Critical Review:
What is the level of compliance with Speech-Language Pathology swallowing recommendations among acute and community caregivers for individuals with dysphagia? What are the factors affecting this compliance?

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This critical review examined the current literature regarding level of compliance of acute and community caregivers with Speech-Language Pathology swallowing recommendations for patients with dysphagia and factors influencing this compliance. The search yielded three mixed design studies, one single-group, post-test only study, two qualitative studies, one survey research study, and one expert opinion article for inclusion in this review. Studies differed widely in study methodology, data collection, and participant populations. Evidence ranged from somewhat suggestive to suggestive. Results indicated relatively high caregiver compliance with room for improvement. Compliance was influenced by recommendation type, availability of caregiver time and resources, caregiver knowledge of dysphagia management, and overall functioning of the multidisciplinary team. Experimental limitations and clinical implications are discussed.

Introduction

Dysphagia, impairment of swallowing function, can result from acute or progressive neurological conditions, trauma, surgery, disease or treatment of disease (Leslie, Paul, Carding, & Wilson, 2003). According to the National Health Interview Survey (2012), one in 25 adults in the U.S. are affected by swallowing problems each year (Bhattacharyya, 2014). Complications associated with dysphagia include aspiration pneumonia (Langmore et al., 1998), malnutrition (Carrión et al., 2015; Sura, Madhavan, Carnaby, & Crary, 2012), dehydration (Leibovitz et al., 2007), increased length of hospitalization (Arnold et al., 2016; Nguyen et al., 2016), and death (Arnold et al., 2016). Aspiration pneumonia is a major cause of morbidity and mortality in elderly individuals who are hospitalized or in nursing homes (Langmore et al., 1998). In one study, the overall incidence of aspiration pneumonia in patients from outpatient clinics, inpatient acute care wards, and nursing homes was 21% (Langmore et al., 1998).

To reduce the risk of morbidities associated with dysphagia, Speech-Language Pathologists (SLPs), as part of an interdisciplinary team, will make swallowing treatment recommendations involving compensatory postures, therapeutic strategies, and/or diet modifications. Patient compliance with swallow recommendations is crucial to ensuring a safe swallow, and adequate hydration and nutrition. A study conducted by Low, Wyles, Wilkinson, & Sainsbury (2001) showed that noncompliance with swallowing recommendations was associated with increased mortality rates in individuals with dysphagia. Patient ability to adhere to swallowing recommendations is influenced by their cognitive state (Cook & Kahrilas, 1999) and their awareness of their dysphagia (Parker et al., 2004). Past research findings suggested that even with good awareness of the clinical symptoms of dysphagia, dysphagic stroke patients rarely perceived they had a swallowing problem (Parker et al., 2004). In these instances, compliance with swallowing recommendations becomes the responsibility of acute and community caregivers.

The focus of this critical review is to examine the level of compliance among acute and community caregivers with Speech-Language Pathology swallowing and dysphagia management recommendations. Through this inquiry, factors affecting caregiver compliance will also be explored. It is hoped that this investigation will shed light on ways in which SLPs can approach making recommendations and assisting caregivers in order to facilitate improved compliance, and thus, dysphagic patients' health outcomes.

Objectives

The primary objective of this paper is to critically evaluate the existing literature regarding level of compliance and barriers to compliance of acute and community caregivers with Speech-Language Pathology swallowing recommendations. The secondary objective is to investigate implications for clinical practice.

Methods

Search Strategy

Online databases including PubMed, Google Scholar, and Western Library were searched using the following

search terms: [(caregiver) OR (carer) OR (nurs*)] AND (compliance) AND [(swallow*) OR (dysphagia*)] AND (recommendations). Reference lists of the articles obtained through the search strategy were then reviewed to obtain other relevant studies. The search was limited to articles written in English.

