to answer	5 (3.4)
	Privately funded/for-profit	64 (43.5)
	Publicly funded/not-for-profit	43 (29.3)
	None of the above	3 (2.0)
Length of time worked at current facility	1.5–2 years	24 (16.3)
	2.5–5 years	30 (20.4)
	5.5–10 years	20 (13.6)
	6–12 months	19 (12.9)
	Less than 6 months	16 (10.9)
	More than 10 years	36 (24.5)
	Prefer not to answer	2 (1.4)

Table 1 (continued)

Description of Participants (N = 148)

Length of time worked in long-term care (total)	1.5–2 years	20 (13.6)
	2.5–5 years	27 (18.5)
	5.5–10 years	27 (18.5)
	6–12 months	13 (8.8)
	Less than 6 months	3 (2.0)
	More than 10 years	56 (38.4)
	Prefer not to answer	1 (0.7)
Role at mealtimes	I am not involved with meals	9 (6.1)
	I assist residents with table set up	23 (15.6)
	I assist with table/tray clean up after meals	12 (8.2)
	I observe residents' abilities during mealtimes	25 (17.0)
	I provide personal assistance, including hands-on assistance with a meal	39 (26.5)
	I receive/solicit feedback from residents about mealtimes	13 (8.8)
	I serve food	17 (11.6)
	Other	8 (5.4)
	Prefer not to answer	1 (0.7)
Staffing ratios	1 staff member to 10+ residents	26 (19.0)
	1 staff member to 4–5 residents	14 (10.2)
	1 staff member to 6–7 residents	43 (31.4)
	1 staff member to 8–9 residents	43 (31.4)
	Prefer not to answer	11 (8.0)

^aOther titles and roles included client relations coordinator, community manager, housekeeper, music therapist, long-term care assistant, recreation coordinator, and recreation therapy programmer.

Figure 1

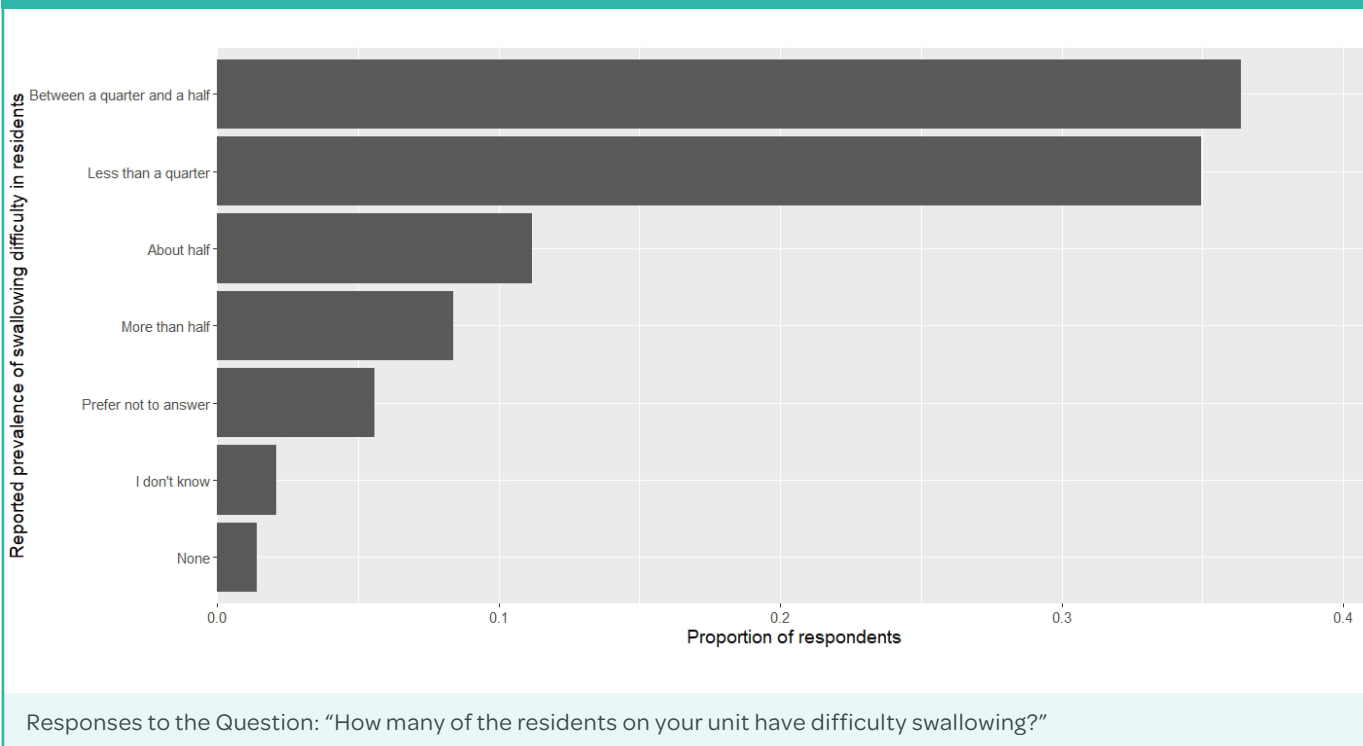
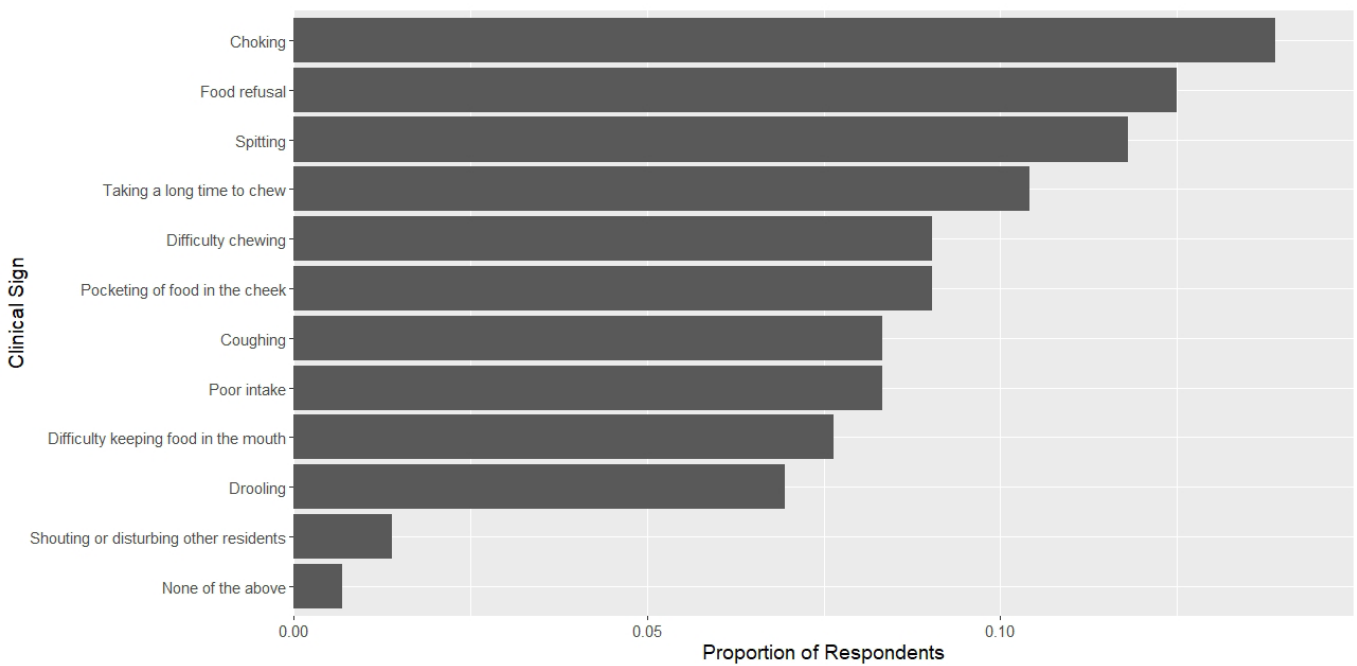
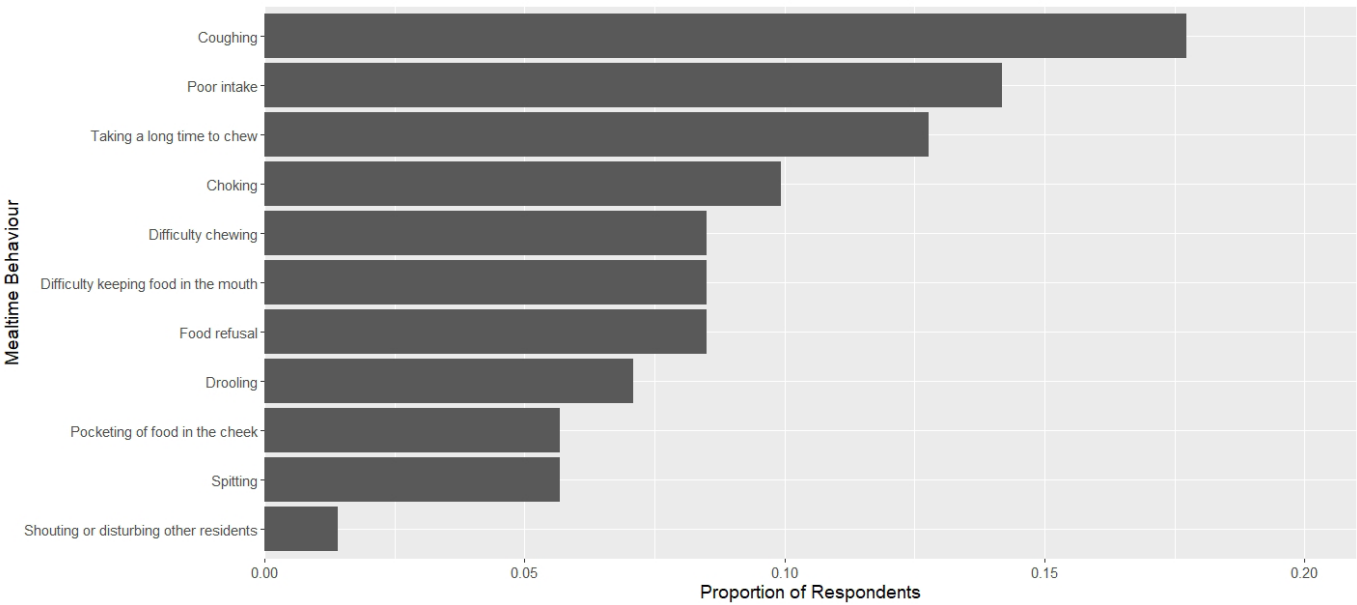


