

Review articles

Dysphagia in the elderly in long-stay institutions – a systematic literature review

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ABSTRACT

The objective of this study was to verify in the literature, through a systematic review, the dietary conditions of the elderly in long-stay institutions, seeking to observe the general care and agents that potentiate dysphagia, in order to review aspects of dysphagia and deglutition risk indicators in the elderly. A survey, regarding the articles published from 2009 on, with the descriptors “elderly, long-stay institution and dysphagia”, in Portuguese and English, on Scielo, PubMed and Lilacs, was performed, totaling 423 articles in the initial search, from which, 13 that were in agreement with the inclusion criteria adopted were chosen, 2 being repeated in more than one research source. At the end, 11 articles were included for analysis and discussion. It was observed that most the long-stay institutions do not have adequate structure to treat the elderly in a multidisciplinary approach. In all those studies, the negligence with the elderly’s oral hygiene, which potentiates the development of pulmonary infections in cases of aspiration, was evidenced. The association between dementia, food dependency and increase in feeding time was also observed in the literature, as well as the association of medication use with the interference in food dynamics. In addition, many studies have shown that, although the Stomatognathic System structures are altered due to the aging process, the elderly have the functions of speech, chewing and swallowing adapted, without greater damage to their general health. It can be concluded that long-stay institutions do not offer adequate staff to care for the elderly to reduce the risks for dysphagia.

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INTRODUCTION

Over the years, the human being passes by stages of life considered natural, characterized by physical and morphological changes that provides structural and functional alterations that affect the operation of the whole body. These changes are inherent in aging, which progressively occurs in an individual way and can be affected by several factors in each person¹.

It is denominated aging a biological process that natural happens with every human being in a progressive away, leading to slow degeneration of structures that make up the organism. Therefore, in this process, it occurs not only physical changes, but also physiological, psychological and social changes, which can manifest in different ways in each individual, leading the organism to function alterations²⁻⁵.

The aging nowadays is presented as a universal phenomenon. In Brazil, World Health Organization estimated that, until 2025, the elderly population will increase sixteen times, against 5 times related to its overall population. These data classify Brazil as a country that has the sixth biggest elderly population in the world, corresponding to more than 32 million people aged 60 or over, equivalent to 15.1% of the population¹.

Knowing that there are several changes related to the natural aging process, the oral sensorimotor or stomatognathic system also changes in its functioning from the structures that compose it and the functions they perform, swallowing for example. In the elderly, changes in this function are considered normal and are characterized by slowing the mechanism of swallowing (less efficient), decreased orofacial sensitivity, decreased strength and mobility of some oral structures, which may provide more serious complications in the clinical picture of the elderly, such as dysphagia associated with malnutrition and dehydration, risk of pulmonary aspiration, which lead to frustration and denial during feeding, interfering in the elderly's quality of life¹⁻⁵.

Marchesan⁶, differences the deglutition in the aging process from the deglutition disturb in the elderly (dysphagia). He states that the difficulty of swallowing caused by the disorganization of the process of formation and/or conduction of the food bolus can be characterized as dysphagia. Slow chewing, decrease in saliva production, reduced oral transit, stasis in piriform recess and presence of cough and aspiration are part of the individual's normal aging. However, when xerostomia or sialorrhoea is present, chewing difficulty or

oral leakage of food in oral cavity, chewing with uncoordinated movements of the tongue and jaw, multiple swallowing, frequent coughing and choking, head swallowing, fatigue during and after meals and refusal to eat, a picture of dysphagia is defined⁷.

Regarding the deglutition of the elderly, Presbyphagia corresponds to the natural aging of structures that participate in the swallowing mechanism due to the degeneration of the neuromuscular system and morphophysiological modifications that occur in the stomatognathic system of the individual. These changes can generate changes from some factors such as maladaptive dentures and the appearance of disease symptoms due to the aging process. When there is an incoordination of chewing, swallowing and breathing functions, the patient develops dysphagia related to neurological diseases (Stroke, Traumatic Cardiac Arrest – TCA, Head and Neck Cancer – HNC and dementia), which may bring as a consequence tracheal aspiration, a risk factor for pneumonia in the elderly, thus increasing the death rate⁶⁻⁹.