Selection Criteria

In order to be included in this review, studies were required to: 1) measure or describe level of compliance, 2) identify factors influencing compliance, and/or 3) identify reasons for non-compliance amongst acute or community caregivers to SLP swallowing recommendations for patients with dysphagia. Study participants were required to have dysphagia and be limited in their ability to follow safe swallowing recommendations independently, requiring caregivers to assume the responsibility. Therefore, although one article (Chadwick, Jolliffe, & Goldbart, 2003) discusses differences in adherence to swallowing recommendations between people fed by caregivers and independent feeders, only results pertaining to caregiver compliance will be included in the review.

Data Collection

Results of the literature search yielded eight articles that met the selection criteria. These articles consisted of three mixed design studies, one single group, post-test study, two qualitative studies, one survey research study, and one expert opinion article.

Results

Chadwick, Jolliffe, & Goldbart (2003) conducted a mixed design study to investigate the extent to which dysphagia recommendations for adults with intellectual disabilities were adhered to by either the adults with intellectual disabilities or the caregivers of these adults. Topics explored by the authors relevant to this review were: overall adherence to recommendations, adherence to particular types of recommendations (consistency modification; physical positioning; utensil and equipment use; and support, prompting, and socializing), and adherence across four different settings (day centers, family homes, public group homes, and private group homes).

The participants consisted of a stratified random sample of 40 adults from a population of individuals identified with intellectual disabilities in Manchester who had been in contact with speech and language pathology services for intervention for dysphagia. Each participant's dysphagia management strategies were used to create individualized checklists. The first author used these checklists to observe each participant and caregiver pair during one meal and one drink. To assess the reliability of the observer's scoring, four observations were videotaped to allow the second author to score them independently.

Appropriate statistical analysis found that average caregiver adherence was 76.58%. Overall adherence was not found to significantly correlate to either the total number of individual recommendations observed or the total number of recommendations on the checklist. The type of recommendation was found to influence level of adherence. Food and drink consistency, positioning, and equipment use recommendations were complied with significantly more than support, prompting, and socializing recommendations. Compliance was found to differ across the types of recommendations within group home and family home settings. Compliance with recommendations pertaining to consistency, equipment use, and support, prompting and socializing differed by setting.

Strengths of the study include use of stratified random sampling of participants, suitable study methodology, and high reliability of observer scoring. One limitation is that the sample size is small; however, the number of participants in this study is comparable to those found in similarly designed, observational studies included in this critical review.

Overall, this study provides somewhat suggestive evidence in terms of level of carer compliance to swallowing recommendations in four settings and the identification of factors influencing this compliance.

Using a mixed study design, **Colodny (2001)** constructed and validated a questionnaire to assess nursing staff attitudes toward compliance with dysphagia management recommendations of the SLP. Suitable methodology for questionnaire construction was used, including reviewing the literature, and obtaining systematic feedback from stakeholders and experts. The second purpose of the study was to compare levels of compliance among RNs, Licensed Practical Nurses (LPNs), and Certified Nursing Assistants (CNAs) with SLP recommendations. Participants included 43 RNs, 10 LPNs, and 131 CNAs working at a nursing home.

Results of factor analysis of the questionnaire identified three main factors: 1) "hassle" (i.e., items related to the difficulty and extra work associated with SLP recommendations), 2) knowledge of feeding techniques, and 3) disagreement with SLP recommendations.

Appropriate statistical analysis found that RNs were less compliant than CNAs. For RNs, lack of knowledge was

reported significantly more often as a reason for non-compliance than hassle or disagreement. In contrast, disagreement with recommendations was the highest-rated reason for non-compliance in CNAs. No significant differences were found between lack of knowledge of feeding techniques, hassle, and disagreement as reasons for non-compliance for LPNs. No significant associations were found between number of years of experience and barriers to compliance for any participants.

One study strength is the inclusion of nursing staff and experts in the step-by-step construction of the questionnaire. In addition, the reliability and concurrent validity of the questionnaire was found to be adequate. Another study strength is the inclusion of perspectives of RNs, CNAs, and LPNs. One study weakness is the small sample size of RNs and LPNs in comparison to CNAs. Another study weakness is that participants were limited in providing perspectives on issues identified in the questionnaire. Overall, this study provides suggestive evidence that lack of knowledge and disagreement with recommendations are driving forces for noncompliance for RNs and CNAs, respectively.