Figure 2



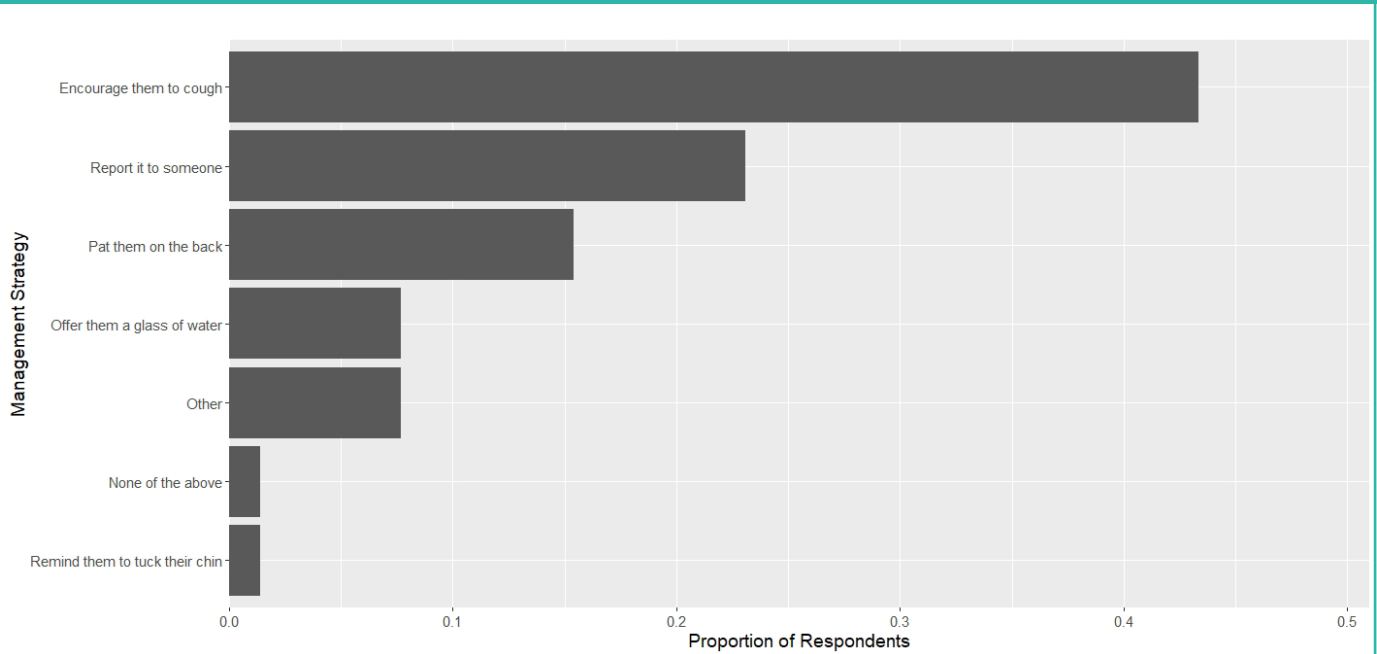
Responses to the Question: "Which of the following might suggest to you that a person has difficulty swallowing?"

