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Research Article

Perception Versus Performance of Swallow Function in Residents of Long-Term Care

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Purpose: The purpose of this study was to determine if older adults residing in long-term care were able to accurately self-report their swallowing status by comparing subjective complaints of dysphagia and objective methods of swallowing screening.
Method: Data were collected from 397 residents of long-term care (M_{age} = 86.8 years ± 7.8; 263 female). Cognitive impairment scores were collected, and each resident was asked (a) if they thought they had a swallowing problem, (b) if they coughed/choked when they ate, and (c) if they coughed/choked when they drank. These responses were compared to results of a swallowing screening tool and mealtime observations of coughing and choking.
Results: Residents who reported swallowing difficulties (10%, n = 41) were 8 times more likely to fail the swallowing screening ($p < .001$); however, 80% of residents who failed the swallowing screening did not previously report that swallowing was an issue. There was no significant association between self-reports of coughing and choking at meals and observations. There was no difference in level of cognition between residents who accurately reported swallowing status and those who were inaccurate.
Conclusions: Residents are largely unable to accurately self-report swallowing difficulties and also have difficulty accurately reporting incidences of coughing and choking. These findings suggest that concerted efforts are required to implement regular, formal swallowing screening protocols in long-term care to objectively identify those at risk.

As of 2014, there were approximately 1.4 million Americans residing in long-term care (LTC) homes (Harris-Kojetin et al., 2016), also known as nursing homes, skilled nursing facilities, dementia care units, or complex continuing care facilities. Given the rapidly increasing global rates of older adults (World Health Organization, 2015), one can also expect the number of people residing in LTC facilities to grow. Impaired cognition, which is often the result of dementia in older adults, is a common precipitating factor for transitioning to receiving LTC services.

Unfortunately, cognitive impairments, such as dementia, may preclude some LTC residents from recognizing their health care needs. Previous studies have indicated that, in general, people with a dementia diagnosis are often unaware of their cognitive deficits (Derouesné et al., 1999; Duke, Seltzer, Seltzer, & Vasterling, 2002; Ott et al., 1996), which may prevent them from providing accurate reports. However, self-reporting is one of the most widely used methods of collecting information regarding individuals' health status (Bhandari & Wagner, 2006; Centers for Disease Control and Prevention, 2007; Schiller, Lucas, & Peregoy, 2012). Despite widespread use of self-reports, there is little known about their accuracy in regard to specific health issues, such as swallowing impairments (dysphagia), for residents of LTC and/or people living with mild-to-severe cognitive impairments in this setting.

Previous research investigating the relationship between subjective and objective assessments of swallowing impairments in patients with various diagnoses has yielded conflicting results. A study of patients with head and neck cancer

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demonstrated that these patients were able to accurately self-report swallowing difficulties (Pauloski et al., 2002). Another study of 103 hospital patients with various medical diagnoses found significant associations for all patient groups, between subjective complaints of swallowing difficulties and objective measures of swallowing, although the strength of the association varied depending on the patient population: Patients with general medical diagnoses had the strongest association (Cramer's $V = 0.864$), followed by patients with structural deficits (Cramer's $V = 0.573$) and then patients with neurological disorders (Cramer's $V = 0.323$; Ding & Logemann, 2008). Another study of patients with stroke presenting with silent aspiration found that patients reported fewer subjective complaints of dysphagia than what was observed via objective evaluations (Horner & Massey, 1988). Only two of these studies may have had participants with cognitive deficits, and neither had a strong association between self-reports and objective measures (Ding & Logemann, 2008; Horner & Massey, 1988). However, given that cognition was not explicitly measured in any of the studies, the question as to whether cognitive impairments preclude an individual from recognizing swallowing difficulties remains unclear. In order to efficiently and accurately serve our older patients, it is imperative that we better understand the accuracy of self-reports of swallowing complaints in the LTC population where cognitive impairments are common. This is a setting where there is an abundance of residents who have been diagnosed with comorbidities known to be associated with dysphagia (i.e., stroke, dementia, Parkinson's disease).