Rosenvinge and Starke (2005) conducted a mixed design observational study to explore level of compliance, and reasons for non-compliance with SLP safe swallowing recommendations for patients with dysphagia throughout one hospital setting.

All inpatients with dysphagia on the speech and language therapy caseload at one hospital were included. A Speech Language Therapist conducted two observational audits four months apart (first audit n = 31, second audit n = 54). Each audit consisted of visiting participating wards 16 times over five consecutive days to observe mealtimes and drinks throughout the day. Compliance to each patient's safe swallowing recommendations in terms of consistency of fluids, dietary modifications, amounts to be given at one meal/drink, swallowing strategies, general safe swallow recommendations, and the level of supervision required were marked and reasons for noncompliance were noted. Two months following the first audit, changes in practice were put in place in an attempt to improve compliance and consisted of: formation of a 'Dysphagia Compliance Group', initiation of a 'Dysphagia Link Nurse' program, introduction of a three-tiered training package, introduction of pre-thickened drinks, and modification of swallowing advice sheets. The second audit followed implementation of these changes and followed the same methodology as the initial audit.

In the first audit, overall level of compliance across all recommendations was 51.9%. Results indicated that level of compliance differed by recommendation type and ward. The highest level of compliance was seen with recommendations pertaining to diet modification, whereas the lowest was seen with quantity of food or fluids, and supervision. In both audits, a significantly higher level of compliance was seen in the stroke ward in comparison to the medical wards. Significant improvements in compliance with recommendations related to consistency of fluids, quantity of food or fluids, general safe swallowing advice, and supervision were seen in the second audit. The authors suggested that common reasons for non-compliance noted in the first audit were related to lack of staff knowledge or understanding.

Strengths of the study include multiple observations of patients, nursing staff being blinded to the study, and use of a repeated measures study design to assess impact of practice changes on level of compliance. Limitations of the study include use of only one study setting, inappropriate statistical analyses, lack of patient and staff description, and lack of reporting of reasons for non-compliance during the second audit. In addition, reported reasons for non-compliance during the first audit were limited in depth due to the nature of how the data was collected.

Due to these limitations, findings of this study provide somewhat suggestive evidence of level of compliance throughout a hospital setting, and the positive impact of the aforementioned practice changes on overall compliance.

Crawford, Leslie, & Drinnan (2007) conducted a single group, post-test only, observational study to investigate the level of carer compliance with dysphagia recommendations for individuals with intellectual disabilities. Twenty-seven individuals with intellectual disabilities attending day centers who were identified as being on the speech and language therapy caseload were included in the study. Each participant had one carer; therefore, 27 carers participated in the study. Individualized checklists were created for each participant, categorizing their swallowing recommendations into five areas: utensils, positioning, mealtime guidelines, food preparation, and direct support. The researching SLP used these checklists to guide mealtime observations of participants and their carers. In addition, a questionnaire was developed to assess whether carers knew whether or not their client had eating and drinking recommendations, and for those that did, what they were, if they were easy to follow, and factors that made recommendations difficult to follow. Questionnaires were given to carers to complete after the mealtime observation.

Appropriate statistical analysis found that average overall carer compliance was 82%, with the highest compliance seen for recommendations pertaining to direct support and the lowest compliance seen for recommendations pertaining to utensils. No association was found between the total number of recommendations to be followed and carers' compliance. The majority of carers were aware of their clients' eating and drinking recommendations and found the recommendations easy to implement. Two thirds of carers reported receiving some level of training in dysphagia management. A third of carers indicated that recommendations related to food provision and utensils were the most difficult to follow, voicing frustration with provision of inappropriate food from the kitchen. Carers made the following suggestions to improve dysphagia management services: having SLPs spend more time getting to know clients outside mealtimes, provision of videos of appropriate feeding support methods for individual clients, and provision of step-by-step printed lists of recommendations for each client.