Figure 3



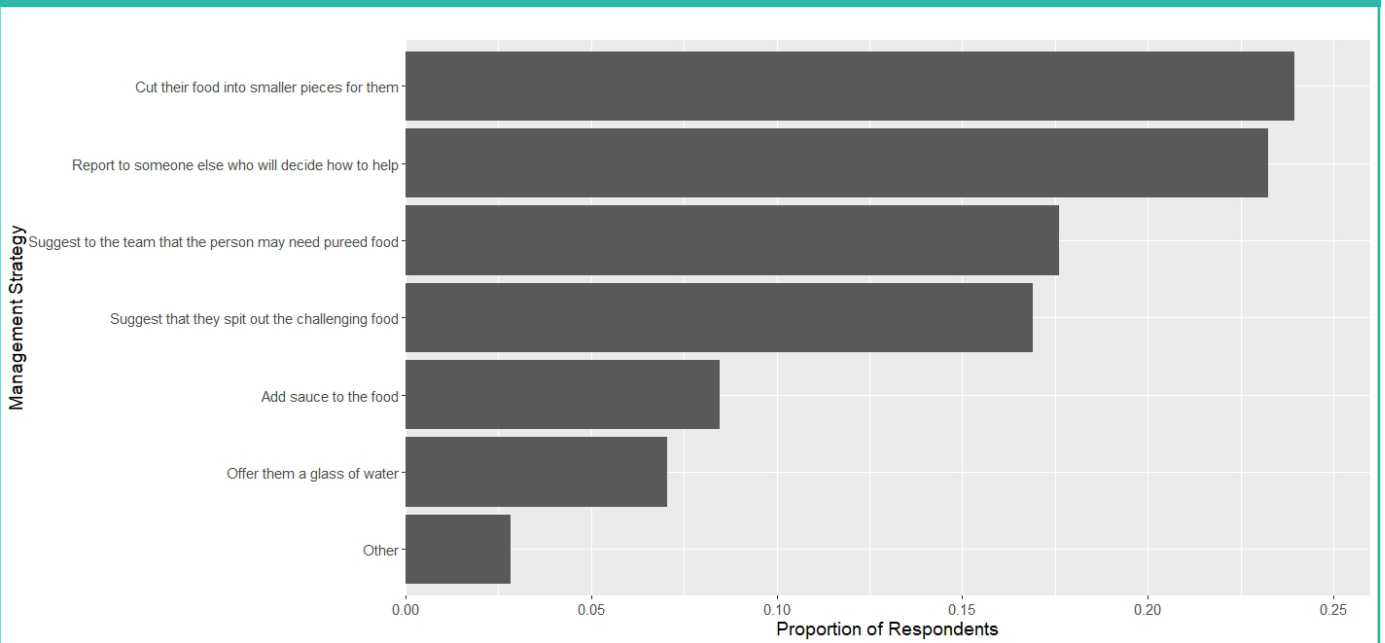
Responses to the Question: "Which mealtime behaviours suggest to you that the person may need a modified texture diet?"

Figure 4



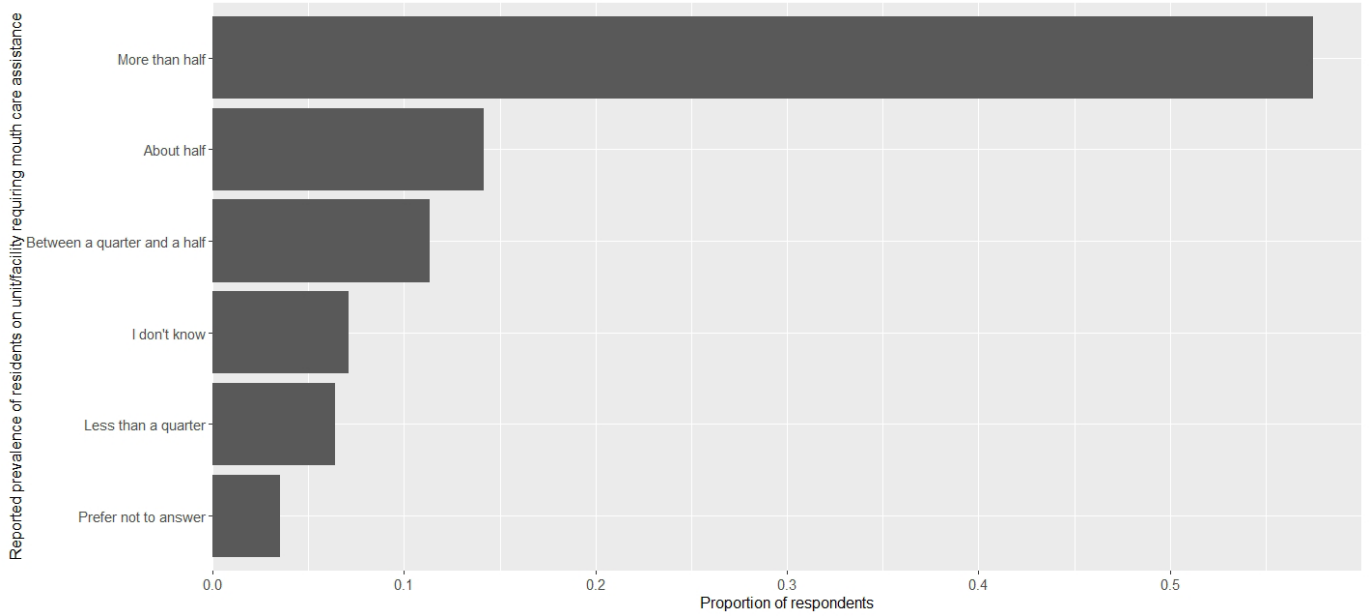
Responses to the Question: "What do you do when you observe a resident coughing during a meal?"