Recent reports suggest that almost 60% of LTC residents present with swallowing difficulties (Namasivayam-MacDonald, Morrison, Steele, & Keller, 2017) and approximately 65% have a known dementia diagnosis (Keller et al., 2017a), for which cognitive impairments are inevitable and dysphagia is a known comorbidity (Easterling & Robbins, 2008). A systematic review of the literature has also indicated that some LTC facilities use the resident assessment instrument to probe for swallowing difficulties (Namasivayam & Steele, 2015), which requires the resident to be questioned about any swallowing difficulties as a component of the swallowing assessment (Morris et al., 1990). Anecdotal clinical reports also suggest that many LTC homes have no formal screening process and so may be relying on self-reports of swallowing difficulties. However, because many LTC residents present with impaired cognition, the reliability of these self-reports is unknown, and the relationship between subjective complaints of dysphagia in LTC and more objective methods of swallowing screening has not been previously documented in the literature. The purpose of this study was to determine if residents of LTC are able to accurately self-report their swallowing status. It was hypothesized that LTC residents would have poor self-perception of their swallowing difficulties.

Method

The present data and analyses are part of the Making the Most of Mealtimes study, which is a large, cross-sectional, multisite project that took place between 2015 and 2016. The complete protocol is described in detail elsewhere (Keller et al., 2017b). In brief, 32 Canadian LTC homes participated, and each was purposively selected from four Canadian provinces. Two to three units within each LTC home were randomly selected for recruitment and included a unit specializing in dementia care if available. Eighty-two units participated. Eligible residents (a) were 65+ years of age, (b) were medically stable (no hospital admission in the previous month or palliative), (c) had been in the home for at least 1 month, (d) ate an oral diet, and (e) typically ate in the dining room. There were 2,358 residents living on the recruited units; however, not all residents were eligible. All eligible residents for the selected units within the home were listed in a random number table that was used by trained home staff to determine order for approaching potential participants to see if they were interested in the study. Once 40 eligible residents agreed to hear more about the study, this list was provided to researchers to complete the informed consent process, which included data collection for the current study. The first 20 residents, or their alternative decision makers, who agreed to participate were included for the home. As described in the protocol article, participants ($n = 639$) were representative of the units where they lived; age, proportion of men, and those requiring alternative decision makers for consent did not differ between participants and eligible nonparticipants (Keller et al., 2017b).

The current study took the 639 residents recruited from the larger Making the Most of Mealtimes study and excluded any residents who had been prescribed thickened liquids ($n = 68$), as this indicated a probable dysphagia diagnosis regardless of documentation in the health record. Residents were also excluded if they were unable or refused to participate in the dysphagia screening process ($n = 174$). Once these residents were excluded from this study, 397 residents remained. Trained research personnel used consistent methods across all homes to collect data. Major medical diagnoses, such as dementia, previous strokes, and Parkinson's disease, were recorded from each resident's health record maintained in each LTC home. Cognitive Performance Scale (CPS) scores were collected in order to place each resident into a cognitive performance category, ranging from borderline intact (score of 1) to very severe cognitive impairment (score of 6; Morris et al., 1994). Research coordinators interviewed staff familiar with the resident to complete the CPS.

Before determining dysphagia risk, residents who were able and willing to respond were asked the following three questions: (a) "Do you have any problems swallowing?" (b) "Do you cough or choke when you drink?" and (c) "Do you cough or choke when you eat?" Dysphagia risk was then determined using a modified version of the Screening Tool for Acute Neuro Dysphagia (STAND; Shephard, 2007). The original protocol alongside the modified protocol can be found in Table 1. Residents consumed three teaspoons of applesauce, were asked to perform two saliva swallows in order to clear any residue remaining from the applesauce, and then drank 3 oz (90 ml) of water in a

Table 1. Comparison of original protocol of the Screening Tool for Acute Neurological Dysphagia to the modified version used in this study.