Strengths of the study include appropriate study methodology and statistical analysis, and assessment of the questionnaire's face validity. Limitations include lack of assessment of the reliability of the researching SLPs observations and the questionnaire, use of primarily closed-ended questions, and only observing caregivers and patients over one mealtime. Since only carers and clients of day centers were included in the study, generalization of study findings is limited. Given its limitations, this study provides somewhat suggestive evidence for high compliance of carers of individuals with intellectual disabilities at day centers with dysphagia management recommendations.

Chadwick, Jolliffe, Goldbart, & Burton (2006) conducted semi-structured interviews with 46 caregivers of adults with intellectual disabilities and dysphagia to explore the barriers to caregiver compliance with eating and drinking recommendations for their patients and the perceived risks of non-compliance to dysphagic patients.

All adults with intellectual disabilities who had been referred to SLP services for dysphagia in Manchester were identified. A stratified random sample of individuals was selected to ensure adequate representation of individuals from each of the four settings (i.e., day centres, family homes, private group homes, public group homes). This sampling resulted in 40 individuals with intellectual disabilities and dysphagia, and 46 caregivers participating in the study. An interview guide with probes was established and used in the semi-structured interviews with caregivers.

A framework approach was used to analyze interview data. Three *a priori* frameworks were used to categorize and interpret the data: 1) problematic recommendations, 2) barriers to compliance with recommendations, and 3) risks associated with non-adherence to the problem recommendation.

Caregivers reported having difficulty with recommendations pertaining to consistency, positioning, equipment use, and support. Caregivers found prompting and supporting clients during mealtime to be the most problematic. This difficulty stemmed from client objection to being watched during their meal, caregivers experiencing time constraints, and other client factors (i.e., poor concentration, refusal to slow pace, etc.). Difficulties with consistency and food preparation stemmed from difficulty with attaining correct consistencies, balancing variety and palatability with correct consistency, and conflict between recommended consistencies and client preference. Caregivers did mention that initial difficulty with attaining correct consistencies seemed to reduce with time and experience. Positioning of clients during mealtime was difficult for fewer caregivers, and often was simply due to the co-occurring physical disabilities within this client group. Time and resource constraints were listed as general problems in adhering to recommendations, especially in terms of pacing, prompting, and monitoring. Fourteen caregivers claimed they had experienced no barriers to compliance. It's important to note that these caregivers did not comply to a greater degree with guidelines and had no greater knowledge of client recommendations than those with reported having difficulty.

Strengths of this study include use of an interview guide, calculation of inter-rater agreement (which ranged from good to excellent), and detailed study methodology. One weakness of the study is that the sample size is small; however, this is commonly found in qualitative research. This study provides suggestive evidence for the identification of barriers to compliance with dysphagia recommendations for caregivers of individuals with intellectual disabilities. Given the qualitative nature of the research, the findings cannot be generalized to other populations and geographical areas.

Smith-Tamaray, Wilson, & McAllister (2011) conducted qualitative research to explore issues related to dysphagia management services in non-metropolitan healthcare settings from the perspective of Speech-Language Pathologists (SLPs). Maximal purposive sampling was used to select SLP participants who represented a range of different service types. Suitable methodology was used to create an interview guide. The first author used this interview guide when conducting

semi-structured, face-to-face interviews with eight SLP participants.

Thematic analysis of the interview transcriptions was conducted; detailed description of the process was included in the article. Two over-arching themes were identified: "Someone misses out" and "You've got to make an impact". The latter theme was the focus of the article and consisted of five sub-themes related to the importance of having a presence on the multidisciplinary team, developing relationships and rapport with team members, role of education and knowledge, proving oneself as a clinician, and compliance with dysphagia management. The latter was discussed as a main concern. Thematic analysis revealed that many of these sub-themes were inter-related, resulting in the conclusion that level of compliance is largely impacted by how well a multidisciplinary team is functioning. The researchers proposed that compliance is a complex issue that needs to be considered in the context of service provision as a whole.