Figure 5



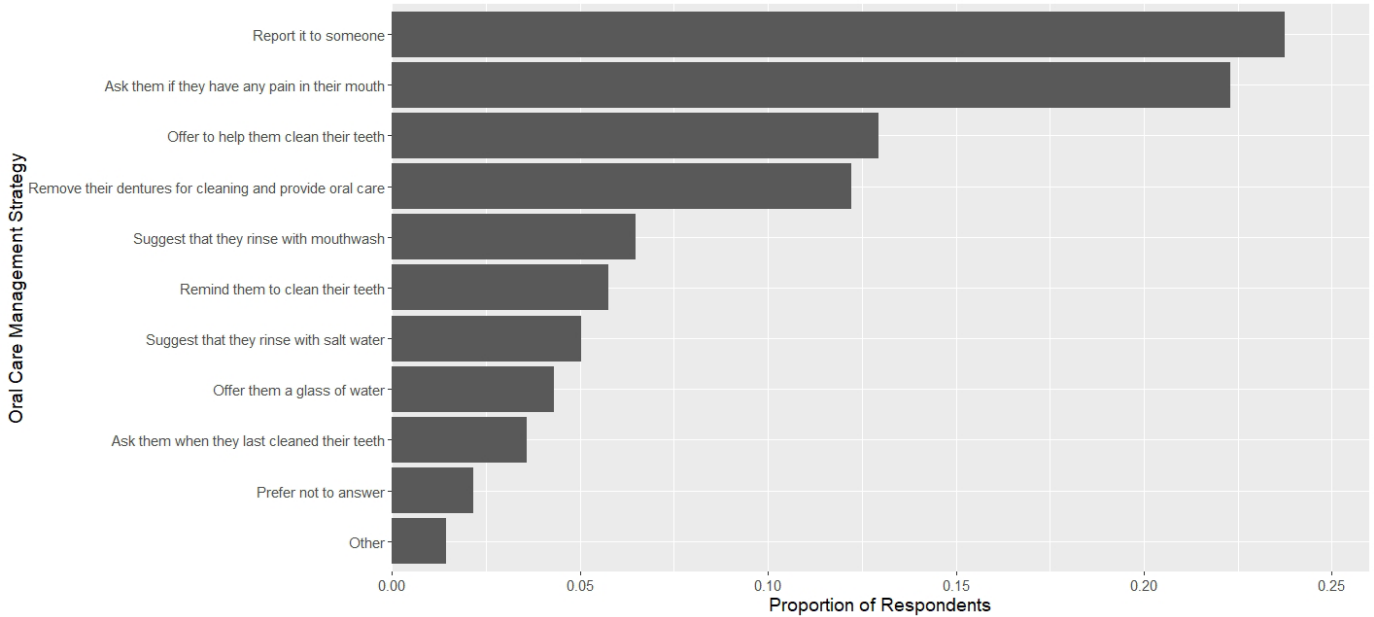
Responses to the Question: "What do you do when you observe a resident having difficulty chewing food during a meal?"

Figure 6



Responses to the Question: "How many residents on your unit/in your facility require assistance with mouth care?"

Figure 7



Responses to the Question: "When you notice something unusual about a resident's mouth, what do you do?"

assessments when they were needed (72%). Dietitians (8%), S-LPs (7%), and nurses (1%) were also reported to perform swallowing assessments (Figure 8). LTC residents reportedly waited for less than a week before they received a swallowing assessment (58%), although some waited for 1 to 2 weeks (12%). Most respondents did not know how LTC residents accessed professional oral health care (39%) or how long that might take (43%), however some reported that a referral had to be made for the resident to go to a special dental clinic (21%) and some reported that a family member had to transport the resident to their dentist (17%). Waiting time for those appointments might take 1 to 2 (18%) or 2 to 4 weeks (18%).

Relationships Between Variables

A significant relationship was identified between greater number of years of experience and feeling very confident recommending the use of TMDs ($p = .039$; Table 2). The following additional potential associations were explored, however no significant relationships were identified: staffing ratios and the amount of time staff dedicated to assisting residents with meals ($p = .332$) or with oral health ($p = .859$); number of beds in the LTC facility and the ability to access a dentist ($p = .070$); the location of the LTC facility and wait time for an S-LP assessment ($p = .823$); years of experience and knowledge of how to manage oral health ($p = .942$) or chewing difficulties ($p = .252$); and years of experience

and confidence managing swallowing disorders ($p = .606$), providing assistance at mealtimes ($p = .427$), or managing oral health ($p = .511$).

Additional Comments

Eighteen percent of respondents provided a free-text response when asked to share any additional comments or thoughts not captured by the survey questions. Responses were coded by RHA and ANM. Raters disagreed on 6 of the 35 codes assigned (17%) and discrepancies were discussed to consensus.

Staff shortages were reported as a barrier to providing optimal care ($n = 4, 14\%$). Respondents indicated they were aware that oral health care may be lacking in LTC ($n = 4, 14\%$); however, they reported that managing resident behaviours could be a major challenge to providing oral care ($n = 2, 8\%$), and there could be a shortage of hygiene equipment ($n = 3, 11\%$). Respondents reported a lack of education and training and an interest in obtaining more education and training to improve their understanding and management practices pertaining to swallowing impairment, IDDSI, and providing oral hygiene ($n = 5, 19\%$). Respondents felt that access to swallowing assessments and an on-site oral health professional (such as a dental hygienist) would have a positive impact on eating and oral care ($n = 1, 4\%$).