Protocol component	Original protocol	Modified protocol
Initial assessment	Is the patient alert and able to maintain oxygen saturation levels at or above 90%, able to manage oral secretions, and without history of dysphagia?	Is the resident alert awake and oriented, and without history of dysphagia?
Swallow challenge: purees	Offer 1 teaspoon of applesauce or pudding and observe for the following: 1. Coughing or throat clearing 2. Wet/gurgling voice 3. Holding food in mouth 4. Pocketing food in cheek 5. Loss of food from mouth 6. Delayed/difficult/painful swallow 7. Tearing with swallowing effort 8. Oxygen desaturation/shortness of breath *Discontinue protocol if any difficulties (above) are observed; otherwise, continue to the next challenge.	Offer 1 teaspoon of applesauce ×3 and, each time, observe for the following: 1. Coughing or throat clearing 2. Wet/gurgling voice 3. Holding food in mouth 4. Pocketing food in cheek 5. Loss of food from mouth 6. Delayed/difficult/painful swallow *Discontinue protocol if any difficulties (above) are observed on any trial; otherwise, continue to the next challenge.
Swallow challenge: dry swallows	N/A	Ask resident to swallow their own saliva ×3 and, each time, observe for the following: 1. Coughing or throat clearing 2. Wet/gurgling voice 3. Delayed/difficult/painful swallow *Discontinue protocol if any difficulties (above) are observed on any trial; otherwise, continue to the next challenge.
Swallow challenge: 3 oz of water from cup	Offer 3 oz of water in a cup and observe for the following: 1. Coughing or throat clearing 2. Wet/gurgling voice 3. Holding food in mouth 4. Pocketing food in cheek 5. Loss of food from mouth 6. Delayed/difficult/painful swallow 7. Tearing with swallowing effort 8. Oxygen desaturation/shortness of breath *Discontinue protocol if any difficulties (above) are observed; otherwise, continue to the next challenge.	Offer 3 oz of water in a cup, ask resident to keep drinking until the cup is empty, and observe for the following: 1. Coughing or throat clearing 2. Wet/gurgling voice 3. Holding food in mouth 4. Pocketing food in cheek 5. Loss of food from mouth 6. Delayed/difficult/painful swallow 7. Resident removes cup from lips without finishing water *If any difficulties (above) are observed, resident has failed the screening and is referred for a clinical bedside swallowing evaluation. Otherwise, resident has passed screening.
Swallow challenge: 3 oz of water from cup with straw	Offer 3 oz of water in a cup with a straw and observe for the following: 1. Coughing or throat clearing 2. Wet/gurgling voice 3. Holding food in mouth 4. Pocketing food in cheek 5. Loss of food from mouth 6. Delayed/difficult/painful swallow 7. Tearing with swallowing effort 8. Oxygen desaturation/shortness of breath *If any difficulties (above) are observed, resident has failed the screening and is referred for a clinical bedside swallowing evaluation. Otherwise, resident has passed screening.	N/A

Note. N/A = not applicable.

continuous fashion. If signs of dysphagia (i.e., coughing, wet voice quality, throat clearing) were noted at any point during the test, the test was stopped and the resident was deemed to be at risk of dysphagia. Residents also failed the screening if they were unable to consume all of the water with sequential swallows (i.e., had to stop and take a breath between swallows). In addition to these screening methods, three nonconsecutive days of meal observation, including one weekend day, were used to capture any instances of coughing or choking at mealtimes, with residents observed by research personnel at three meals each day, for a total of nine meal observations per resident. These mealtime observations were included in the current study to gain a better understanding of mealtime behaviors, such as coughing and choking, rather than relying solely on reports from residents and staff. Resident observations are a commonly used research technique to gain knowledge about mealtime performance when swallowing difficulties are suspected (e.g.,

Groher & McKaig, 1995; Kayser-Jones & Pengilly, 1999; Steele, Greenwood, Ens, Robertson, & Seidman-Carlson, 1997). Residents in whom mealtime coughing or choking were observed at least once were also considered to have clinical signs of possible dysphagia.