In long-stay care facilities (LTCF), problems frequently occur during the feeding of the elderly. The signs of dysphagia manifested during meals are related to the behavior of the elderly, dental alterations, inadequate food consistency, improper posture and positioning during feeding, fast delivery of food by the caregiver, and dysphagia may also be related to cognitive, neurological, physical and environmental changes, lack of adequate oral hygiene and diverse diagnoses, being frequent the risk of pulmonary aspiration, risk factor for the institutionalized elderly^{8,10,11}.

According to Furkim et al.¹², it is of fundamental importance that caregivers responsible for the elderly who reside in long-stay institutions have knowledge about the risk factors of dysphagia and the occurrence of pulmonary aspiration since it is very frequent episodes of silent aspiration, without the manifestation of immediate and evident signs, which makes the perception of the problem more difficult, compromising the health of the institutionalized elderly.

Thus, there are many elderly people who live in long-stay institutions and are subject to the changes resulting from the aging process. Therefore, in the long-stay institution environment, it is extremely important to identify these changes, as well as those related to swallowing, since the elderly understand an audience that presents risks of dysphagia as a consequence of the manifestations of this process in the mechanism of swallowing. With the objective of

reviewing aspects of dysphagia and risk indicators in elderly's deglutition, we verified in the literature, through a systematic review, the nutritional conditions of the elderly enrolled in long-stay institutions, to observe the general care and enhancing agents of dysphagia in this population.

METHODS

We carried out a systematic review of literature. The study was carried out by three authors/evaluators who discussed the intersection of the following descriptors: Long-stay institution for the elderly, Elderly and Deglutition disorders and their correspondents in English: Homes for the aged, Aged and Deglutition Disorders, (DeCS), available in the PubMed (US

National Library of Medicine), Latin American and Caribbean Health Sciences (Lilacs) and Scientific Electronic Library Online (SciELO). We collected these data during the months of April and June 2016.

We only researched papers published from 2009 to 2017, adopting as exclusion criteria: work whose population was less than 60 years old, studies in which the population was not in a long-stay institution and articles that were not available in the databases searched, even sending e-mails to the authors. We included those that brought the topic "deglutition and elderly in long-stay institution" before articles in foreign language and Portuguese. The presence of the elderly in the long-stay institution was also considered as inclusion criteria (Figure 1).

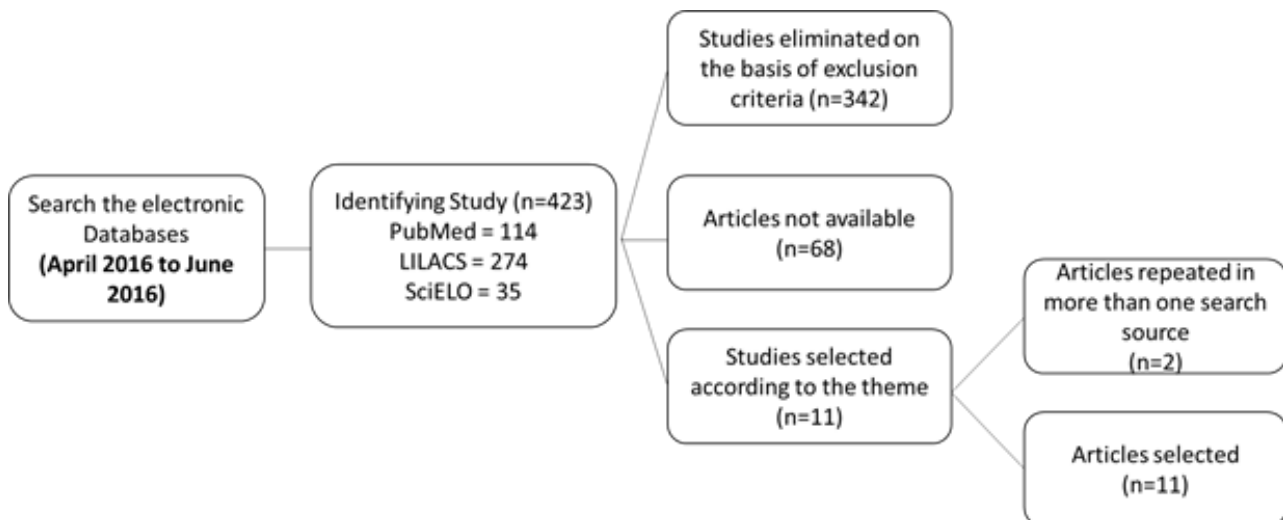


Figure 1. Criteria to identify the study

In the search, we only evaluated and selected articles that belonged to the theme proposed. We collected the data of each potentially relevant article for the systematic review through a protocol record containing: eligibility criteria, method, type of study, type of interventions and outcomes measured and results obtained. The articles selected for analysis were those that presented level of evidence:

- 1- Literature Review
- 2- Controlled Studies
- 3- Intervention studies

It is worth to highlight that, according to the principles of the systematic review, only studies with

levels of evidence 1 and 2 should be selected. Thus, this work was developed through the following methodological steps: initially, we performed the electronic selection, classified the articles, then we performed the analysis and classification based on the theme. Then, of the 423 articles surveyed in the initial search, 13 were selected that were in agreement with the inclusion criteria adopted. Of these 13 articles, 2 were repeated in more than one research source. 342 articles were excluded and 68 were not available. At the end, 11 articles were included for analysis and discussion (Figure 2).

Study	Type of Study	Methodology	Results
Furkim <i>et al.</i> (2010). The asylum as worsening factor for dysphagia	Descriptive analysis	Application of a questionnaire to the managers of five long-stay institutions in the city of Rio de Janeiro, referring to material, human and routine food resources.	In all the institutions there are factors that can potentiate dysphagia, such as those related to the general structure and/or the human resources and/or related to the established food routine.
Pace e McCullough (2010). The Association Between Oral Microorganisms and Aspiration Pneumonia in the Institutionalized Elderly: Review and Recommendations	Review	They performed a search in the PubMed database MeSH, Ovid and Google Scholar with the descriptors "aspiration pneumonia" and "oral hygiene" from 1970 to 2009. They found a total of 34 articles, besides a manual search of references of other articles, including three systematic reviews published during the last decade.	Studies suggest an association between hygiene and respiratory pathogens, a decrease in the incidence of respiratory complications with improved oral care. Further studies are needed to determine adequate oral hygiene protocols for patients in LSIs.
Bomfim <i>et al.</i> (2013). Factors associated to suggestive signs of oropharyngeal dysphagia in institutionalized elderly women	Analytical Transversal	30 institutionalized elderly women participated of this research in Maceió. They collected data on medical records, follow-up of a meal and application of the PARD protocol. The elderly were divided into two groups: with and without signs of suggestive dysphagia and later compared.	Higher medication use, lower occurrence of depression, higher number of teeth and changes in food dynamics in the elderly group with signs suggestive of dysphagia. The elderly women with the required assistance were more likely to be fed poorly positioned.
Oliveira <i>et al.</i> (2011). The training of caregivers of institutionalized elderly: emphasis on routine feeding	Descriptive-exploratory	Interviews were conducted with five health professionals working in a Long Stay Institution for the Elderly (LSIs).	It was verified that caregivers reported risk factors for swallowing changes and oral hygiene in the elderly.
Roque <i>et al.</i> (2010). Description of the feeding dynamics of institutionalized elderly women.	Cross-sectional prospective	Description of the feeding dynamics of 30 elderly women living in a long-stay institution.	An association between dementia and food dependency was observed. The use of medication, the absence of depression and the presence of teeth, possibly interfere in the feeding dynamics of the elderly.
Fioravanti <i>et al.</i> (2011). Bedside assessment of swallowing in elderly subjects using psychotropic drugs	Cross-sectional	The swallowing of 47 nursing home elderly, users or not of neuroleptic drugs, was evaluated through the functional clinical test of swallowing with four food consistencies.	There was no significant difference in swallowing of both groups, which demonstrated that this type of drug alone does not interfere in the swallowing process of institutionalized elderly.
Amaral <i>et al.</i> (2009). Chew, deglutition and speech adaptations in aged people at a long permanence institution	Descriptive analysis	Thirty-four elderly, 15 females and 19 males participated in the study. An interview was conducted on general health and nutrition and then a speech and language assessment of the chewing, swallowing and phonoarticulation functions.	The majority of the elderly presented hypofunction of SE structures, precarious oral hygiene, adapted masticatory pattern, swallowing and with the presence of compensations.
Dias e Cardoso (2009). Characteristics of the deglutition function in a group of institutionalized elderly women.	Transversal	Fifteen institutionalized elderly women, aged over 65 years, participated in this study. They carried out a data collection, regarding myofunctional orofacial characteristics, an individual orofacial myofunctional evaluation. They observed a meal to evaluate the swallowing.	The difficulty in chewing and swallowing solid foods was the biggest complaint of the elderly. There was little occurrence of gagging and weight loss, respiratory problem and complaint of tiredness upon waking up.