Figure 8

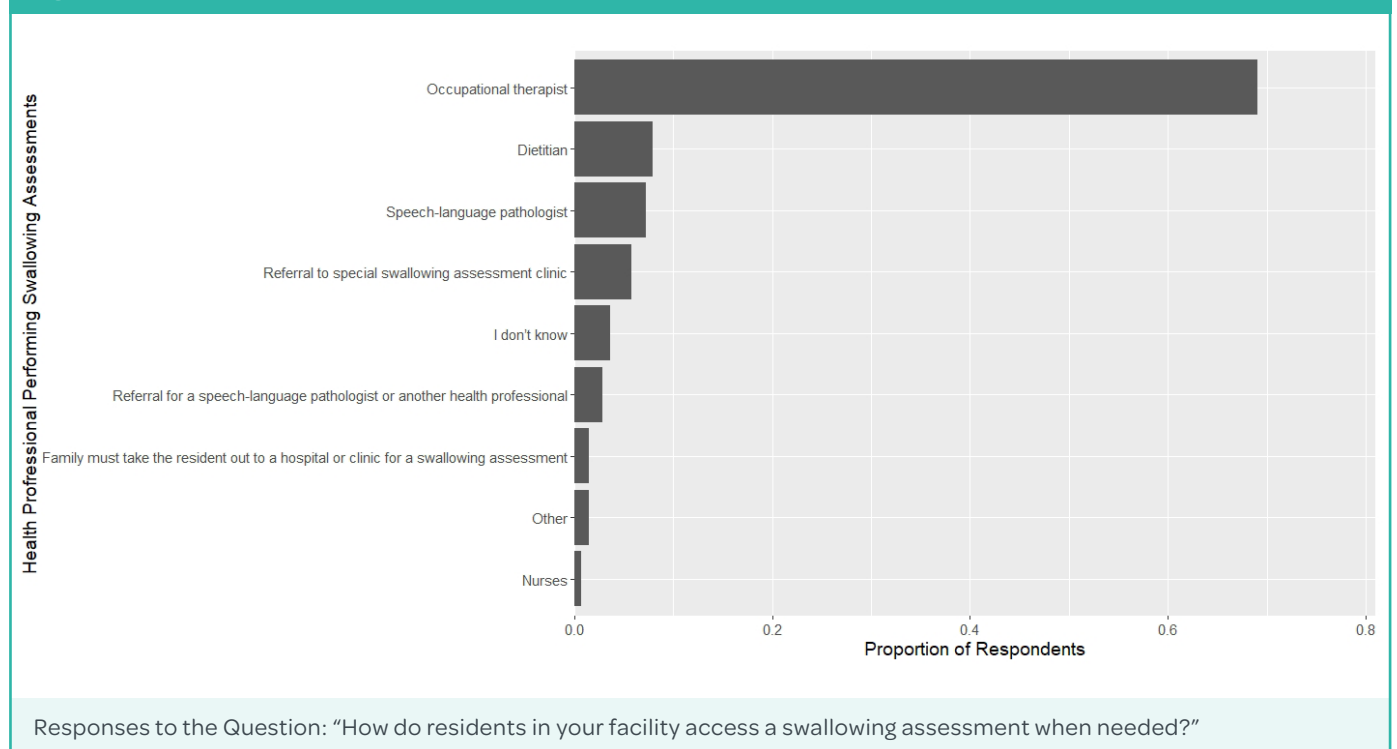


Table 2

Relationship Between Number of Years of Experience and Feeling Very Confident Recommending the Use of Texture-Modified Diets

Years of experience	How confident do you feel recommending the use of modified texture diets?	
	Not confident <i>n</i> (%)	Confident* <i>n</i> (%)
2 years or less	18 (41.9)	16 (18.8)
2.5–5 years	7 (16.3)	16 (18.8)
5.5–10 years	4 (9.3)	18 (21.2)
More than 10 years	14 (32.6)	35 (41.2)

Note. The years of experience were reported by participants in answer to the question, "How many years in total have you worked in long-term care (any facility)?"
* *p* = .039 using Fisher's exact test for count data

Additional Comments: Impact of the COVID-19 Pandemic

Thirty-five percent of respondents indicated that the COVID-19 pandemic impacted the eating-related and oral care provided to LTC residents and of those, 82% (*n* = 42) provided a free-text description. Raters disagreed on 7 of the 106 codes assigned (1%) and discrepancies were discussed to consensus. Several themes were identified from the free-text responses, including staff shortages, visitor restrictions, mask requirements, being confined to rooms for meals, and limited accessibility of off-site appointments.

Staff shortages were very commonly reported as having a negative impact on eating and oral care (*n* = 22, 58%). Respondents reported that staff shortages resulted in staff having less time to dedicate to assisting each resident during mealtimes or with oral care (*n* = 2, 5%). Staff burnout was also identified as a challenge (*n* = 1, 3%). Respondents reported that staff shortages resulted in the presence of new and untrained and/or unfamiliar staff who were inexperienced with providing care or were unaware of what assistance was needed by the residents (*n* = 2, 5%).

Visitor restrictions were also commonly reported as having a negative impact on care. Respondents reported that visitor restrictions had a negative impact on residents' emotional well-being, which could impact appetite, as well as on the ability to provide mealtime assistance as many family members were involved with providing mealtime assistance prepandemic (*n* = 9, 24%). Moreover, mask requirements were reported to negatively impact communication between residents with hearing loss and staff or visitors (*n* = 3, 8%). Interactions between residents and staff were reported to be less personal and more medical.

Respondents reported that during the pandemic residents were confined to their rooms for meals, which negatively impacted eating-related care (*n* = 5, 12%). Mealtimes were reported to be less social, routines were disrupted, and respondents felt residents had less sensory stimulation (food aromas and seeing others eating around them) than before the pandemic (*n* = 2, 5%). Respondents reported that additional time was required when staff were providing mealtime assistance to each resident individually in their rooms, resulting in meals being served at nonoptimal temperatures, and they felt that some residents did not receive the level of assistance they required (*n* = 5, 13%). One respondent mentioned that during the pandemic, residents had to use disposable utensils at mealtimes and were not able to use prescribed assistive devices (*n* = 1, 3%).

Respondents reported that the COVID-19 pandemic negatively impacted the accessibility of sending residents to off-site appointments (*n* = 5, 13%). Transporting residents to appointments was reported to be more challenging than usual due to restrictions pertaining to the number of support persons allowed to travel with residents (*n* = 1, 3%). Accessing professional oral health care was limited due to dental office closures during the first wave of the pandemic (*n* = 1, 2%).

Discussion

The purpose of this study was to explore the current knowledge, perspectives, and practice patterns of LTC staff pertaining to swallowing disorders, oral health, TMD use, and the barriers and facilitators to identifying and advocating for swallowing and/or oral health assessments for LTC residents. A survey instrument was developed with input from an advisory panel made up of key stakeholders and was

administered to staff at LTC facilities in Nova Scotia, New Brunswick, and Ontario. Complete responses were obtained from 148 participants (response rate of 47%) primarily working in LTC facilities in Nova Scotia and New Brunswick. The results of the survey suggest that frontline LTC staff may have limited knowledge of swallowing disorders and that overreliance on TMDs is likely. Staff appear to be reporting concerns related to oral health and swallowing impairments when they identify them, however, assessment of these concerns using instrumental measures (such as videofluoroscopic or endoscopic swallowing studies) in the case of swallowing impairments, or professional oral health assessment, appears to be rare.

Despite reporting high levels of confidence to act upon suspected swallowing disorders, responses to items pertaining to knowledge of swallowing disorders suggest that survey respondents may not be aware of the breadth of clinical signs associated with swallowing disorders. These high levels of confidence could also be accounted for by the Dunning-Kruger effect (Kruger & Dunning, 1999), where less skilled LTC staff provide higher self-assessments, resulting in respondents reporting what they believe the survey is looking for, regardless of their actual perceptions. As such, we cannot be sure that staff confidence in swallowing disorders is associated with best practices. Moreover, 36% of survey respondents reported the prevalence of swallowing disorders on their unit to be between 25% and 50%, which is consistent with prevalence values previously cited in the literature (between 13% and 53%; Park et al., 2013; Streicher et al., 2017). However, a similar number of respondents (35%) reported the prevalence to be less than 25% suggesting that swallowing disorders may be underidentified in some facilities. Similar findings pertaining to potentially underidentifying swallowing disorders were reported in a survey study conducted with nursing home leadership in Norway (Eng & Speyer, 2021).