Descriptive statistics were used to describe the LTC sample. Data from the swallowing screening were carefully analyzed to determine the stage of the protocol at which residents failed. All data collected for analyses were converted into binary variables in order to indicate the presence or absence of a problem or the perception of a problem. Frequencies were cross-tabulated to determine the co-occurrence of reporting a swallowing difficulty and failing the STAND and tested with chi-square with an odds ratio calculated to demonstrate the association between these two variables. Cohen's kappa determined the correspondence between residents' self-reports of swallowing difficulties and results of the STAND. Cohen's kappa was also used to determine the interrater agreement between self-reports of coughing and choking at meals and mealtime observations of coughing and choking. An independent-samples t test was conducted to compare CPS scores and accuracy of reporting of swallowing status, as well as accuracy of reporting coughing and choking at meals (i.e., residents thought they had a problem and objective measures also found a problem, or vice versa). All analyses were performed using SPSS statistical software (Version 22, IBM Corporation).

Results

Sample characteristics for residents who participated in this study are summarized in Table 2. Of the 397 who were eligible and participated, their mean age was 86.8 ± 7.84 years and 263 (66%) were female. When asked if they had any difficulties swallowing, 41 residents (10%) reported self-perceived swallowing difficulties. However, choking or coughing while drinking liquids was reported by 119 residents (30%) and choking or coughing while eating solid food was reported by 92 residents (23%). Eight percent (n = 33) of residents either self-reported a swallowing problem but did not report coughing or choking at meals, or vice versa.

More than half (55%, n = 217) of residents failed the STAND, indicating that they were at risk for dysphagia. Seventy-eight (36% of 217) residents failed when they showed signs of difficulty while performing the puree trials, five (2%) failed when they showed difficulty while performing the saliva swallows, and the majority (n = 134, 62%) failed when they showed signs of swallowing difficulties when attempting to drink the 3 oz of water. As can be seen in Figure 1, there was a significantly higher proportion (20%) of residents self-reporting swallowing problems among those who failed the STAND than those who passed the STAND (3%). Residents who reported swallowing difficulties were almost eight times more likely to fail the STAND, $\chi^2(1) = 43.79$, $p < .001$, $OR = 7.50$, 95% CI [2.86, 19.65]. However, only 36 of the 178 residents (20%) who failed the STAND reported swallowing difficulties. The majority of residents who failed the STAND (80%) did not previously report that they had a swallowing issue, further demonstrated by the low kappa for comparing these two groups (κ = .160, 95% CI [0.095, 0.224], $p < .001$). There was no significant association between self-reports of coughing and choking at meals and mealtime observations of coughing and choking (κ = .064, p = .28). Out of the 112 residents who reported coughing or choking at meals, only 45 (40%) were actually observed coughing or choking during a meal. There was no significant difference in CPS scores between residents who accurately reported swallowing status (M = 1.83 ± 1.28) and residents who did not accurately report their swallowing status (M = 1.95 ± 1.35), $t(329) = 0.79$, p = .433. There was also no difference in CPS scores between residents who accurately reported coughing/choking at meals (M = 1.95 ± 1.30) and residents who did not accurately report coughing/choking (M = 1.83 ± 1.33), $t(287) = -0.74$, p = .457.