Use of a qualitative study design was appropriate given the desire to more deeply explore previously identified issues related to dysphagia services. Strengths of the study included its detailed description of study methodology, including steps involved in the interview protocol and thematic analysis of transcriptions. One weakness of the study includes its small sample size. Although having a small sample size is commonplace for qualitative research, the findings are limited in scope given that only Speech-Language Pathologists were interviewed. Overall, this study provides suggestive evidence that level of compliance is a function of how well a multidisciplinary team is functioning.

Using a survey research design, **McCullough, Estes, McCullough, & Rainey (2007)** explored self-reported compliance of Registered Nurses (RNs) with SLP recommendations for safe feeding and swallowing techniques, and proper oral hygiene care for acute care patients and common frustrations experienced by RNs when caring for dysphagic patients.

The survey, which was developed for the purpose of this study, contained statements relating to demographic information (e.g., years of experience, average number of patients with dysphagia served per month, frustrations associated with working with patients who have dysphagia, sources of education regarding feeding and swallowing), and feeding and swallowing issues, and oral hygiene care. Seventy-seven acute care RNs at five acute care hospitals in Arkansas completed the survey.

Appropriate statistical analysis found that RN self-reported compliance was high in all three areas of feeding, swallowing, and oral care, with no significant difference in compliance among these areas of care. No associations were found between overall compliance and participant age, years of experience, or the number of patients served. Almost half of participants reported feelings of frustration when working with patients with dysphagia. The most commonly reported frustration was the amount of time it takes to feed patients with dysphagia. No association was found between this frustration and level of compliance. Other reported frustrations included lack of knowledge by RNs, disagreement with the doctor's or SLP's recommendations, feeling like it is a "hassle" to work with patients with dysphagia, having too many patients in general, problems communicating with patients, problems with patient noncompliance and frustration, problems receiving proper dietary orders in charts, and not having enough staff to care for all patients.

Although the survey statements related to feeding, swallowing, and oral care hygiene issues were created on the basis of published findings, the authors did not assess the reliability of the survey. In terms of validity, only face validity was assessed. Another limitation is that primarily closed-ended questions were used in the survey to gather demographic information. One strength in the design of the dysphagia management statements was that the researchers included both positively and negatively worded statements to reduce practice and/or fatigue effects. Given the study's limitations, the results provide somewhat suggestive evidence for self-perceived high compliance among acute care nurses across the areas of safe feeding and swallowing techniques, and oral hygiene care.

Colodny (2007) wrote an expert opinion article on factors influencing non-compliance with SLP dysphagia recommendations among patients and caregivers and provided suggestions for SLPs to improve compliance. In terms of factors influencing non-compliance, only discussion pertaining to caregiver non-compliance will be included in this review.

In terms of compliance of health care professionals, Colodny (2007) cited previous work (Colodny, 2001), which has been discussed in this review. Reasons for non-compliance in non-health care professional (NHP) caregivers differed from that of health care professionals and surrounded preserving quality of life for patients.

Colodny (2007) emphasized the importance of SLPs acknowledging the impact that receiving a diagnosis of dysphagia has on patients, including initial feelings of

lack of control and independency, anger, and denial. To improve compliance, the importance of open communication amongst the SLP, NHP caregiver, and patient, patient-centered care, and shared decision making was highlighted. Lastly, ensuring patients and NHP caregivers have access to social support systems that reinforce recommendations was provided as a means to improve compliance.

Two main limitations of this review were that the selection criteria used is unknown, and articles cited in discussions of non-compliance were limited in scope. Given these limitations, this article provides somewhat suggestive recommendations for the importance of open communication and shared decision-making to improving patient and NHP caregiver compliance with SLP recommendations.

Discussion

This paper sought to evaluate the existing literature regarding level of compliance and barriers to compliance of acute and community caregivers with Speech-Language Pathology swallowing recommendations for patients with dysphagia. Eight articles were identified for inclusion in this review. These eight articles largely differed in their study methodology and participant populations. Commonalities amongst study findings, as well as major differences among, and limitations of, the study designs used in the included literature will be discussed.