Few respondents reported receiving formal education to support residents during mealtimes and signs of potential malnutrition (poor intake) were reported as an indicator of needing a TMD, which could worsen nutritional status due to general unpalatability and reduced levels of nutrient density in TMDs (Wu et al., 2020). Also concerning, most respondents did not know about IDDSI, which is an internationally accepted framework to ensure standardization of TMDs. Increased awareness and education around IDDSI may help to ensure residents are receiving the least restrictive diet required, consequently helping to improve palatability and intake. Despite reporting limited knowledge and training, respondents reported being very confident recommending the use of TMDs and

those who reported having a greater number of years of experience working in LTC were significantly more likely to report feeling very confident recommending TMDs. Feeling confident about recommending TMDs may be related to feelings of self-efficacy. Holteng et al. (2017) conducted a qualitative study where they held focus group interviews with frontline LTC staff who reported that they felt safer in the meal situation when they served TMDs to patients with identified swallowing impairments than when serving regular food. Despite TMD use being associated with malnutrition, participants reported that with TMDs, they felt more able to provide sufficient nutritional care that was customized according to patients' needs and that could be eaten with fewer problems (Holteng et al., 2017).

Most survey respondents reported that more than half of residents require assistance with oral care, which is consistent with other estimates cited in the literature (Canadian Institute for Health Information, 2020). Of note, most respondents reported feeling very confident about their ability to provide mouth care, however, most respondents reported that they did not provide mouth care to residents despite performing roles such as nursing assistant/health care aide/personal support worker, licensed practical nurse, or registered nurse. Furthermore, most respondents reported that they did not know how residents accessed professional oral health services. This is a concern because oral care issues may not be resolved in a timely manner if proper referrals are not being made due to lack of knowledge regarding access to appropriate services. This could subsequently lead to increased risk of aspiration pneumonia (Langmore et al., 1998) and other illnesses linked to poor oral care.

Occupational therapists and dietitians were overwhelmingly reported to be involved in swallowing assessments. Outside LTC settings in Nova Scotia, New Brunswick, and Ontario, S-LPs are most commonly involved in conducting and interpreting instrumental swallowing assessments, such as videofluoroscopic swallowing studies or flexible endoscopic evaluations of swallowing. The survey results suggest that S-LPs are rarely involved in conducting swallowing assessments within LTC, and instrumental assessments are not used when prescribing TMDs, a finding which was expected given anecdotal clinical reports suggesting that S-LPs have a limited presence in Canadian LTC facilities. However, given S-LPs are uniquely qualified to evaluate and manage dysphagia and to identify oral health concerns, increased involvement of S-LPs within LTC interprofessional teams could be beneficial for educating staff and providing comprehensive management of swallowing impairments (Affoo et al., 2022).

Most respondents reported working in Nova Scotia or New Brunswick, which may provide some important insights given the unique characteristics of these two provinces. Nova Scotia and New Brunswick have an aging population compared with the rest of Canada, with the first and second (respectively) largest percentages of older people among all other provinces (Statistics Canada, 2019). Moreover, data from Nova Scotia reveal a higher rate of LTC residents with at least one tooth (59%) compared to the national average (Matthews & Clovis, 2012), which suggests that professional oral health care is particularly important for LTC residents in Nova Scotia. In 2016, provincial guidelines were developed that outlined specific expectations for oral health evaluation and daily care in LTC facilities in Nova Scotia. The fact that most respondents reported that they did not provide mouth care to residents and did not know how residents accessed professional oral health services is surprising. Provincial guidelines require that each resident have a daily mouth care plan that includes appropriate oral hygiene techniques and products individualized to their specific needs (The Nova Scotia Department of Health and Wellness, 2022) and a suite of open access resources that support optimum daily mouth care were provided (and continue to be freely available) to LTC facilities in the province (Brushing Up on Mouth Care, n.d.; McNally et al., 2015).

Clinical Implications

The results of this study suggest that increased education and training is required for LTC staff to improve knowledge of how to best reduce the risk of, screen for, and improve management of swallowing disorders and oral health concerns. Further, LTC facilities in Canada may greatly benefit from increased physical presence of S-LPs to provide continuous training and education, and liaise with nursing staff, dietitians, and occupational therapists who are currently supporting residents with swallowing disorders and oral care issues. S-LPs could also provide critical training on IDDSI to both frontline and kitchen staff to ensure TMDs are being prescribed only when absolutely necessary, weighing both the risks and benefits, and are being created in a standard way to ensure the least restrictive diet is always being provided to residents. Finally, results also suggest that clear clinical pathways should be developed and conveyed to all LTC staff so the processes of screening for swallowing disorders and oral health issues and of making subsequent appropriate referrals are clear.

Limitations

This study has several limitations. The advisory panel that was assembled to inform survey development did not include patient/resident representation and therefore that

perspective was not adequately captured in the final version of the survey. Furthermore, because the total number of LTC staff in Canada is unknown and an a priori sample size was not calculated, it is unclear whether the sample of respondents is representative of the total population of LTC staff in Canada.

The COVID-19 pandemic disproportionately impacted LTC facilities including residents and staff (Canadian Institute for Health Information, 2021). Recruitment and data collection occurred during the COVID-19 pandemic at a time when staff shortages and staff burnout were a major concern, as can be seen from our qualitative findings. Survey responses were collected for over a year, and it is unclear what impact this may have had on the findings. It is possible, given the impacts of the pandemic on LTC staff that nonresponse bias may have been an issue in our study. One of the indicators of this may have been the high response rate from LTC staff working in Nova Scotia and New Brunswick (where infection rates tended to be lower in early waves of the pandemic) compared to Ontario. Although 148 participants completed the survey (response rate of 47%), the length of the survey (at 54 items) may have been burdensome on respondents and influenced their responses. Social desirability bias may have also been an issue, although the fact that most respondents reported that they did not provide mouth care to residents does not support this.

Future Directions

This survey did not include items pertaining to nutritional assessment and management of residents receiving TMDs. Future research should focus on exploring the knowledge and perspectives of LTC staff pertaining to nutrition and TMDs. Evaluating the appropriateness of TMD prescription in LTC facilities across Canada should also be the focus of future research.

Conclusion

Frontline LTC staff appear to be reporting concerns related to oral health and swallowing impairments when they identify them, however, they need education and training to improve their knowledge and ability to identify disorders and concerns. Increased involvement of S-LPs within LTC interprofessional teams could be beneficial for educating staff and for providing comprehensive management of swallowing. Improved access to instrumental swallowing assessments and professional oral health evaluations would contribute to reducing the overuse of TMDs in LTC facilities.