Discussion

This study describes the agreement between self-reports of swallowing difficulties in a group of LTC residents and results of a screening protocol and mealtime observations. More specifically, we compared residents' responses to questions about their swallowing to results of the STAND and also compared answers to questions about instances of coughing and choking at meals to observations of coughing and choking during mealtimes. Our goal was to determine whether self-reports of swallowing difficulties can be used in this setting given the limited resources that may prevent the implementation of formal swallowing screening procedures. Self-report in this population has the potential to help streamline and prioritize residents who require a more comprehensive swallowing assessment. Conversely, inadequate self-reports indicate that we require clearer methods of communicating with residents and gathering information about swallowing status. The current study found that residents who report swallowing impairments are eight times more likely to show signs of difficulty when screened for dysphagia; however, the large majority of residents did not self-report swallowing difficulties, coughing, or choking during meals. It is unknown whether this is due to an inability to articulate their concerns or lack of recognition of a problem and/or if some residents have difficulty making the connection that the symptoms experienced, such as coughing, may be due to a swallowing impairment. There was little to no association between self-reports and objective measures. Interestingly, cognition appeared to have no bearing on the accuracy of these self-reports. This sheds light on the importance of objectively screening for swallowing difficulties in the LTC setting rather than relying on self-reports.

The existing LTC system shies away from swallowing screening due to limited resources and, in the United States, the inability to bill insurance companies for screening (American Speech-Language-Hearing Association, n.d.). As such, anecdotal reports have suggested that LTC staff, such as personal care workers and nursing assistants, are left to determine if a swallowing assessment is warranted based on self-reports and limited mealtime observations,

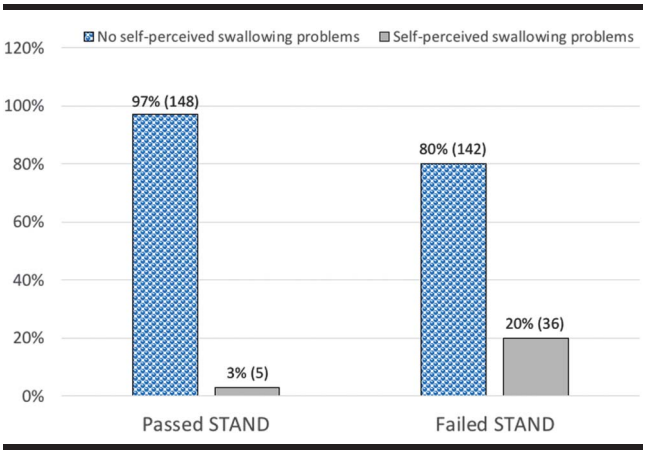
Table 2. Descriptive statistics for long-term care residents (N = 397).

Variables	*n* (%)
Age	M = 86.8 years ± 7.8
Cognitive Performance Scale score	M = 2.7 ± 1.5
Score of 0 (intact cognition)	61 (15%)
Score of 1 (borderline intact cognition)	67 (17%)
Score of 2 (mild cognitive impairment)	110 (28%)
Score of 3 (moderate cognitive impairment)	105 (26%)
Score of 4 (moderately severe cognitive impairment)	17 (4%)
Score of 5 (severe cognitive impairment)	31 (8%)
Score of 6 (very severe impairment)	6 (2%)
Female	263 (66%)
Dementia	223 (56%)
Chronic obstructive pulmonary disease/emphysema	62 (16%)
Parkinson's disease	27 (7%)
Other neurologic disease (e.g., amyotrophic lateral sclerosis, multiple sclerosis, cerebral palsy)	27 (7%)
Previous stroke	116 (29%)
Reporting swallowing difficulties	41 (10%)
Reporting coughing or choking while drinking	119 (30%)
Reporting coughing or choking while eating	92 (23%)
Observed coughing or choking during meals	105 (26%)
Failed the STAND	217 (55%)
Signs of difficulty on puree trials during STAND	78 (36% of 217)
Signs of difficulty on saliva swallows during STAND	5 (2% of 217)
Signs of difficulty on 3-oz water swallow test during STAND	134 (62% of 217)
Accurately reported swallowing status	184 (46%)
Accurately reported coughing/choking at meals	162 (41%)

Note. STAND = Screening Tool for Acute Neurological Dysphagia.