Of the four studies that reported level of compliance of caregivers, three studies provided somewhat suggestive to suggestive evidence that level of compliance was relatively high amongst acute (McCullough et al., 2007) and community caregivers (Chadwick et al., 2003; Crawford et al., 2007). Four of the eight studies supplied somewhat suggestive to suggestive evidence that level of compliance differed with recommendation type (Chadwick et al., 2003; Chadwick et al., 2006; Crawford et al., 2007; Rosenvinge & Starke, 2005). However, there was disagreement in terms of which recommendation yielded the highest level of compliance and which yielded the lowest. Chadwick et al. (2003) and Rosenvinge and Starke (2005) both found compliance was highest with diet modification, and lowest with recommendations pertaining to support, prompting, and supervision. Similarly, caregivers in the study conducted by Chadwick et al. (2006) indicated that prompting and supporting was the most problematic recommendation to follow. In contrast, Crawford et al. (2007) found somewhat suggestive evidence that the highest level of compliance with recommendations pertained to direct support and the lowest compliance with food provision. Interestingly, all three studies (Chadwick et al., 2003; Crawford et al., 2007; Rosenvinge & Starke, 2005) used similar methodology, in which individualized checklists were used to observe caregivers assisting patients with at least one meal and drink. Differences in findings may be due to differences in study settings (hospital, day centres, family homes, public group homes, private group homes), severity of patient dysphagia and other patient factors (i.e., cognitive status, behavioural issues) and/or differences in caregiver training relating to dysphagia management. One can speculate that differences in caregiver training may result in differences in caregiver perceptions of recommendations and the challenges associated with them.

In her informational review, Colodny (2007) suggested that in order to improve compliance, open communication must occur between SLPs, patients, and caregivers, where the latter two are considered active members of the healthcare team and share in decision making. This was supported by the study by Smith-Tamaray et al. (2011), who provided suggestive evidence that level of compliance is largely impacted by how well a multi-disciplinary team is functioning. Along these lines, disagreement with doctor or SLP recommendations was reported as a frustration for RNs (McCullough et al., 2007) and as the highest rated reason for non-compliance by CNAs (Colodny, 2001). Furthermore, McCullough et al. (2007) suggested that a misunderstanding likely exists between RNs and SLPs surrounding problems with patient care; where SLPs blame poor compliance, RNs view patient care problems being related to lack of time. Two of the reviewed studies (Chadwick et al., 2006; McCullough et al., 2007) found time constraints and lack of resources to be great sources of frustration and barriers to adherence with SLP recommendations. Smith-Tamaray et al. (2011) recommended that ultimately, SLPs need to be aware of, and consider who will be implementing their recommendations, their understanding and capability to do so, their willingness to do so, and their ability to do so, including availability of time and resources, when making recommendations. As well, Chadwick et al. (2006) proposed problem-solving as a team, to generate creative and practical strategies for dysphagia management, may increase compliance. Although these findings were deemed somewhat suggestive to suggestive, given the health implications team dysfunction and noncompliance can have on patient health, steps should be taken to ensure open communication, especially in regards to dysphagia management, is occurring within the multidisciplinary team.

The importance of education in relation to caregiver compliance was a primary theme across all eight studies

(Chadwick et al., 2003; Chadwick et al., 2006; Colodny, 2001; Colodny, 2007; Crawford et al., 2007; McCullough et al., 2007; Rosenvinge & Starke, 2005; Smith-Tamaray et al., 2011). Lack of education, knowledge, and/or training was posited as a common reason for non-compliance with recommendations in five studies (Colodny, 2001; Chadwick et al., 2003; McCullough et al., 2007; Rosenvinge & Starke, 2005; Smith-Tamaray et al., 2011). In contrast, Crawford et al. (2007) suggested that good levels of compliance were likely related to carers having adequate knowledge of recommendations. Similarly, Chadwick et al. (2003) suggested that the reason day-centre caregivers showed the greatest level of adherence was, in part, due to their additional training on dysphagia in comparison to the other community caregiver participants. This is supported by the study conducted by Rosenvinge and Starke (2005), who found somewhat suggestive evidence that compliance with certain types of recommendations improved following introduction of measures to increase knowledge and awareness of dysphagia management strategies. In terms of education needed, it was suggested that in-service education should surround providing clarity on less concrete recommendations (Chadwick et al., 2003), increasing caregiver awareness of their role in providing supports (Chadwick et al., 2006), and providing education surrounding rationales for various dysphagia management recommendations (Colodny, 2001; Chadwick et al., 2003; Crawford et al., 2007) and consequences of non-compliance (Colodny, 2001). However, in the study conducted by McCullough et al. (2007), RN participants indicated that they had little opportunities for inservice education with SLPs and the majority of their training on dysphagia was through on-the-job experience. Despite the fact that these findings were deemed somewhat suggestive to suggestive in nature, in-service education is likely critical to increasing caregiver compliance and reducing risk to dysphagic patient health.