References

- Affoo, R., Constantinescu, G., Craig, S., Perlin, R., Wadhvaniya, Z., & Wright, M. (2022, May). *SAC position paper on speech-language pathology evaluation and intervention for swallowing and feeding disorders across the lifespan*. Speech-Language & Audiology Canada. https://www.sac-oac.ca/wp-content/uploads/2022/10/SAC_Position_Paper_-_Swallowing_Feeding_Disorder_Across_the_Lifespan_EN.pdf
- Algra, Y., Haverkort, E., Kok, W., van Etten-Jamaludin, F., van Schoot, L., Hollaar, V., Naumann, E., de van der Schueren, M., & Jerković-Čosić, K. (2021). The association between malnutrition and oral health in older people: A systematic review. *Nutrients*, *13*(10), Article 3584. <https://doi.org/10.3390/nu13103584>
- Bennett, J., & Vella, C. (2023, January 5). Aspiration pneumonia. *BMJ Best Practice*. <https://bestpractice.bmj.com/topics/en-gb/3000171#main-content>
- Braun, V., & Clarke, V. (2014). What can “thematic analysis” offer health and wellbeing researchers? *International Journal of Qualitative Studies on Health and Well-Being*, *9*, Article 26152. <https://doi.org/10.3402/qhw.v9.26152>
- Brushing Up on Mouth Care. (n.d.). *Home page*. Healthy Populations Institute. <https://brushingup.ca>
- Canadian Institute for Health Information. (2020). *Profile of residents in residential and hospital-based continuing care, 2019-2020*. www.cihi.ca/sites/default/files/document/ccrs-quick-stats-2019-2020-en.xlsx
- Canadian Institute for Health Information. (2021). *The impact of COVID-19 on long-term care in Canada: Focus on the first 6 months*. <https://www.cihi.ca/sites/default/files/document/impact-covid-19-long-term-care-canada-first-6-months-report-en.pdf>
- Crary, M. A., Humphrey, J. L., Carnaby-Mann, G., Sambandam, R., Miller, L., & Silliman, S. (2013). Dysphagia, nutrition, and hydration in ischemic stroke patients at admission and discharge from acute care. *Dysphagia*, *28*(1), 69–76. <https://doi.org/10.1007/s00455-012-9414-0>
- Crogan, N. L., & Pasvogel, A. (2003). The influence of protein-calorie malnutrition on quality of life in nursing homes. *The Journals of Gerontology: Series A*, *58*(2), M159–M164. <https://doi.org/10.1093/gerona/58.2.m159>
- Cruz-Jentoft, A. J., Kiesswetter, E., Drey, M., & Sieber, C. C. (2017). Nutrition, frailty, and sarcopenia. *Aging Clinical and Experimental Research*, *29*(1), 43–48. <https://doi.org/10.1007/s40520-016-0709-0>
- de Medeiros, M. M. D., Pinheiro, M. A., de Figueredo, O. M. C., de Oliveira, L. F. S., Wanderley, R. L., Cavalcanti, Y. W., & Rodrigues Garcia, R. C. M. (2020). Masticatory function in nursing home residents: Correlation with the nutritional status and oral health-related quality of life. *Journal of Oral Rehabilitation*, *47*(12), 1511–1520. <https://doi.org/10.1111/joor.13096>
- Eng, M. C. N., & Speyer, R. (2021). Management of dysphagia in nursing homes: A national survey. *Dysphagia*, *37*, 266–276. <https://doi.org/10.1007/s00455-021-10275-7>
- Groher, M. E., & McKaig, T. N. (1995). Dysphagia and dietary levels in skilled nursing facilities. *Journal of the American Geriatrics Society*, *43*(5), 528–532. <https://doi.org/10.1111/j.1532-5415.1995.tb06100.x>
- Holteng, L. B. A., Frøiland, C. T., Corbett, A., & Testad, I. (2017). Care staff perspective on use of texture modified food in care home residents with dysphagia and dementia. *Annals of Palliative Medicine*, *6*(4), Article 4. <https://doi.org/10.21037/apm.2017.06.24>
- Jackson, T., Clemens, J., & Palacios, M. (2017). *Canada's aging population and implications for government finances*. Fraser Institute. <https://www.fraserinstitute.org/sites/default/files/canadas-aging-population-and-implications-for-government-finances.pdf>
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, *77*(6), 1121–1134. <https://pubmed.ncbi.nlm.nih.gov/10626367/>
- Langmore, S. E., Skarupski, K. A., Park, P. S., & Fries, B. E. (2002). Predictors of aspiration pneumonia in nursing home residents. *Dysphagia*, *17*(4), 298–307. <https://doi.org/10.1007/s00455-002-0072-5>
- Langmore, S. E., Terpenning, M. S., Schork, A., Chen, Y., Murray, J. T., Lopatin, D., & Loesche, W. J. (1998). Predictors of aspiration pneumonia: How important is dysphagia? *Dysphagia*, *13*(2), 69–81. <https://doi.org/10.1007/PL00009559>
- Lanspa, M. J., Peyrani, P., Wiemken, T., Wilson, E., Ramirez, J. A., & Dean, N. C. (2015). Characteristics associated with clinician diagnosis of aspiration pneumonia: A descriptive study of afflicted patients and their outcomes. *Journal of Hospital Medicine*, *10*(2), 90–96. <https://shmpublications.onlinelibrary.wiley.com/doi/10.1002/jhm.2280>
- Logemann, J. A. (1998). The evaluation and treatment of swallowing disorders. *Current Opinion in Otolaryngology & Head & Neck Surgery*, *6*(6), 395–400. https://journals.lww.com/co-otolaryngology/abstract/1998/12000/the_evaluation_and_treatment_of_swallowing8.aspx
- Logemann, J. A., Rademaker, A., Pauloski, B., Antinoja, J., Bacon, M., Bernstein, M., Gaziano, J., Grande, B., Kelchner, L., Kelly, A., Klaben, B., Lundy, D., Newman, L., Santa, D., Stachowiak, L., Stangl-McBreen, C., Atkinson, C., Bassani, H., Czaplá, M., & Farquharson, J. (2008). What information do clinicians use in recommending oral versus nonoral feeding in oropharyngeal dysphagic patients? *Dysphagia*, *23*(4), 378–384. <https://doi.org/10.1007/s00455-008-9152-5>
- Makhnevich, A., Marziliano, A., Porreca, K., Gromova, V., Diefenbach, M. A., & Sinvani, L. (2023). Oropharyngeal dysphagia in hospitalized older adults with dementia: A mixed-methods study of care partners. *American Journal of Speech-Language Pathology*, *32*(1), 234–245. https://doi.org/10.1044/2022_AJSLP-22-00126
- Matthews, D., & Clovis, J. (2012). *The oral health of our aging population study* [Summary report]. Dalhousie University.
- McNally, M., Martin-Misener, R., McNeil, K., Brilliant, M., Moorhouse, P., Crowell, S., Matthews, D., & Clovis, J. (2015). Implementing oral care practices and policy into long-term care: The brushing up on mouth care project. *Journal of the American Medical Directors Association*, *16*(3), 200–207. <https://doi.org/10.1016/j.jamda.2014.08.018>
- Namasivayam-MacDonald, A. M., Slaughter, S. E., Morrison, J., Steele, C. M., Carrier, N., Lengyel, C., & Keller, H. H. (2018). Inadequate fluid intake in long term care residents: Prevalence and determinants. *Geriatric Nursing*, *39*(3), 330–335. <https://doi.org/10.1016/j.gerinurse.2017.11.004>
- The Nova Scotia Department of Health and Wellness. (2022). *Long-term care program requirements: Nursing homes & residential care facilities*. <https://novascotia.ca/dhw/ccs/policies/Long-Term-Care-Facility-Program-Requirements.pdf>
- Park, Y.-H., Han, H.-R., Oh, B.-M., Lee, J., Park, J., Yu, S. J., & Chang, H. (2013). Prevalence and associated factors of dysphagia in nursing home residents. *Geriatric Nursing*, *34*(3), 212–217. <https://doi.org/10.1016/j.gerinurse.2013.02.014>
- Porter, J., Ntouva, A., Read, A., Murdoch, M., Ola, D., & Tsakos, G. (2015). The impact of oral health on the quality of life of nursing home residents. *Health and Quality of Life Outcomes*, *13*, Article 102. <https://doi.org/10.1186/s12955-015-0300-y>
- Public Health Agency of Canada. (2020). *Aging and chronic diseases: A profile of Canadian seniors*. <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/aging-chronic-diseases-profile-canadian-seniors-report.html>
- Robbins, J., Nicosia, M., Hind, J. A., Gill, G. D., Blanco, R., & Logemann, J. (2002). Defining physical properties of fluids for dysphagia evaluation and treatment. *Perspectives on Swallowing and Swallowing Disorders*, *11*(2), 16–19. <https://doi.org/10.1044/sasd11.2.16>
- Sharma, A., Minh Duc, N. T., Luu Lam Thang, T., Nam, N. H., Ng, S. J., Abbas, K. S., Huy, N. T., Marušić, A., Paul, C. L., Kwok, J., Karbwang, J., de Waure, C., Drummond, F. J., Kizawa, Y., Taal, E., Vermeulen, J., Lee, G. H. M., Gyedu, A., To, K. G., ... Karamouzian, M. (2021). A consensus-based checklist for reporting of survey studies (CROSS). *Journal of General Internal Medicine*, *36*(10), 3179–3187. <https://doi.org/10.1007/s11606-021-06737-1>
- Shim, J. S., Oh, B.-M., & Han, T. R. (2013). Factors associated with compliance with viscosity-modified diet among dysphagic patients. *Annals of Rehabilitation Medicine*, *37*(5), 628–632. <https://doi.org/10.5535/arm.2013.37.5.628>
- Statistics Canada. (2019, September 19). *Population projections for Canada (2018 to 2068), provinces and territories (2018 to 2043)*. Government of Canada. <https://www150.statcan.gc.ca/n1/pub/91-520-x/91-520-x2019001-eng.htm>
- Streicher, M., Themessl-Huber, M., Schindler, K., Sieber, C. C., Hiesmayr, M., & Volkert, D. (2017). nutritionDay in nursing homes—The association of nutritional intake and nutritional interventions with 6-month mortality in malnourished residents. *Journal of the American Medical Directors Association*, *18*(2), 162–168. <https://doi.org/10.1016/j.jamda.2016.08.021>