Study	Type of Study	Methodology	Results
Cardoso <i>et al.</i> (2014). The impact of swallowing disorders on quality of life of institutionalized elderly	Descriptive-exploratory	A study with 84 elderly people from a long-stay institution in Porto Alegre. They asked questions about the presence of complaints regarding swallowing and an evaluation of Orofacial Motricity was performed. The elderly with swallowing disorders were submitted to the Mini-Mental State Examination (MEEM). The SWAL-QOL questionnaire was used to measure the impact of changes in swallowing on their quality of life.	Although swallowing changes have an impact on the quality of life of the elderly, these are inherent in the aging process.
Oliveira <i>et al.</i> (2014). Changes of mastication and swallowing in the process of feeding institutionalized elderly	Descriptive-exploratory Quantitative, descriptive, observational, transversal and prospective	The sample consisted of 27 females and 3 males. They carried out an interview and evaluation of the structures of the stomatognathic system and observation of a meal at the usual feeding environment of the elderly.	The most frequent complaints were the difficulty of chewing a particular food and the preference for soft foods. The evaluation found alterations of the structures of the stomatognathic system, edentulism (regular and poor state of conservation), exaggerated participation of the perioral musculature in the chewing and swallowing function and slowed masticatory rhythm. There were no signs of dysphagia.
Moreira e Pereira (2012). Performance of Brazilian elderly on the 100 mL water swallowing test	Quantitative analysis	Eighteen elderly, 13 women and 5 men, with mean age of 83.46 years, were evaluated. The elderly were asked to drink 100 mL of water from a plastic cup.	Swallowing capacity for males was lower than that for females, diverging from the original study. The mean time of swallowing and mean swallowing volume was similar for both sexes.

Figure 2. Articles selected for analysis in the systematic review

LITERATURE REVIEW

At the end of this survey, we found 423 articles in the databases searched. However, we included only 11 in the inclusion criteria classified according to the theme proposed in the study. Regarding the method used in the articles included in the present study, a review article relating the incidence of pneumonia with aspiration (Figure 2) is highlighted.

Eight of the 11 articles applied evaluations and, among them, one used the Dysphagia Risk Evaluation Protocol (DREP), the other used functional adaptations and assessments. The findings indicated altered swallowing, hypofunction of Stomatognathic System (SS) structures, poor oral hygiene, adapted masticatory pattern, and showed that the majority of Brazilian long-stay institutions do not have adequate structure to treat the elderly in a multidisciplinary character, only banking on the basic health care.

The study carried out by Furkim *et al.*¹² investigated the institution as a potential agent for dysphagia,

applying a questionnaire about human resources and daily routines to the leaders of four institutions in the city of Rio de Janeiro. He reaffirmed that none of the long-stay institutions surveyed had all the professionals needed to care for the elderly. In addition, in all of them there were factors that could potentiate a swallowing disorder, such as problems with the general structure and/or human resources and/or related to the established food routine.

Another significant factor pointed out by the studies, showed that the reality of the institutionalized elderly, refers to negligence regarding oral hygiene, favoring the colonization of bacteria in the oral cavity, which may aggravate pulmonary infections in the case of micro-aspirations. In the literature review work carried out by Pace & McCullough¹³, the relationship between oral hygiene and oral care in long-stay institutions associated with aspiration and pneumonia risks, as well as research on oral care was observed¹⁴.

The studies suggested an association between oral hygiene and respiratory pathogens, evidencing the direct relationship between periodontal diseases, aspiration and lung disease. This was also evidenced in the study carried out by Bomfim et al.¹⁵ in a study with 30 elderly women living in a long-stay care facilities (LTCF) in the city of Maceió, Brazil. The state of dental conservation in association with the risk of pulmonary disease due to dysphagia is very relevant. In addition, in this same study, the authors investigated the relevance of medication use, schooling and cognitive status, with an association among dementia, food dependency and increased feeding time, in agreement with the literature. Factors such as medication use and the absence of depression were also described as possible interferences in the food dynamics of the elderly.