where the focus is also on delivering meal trays, getting residents settled, and assisting with feeding, among a host of other responsibilities (Secrest, Iorio, & Martz, 2005). A recent study conducted in LTC suggested that monitoring mealtime duration may be a method of identifying those at a high risk for dysphagia (Namasivayam-MacDonald et al., 2017). The authors found that residents who took over 41 min to complete a meal, regardless of the presence of eating assistance, were significantly more likely to present with swallowing difficulties. In the study, residents who took longer to eat tended to exert less pressure with their anterior tongues while swallowing and were almost four times more likely to present with dysphagia. Unfortunately, using mealtime duration to screen for swallowing difficulties has yet to be validated, and there are no other screening tools that have been validated for use in the LTC setting, where the population is extremely heterogeneous. Results from this study suggest that the full, modified version of the STAND can be used for residents who are cognitively able to follow simple directions. However, the full protocol may be unnecessary in LTC, given that almost two thirds of residents who failed only demonstrated signs of aspiration and/or difficulty with the continuous water swallowing portion of the protocol. As such, the 3-oz water swallow test alone may be sufficient for use in LTC. Previous research examining the psychometric properties of the test in a group of patients with dementia, which is a diagnosis confirmed in 56% of residents in this study, found the screening tool to have a high sensitivity (100%) but low specificity (25%; Suiter & Leder, 2008). Therefore, it has a high likelihood of identifying LTC residents with dysphagia, but we run the risk of overidentifying residents with swallowing impairments. The protocol has also been tested on patients with previous strokes, Parkinson's disease, and other neurological conditions, which are diagnoses commonly seen in the LTC population (see Table 2), and sensitivity was high and specificity was low for these groups as well (Suiter & Leder, 2008). However, until another screening protocol is validated, this may be a feasible and useful option to at least identify those who require further assessment to diagnose dysphagia, prior to adjusting diet texture.

Figure 1. Bar graph displaying the proportion of residents who passed versus failed the Screening Tool for Acute Neurological Dysphagia (STAND) and their perception of swallowing difficulties.



Previously conducted studies analyzing the accuracy of self-reports in people with cognitive impairments, such as dementia, have also tended to find that objective assessments may be preferable with this population. Cognitive impairment has been found to be a significant factor contributing to disagreements between self-reports of ability to perform activities of daily living and objective performance measures in a group of hospitalized older adults (Sager et al., 1992). However, a longitudinal study comparing self-reports to family members' reports of health among patients with Alzheimer's disease found that the capacity for self-observation is partially preserved in the mild to moderate stages of the disease (Kiyak, Teri, & Borson, 1994). Based on CPS scores, residents in the current study tended to have more mild–moderate cognitive impairments (M score = 2.7), and agreement between self-reports and objective measures was still poor. There was also no difference in cognitive status between those who correctly self-reported swallowing status and those who did not, indicating that swallowing status may not be something residents are paying attention to and/or aware of. Interestingly, Graham, Kunik, Doody, and Snow (2005) discovered that patients with dementia do not update their self-perceptions based on actual performance. In other words, their judgments were based on predisease, rather than current, abilities. This may be true for many of the residents in this study who indicated that they did not have difficulty swallowing but failed the swallowing screening and/or indicated that they did not cough or choke at meals but were observed to do so, or vice versa. Taken together, these studies support our current findings, indicating that self-reports of residents of LTC are unlikely to be useful.