- Swan, K., Speyer, R., Heijnen, B. J., Wagg, B., & Cordier, R. (2015). Living with oropharyngeal dysphagia: Effects of bolus modification on health-related quality of life—A systematic review. *Quality of Life Research, 24*(10), 2447–2456. <https://doi.org/10.1007/s11136-015-0990-y>
- Takeuchi, K., Aida, J., Ito, K., Furuta, M., Yamashita, Y., & Osaka, K. (2014). Nutritional status and dysphagia risk among community-dwelling frail older adults. *The Journal of Nutrition, Health & Aging, 18*(4), 352–357. <https://doi.org/10.1007/s12603-014-0025-3>
- Toniazzo, M. P., de Sant'Ana Amorim, P., Muniz, F. W. M. G., & Weidlich, P. (2018). Relationship of nutritional status and oral health in elderly: Systematic review with meta-analysis. *Clinical Nutrition, 37*(3), 824–830. <https://doi.org/10.1016/j.clnu.2017.03.014>
- Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences, 15*(3), 398–405. <https://doi.org/10.1111/nhs.12048>
- Vucea, V., Keller, H. H., Morrison, J. M., Duizer, L. M., Duncan, A. M., Carrier, N., Lengyel, C. O., Slaughter, S. E., & Steele, C. M. (2018). Modified texture food use is associated with malnutrition in long term care: An analysis of making the most of mealtimes (M3) project. *The Journal of Nutrition, Health & Aging, 22*(8), 916–922. <https://doi.org/10.1007/s12603-018-1016-6>
- Vucea, V., Keller, H. H., Morrison, J. M., Duizer, L. M., Duncan, A. M., & Steele, C. M. (2019). Prevalence and characteristics associated with modified texture food use in long term care: An analysis of making the most of mealtimes (M3) project. *Canadian Journal of Dietetic Practice and Research, 80*(3), 104–110. <https://doi.org/10.3148/cjcdpr-2018-045>
- Vucea, V., Keller, H. H., Morrison, J. M., Duncan, A. M., Duizer, L. M., Carrier, N., Lengyel, C. O., & Slaughter, S. E. (2017). Nutritional quality of regular and pureed menus in Canadian long term care homes: An analysis of the making the most of mealtimes (M3) project. *BMC Nutrition, 3*, Article 80. <https://doi.org/10.1186/s40795-017-0198-3>
- Welch, A. A. (2014). Nutritional influences on age-related skeletal muscle loss. *The Proceedings of the Nutrition Society, 73*(1), 16–33. <https://doi.org/10.1017/S0029665113003698>
- Whelan, K. (2001). Inadequate fluid intakes in dysphagic acute stroke. *Clinical Nutrition, 20*(5), 423–428. <https://doi.org/10.1054/clnu.2001.0467>
- Wu, X. S., Miles, A., & Braakhuis, A. (2020). Nutritional intake and meal composition of patients consuming texture modified diets and thickened fluids: A systematic review and meta-analysis. *Healthcare, 8*(4), 579. <https://doi.org/10.3390/healthcare8040579>
- Wyatt, C. C. L., & Kawato, T. (2019). Changes in oral health and treatment needs for elderly residents of long-term care facilities over 10 years. *Journal of the Canadian Dental Association, 84*, Article 7. <https://jcd.a.ca/j7>
- Yoon, M. N., Ickert, C., Slaughter, S. E., Lengyel, C., Carrier, N., & Keller, H. (2018). Oral health status of long-term care residents in Canada: Results of a national cross-sectional study. *Gerodontology, 35*(4), 359–364. <https://doi.org/10.1111/ger.12356>

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