Amongst the eight articles included in this review, a variety of study methodologies for data collection were utilized, including mealtime observations of patients and caregivers (Chadwick et al., 2003; Crawford et al., 2007; Rosenvinge & Starke, 2005), semi-structured interviews (Chadwick et al., 2006; Smith-Tamaray et al., 2011), and self-reported questionnaires (Colodny, 2001; Crawford et al., 2007; McCullough et al., 2007). Although all of these studies provided somewhat suggestive to suggestive evidence, it is likely mealtime observations provided the strongest direct measure of compliance. Generally speaking, study designs were relatively weak, where five of the eight studies provided lower levels of evidence (Colodny, 2001; Chadwick et al., 2006; Crawford et al., 2007; McCullough et al., 2007; Smith-Tamaray et al., 2011). Taken together, it is clear that this research area would benefit from more rigorous study methodology, and the use of direct, behavioural measures with high psychometric properties.

In addition to differences in methodology, large variation existed amongst the participant populations in the eight studies. Data from the included studies provided information on the perspectives of hospital staff (Rosenvinge & Starke, 2005), community caregivers at various settings (Chadwick et al., 2003; Chadwick et al., 2006; Crawford et al., 2007), SLPs, RNs (Colodny, 2001; McCullough et al., 2007), CNAs (Colodny, 2001) and LPAs (Colodny, 2001). One can speculate that large differences exist in terms of these participants' education, experiences with individuals with dysphagia, and training in relation to dysphagia management. These differences likely lead to distinct perspectives on dysphagia management and compliance with swallowing recommendations, each of which warrant further investigation. In addition, this vast diversity in participants pays homage to the fact that dysphagia management is complex and involves many stakeholders.

The use of varied study methodology and inclusion of different participant populations makes it challenging to draw definitive conclusions to the objectives posed in this review. In addition, it suggests that compliance with dysphagia management is multifactorial with many moving pieces.

Clinical Implications

Assessment of swallowing function and treatment of dysphagia fall under the umbrella of clinical practice for SLPs. To reduce health risks posed to those with dysphagia, various safe feeding and swallowing recommendations are made. Due to cognitive limitations of patients, often SLPs will work with community and acute caregivers to implement these strategies. Through critical appraisal of the literature, somewhat suggestive to suggestive evidence was found that caregiver compliance with recommendations is reasonably high, with a number of factors influencing this compliance.

Evidence that lack of caregiver knowledge in dysphagia management was both a frustration and barrier to compliance was only somewhat suggestive to suggestive in nature. However, the potential impact of in-service education on improving caregiver knowledge and compliance and thus, patient health, far outweighs the risk of implementation. Therefore, it is critical that in-service education and training is provided to all

stakeholders working with individuals with dysphagia. Furthermore, more research is needed on what effective in-service education entails.

It is well known that a multidisciplinary team is considered best practice for dysphagia management. Although evidence for the effect of team functioning on caregiver adherence was somewhat suggestive to suggestive in nature, again, the potential positive impact of open communication on caregiver compliance makes this recommendation worth exploring. It is recommended that SLPs take the following factors into consideration when making recommendations: who will be implementing the recommendations, their training and ability to do so, their willingness to do so, and the context in which they work (i.e., availability of time and resources). In working with acute and community caregivers to problem-solve and generate practical recommendations given time and resource availability, caregiver compliance will likely benefit.

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