Future Directions and Clinical Implications

The findings of the current study suggest a lack of knowledge surrounding swallowing disorders that may contribute to inaccurate self-reports. There is no available research on if and how patients and their caregivers are educated in regard to the signs, symptoms, and consequences of swallowing difficulties; however, if physicians and other health care professionals provided education on dysphagia upon diagnosis of known comorbidities, such as neurodegenerative diseases and neurological lesions, it is possible that patients may become more self-aware of their difficulties. A review examining effective methods of delivery for patient education found that teaching strategies that increased knowledge included computer technology, audiotapes and videotapes, written materials, and demonstrations, rather than using strategies such as traditional lectures or discussions (Friedman, Cosby, Boyko, Hatton-Bauer, & Turnbull, 2011). Given these findings, simply providing patients and their caregivers with a pamphlet on swallowing disorders may be helpful to increase awareness. An alternative solution may be to improve training of nursing assistants, the group of health care providers who provide the majority of direct care for residents in both nursing homes and LTC facilities (Chappell & Novak, 1992; Diamond, 1988; Mercer, Heacock, & Beck, 1993; Novak & Chappell, 1994). There has been speculation that nursing assistants have inadequate training and undergo limited supervision despite the fact that their jobs require heavy physical labor and challenging resident care responsibilities (Kane & Kane, 1990). Future research should determine if it is useful to train these individuals to recognize the signs and symptoms of swallowing difficulties, so that they may be able to better identify residents who require a swallowing assessment in the absence of a formal swallowing screening protocol. Future research should also focus on better understanding the reason for inaccurate self-reports in the LTC population and comparing both informal and formal caregiver reports to objective measures, in order to determine if this is a more reliable source of information.

Limitations

While this study presents novel findings, there are some limitations that need to be acknowledged. First, researchers asked residents about their swallowing status and then immediately performed the STAND. Therefore, they were not blinded to the results of subjective reports when taking the objective measures, and vice versa. It is also important to note that we cannot draw any conclusions about a dysphagia diagnosis based on the data collected in the current study. The sample may have also been biased toward a group of residents without swallowing difficulties, given that we excluded 68 residents who had been prescribed thickened liquids. The sensitivity of the STAND has been reported to be high for detecting both dysphagia and aspiration, but the specificity of the screening tool was moderate (Shephard, 2007); consequently, there is a chance that the number of residents considered to be at risk for dysphagia in this study was overestimated. Moreover, the STAND has only been validated in poststroke patients; therefore, we cannot be 100% certain that residents who have other medical conditions, such as dementia in the absence of a stroke, have accurate or inaccurate perceptions of their swallowing function based on the results of this test alone. Lastly, it would have also been beneficial to ask staff if they believed residents had difficulty swallowing or coughed/choked at meals, in order to compare their responses to residents' responses.

Conclusions

This study adds to the growing literature base regarding the management of swallowing difficulties in the LTC setting by suggesting that residents are largely unable to sufficiently self-report symptoms and swallowing problems. The findings also demonstrate that cognitive impairments do not necessarily preclude individuals from recognizing their health care needs; however, mild–moderate cognitive impairment still has the potential to leave residents confused about health issues that are not commonly discussed, such as swallowing. Persons with severe cognitive impairment were unable to comply with the protocol and, therefore, could not self-report challenges. The findings also suggest that concerted efforts are required to determine appropriate methods to objectively screen for swallowing difficulties in

this setting. Previous research suggests that the 3-oz water swallow test may be an appropriate screening tool for residents who are able to follow simple directions (Suiter & Leder, 2008) and mealtime duration may be an alternative method of screening residents with more severe cognitive impairments (Namasivayam-MacDonald et al., 2017). In the absence of a formal screening protocol, increased training of nursing assistants to identify signs or symptoms of swallowing difficulties may help to prioritize patients requiring a formal swallowing evaluation, instead of relying on self-reports. In addition, educating residents and their family care partners about the signs, symptoms, and consequences of swallowing impairments upon diagnosis of a known comorbidity may increase self-awareness of any difficulties.

Given the rapidly increasing numbers of older adults requiring LTC and a large proportion of LTC residents presenting with swallowing difficulties, it is critical that we continue to explore optimal methods of screening, assessment, and treatment of dysphagia in this population. Future research should focus on the construction and validation of screening tools for use with this population and interventions to improve training of nursing assistants.

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