In the study by Oliveira et al.³, we also investigated the general daily care of the institution, among them, the risk factors for swallowing changes in the elderly, the positioning during feeding, and oral hygiene practices, through a semi-structured interview with the caregivers of an LSI. As a result, caregivers reported the prevalence of depression, diabetes and stroke as risk factors for swallowing, which is in agreement with the literature data. Regarding oral hygiene, as other studies have shown, it was also neglected, with the majority of elderly edentulous patients with poorly adapted prostheses, which was evidenced in most of the researched articles.

The use of medications has been investigated as an interference factor in the food dynamics of the elderly. In the paper by Roque et al.¹⁶, it was observed that the most used drugs were neuropsychiatric and antihypertensive, interfering in the swallowing dynamics of the elderly. Fioravanti et al.¹⁷ observed the interference of psychotropic drugs in the process of deglutition of 47 elderly residents of a nursing home. The signs suggestive of dysphagia were evaluated in two groups of elderly people: those who used neuroleptic drugs and the group that did not use this type of medication. There was no significant difference in swallowing in both groups, which demonstrated that this type of drug alone does not interfere in the swallowing process of institutionalized elderly.

In a study carried out by Lima et al.¹⁸ with 34 elderly volunteers residing in an LSI, it was found that, although the majority of the elderly presented hypofunction of Stomatognathic System structures, there was an adapted pattern in the masticatory process, with some compensations during swallowing, allowing safe

feeding. In addition, the phonoarticulatory characteristics that were found do not compromise the communication effectiveness of these elderly individuals. In the paper by Dias et al.⁷, it was also evident that, despite the alterations in SS structures caused by aging, the elderly had an adaptation that, despite chewing being compromised, mainly due to poor dental conditions, poorly adapted prostheses and edentulism, they presented a safe swallowing, with ingestion of all the consistencies, even needing the aid of swallowing liquid. These findings were also demonstrated in the studies of Cardoso et al.¹⁰ and Oliveira et al.¹⁹.

Moreira and Pereira²⁰, did a study with 18 institutionalized elderly, 13 women and 5 men, without complaints of dysphagia and compared with an earlier English study. Both compared the participants' performance in swallowing 100 mL of water, noting the disparity between the sexes. This study may indicate that, for a very old age group, normality indexes for men and women tend to equate to around 7 mL/s, showing no difference between the sexes, which diverged from the comparative English work because, in this work, there was some difference in swallowing between men and women.

The reality of the Brazilian elderly is mostly women, widows, with low schooling, edentulous or with poorly adapted prostheses. Poor oral hygiene was the most cited item in all studies, being directly linked to the development of pulmonary complications in cases of bronchoaspiration. In addition, despite the structural alterations and, consequently, the functions of the stomatognathic system, a large part of the elderly had adapted swallowing, without presenting general health risks²¹. It was also evidenced the association of the use of controlled drugs with signs and symptoms of dysphagia in the elderly studied.

The risks for dysphagia in the LSIs are great, and none of the institutions cited in the studies surveyed had adequate staff to care for the elderly. The caregivers' lack of preparation to feed the elderly was also a considerable factor in the works studied, and some elderly were fed lying down, which may favor Gastroesophageal Reflux²².

Therefore, it is of fundamental importance the speech and language intervention in long-stay institutions, as well as a multidisciplinary team, developing actions of evaluation, diagnosis, rehabilitation and elaboration of educational programs, in order to promote an improvement in the quality of life of this population.

CONCLUSION

It can be concluded that, according to the revised articles, long-stay institutions do not provide adequate care staff with the elderly to reduce the risks of dysphagia. Thus, not only the presence of the speech therapist, but of a multidisciplinary team is fundamental, aiming to prevent the aggravation of the aspiration pictures, hospitalization for aspiration pneumonia and, consequently, death as a result.

The reality of the elderly in long-stay institutions is worrisome because, besides the lack of preparation of the caregivers, the alimentary routine and the way they are fed, the lack of oral hygiene and the use of medications are also risk factors for the development of dysphagia and much evidenced in the researched literature. There are few studies that quantify cases of risk for dysphagia in long-stay institutions. Thus, there is a need for more publications in the area, as well as proposals for interventions in the elderly in long-stay institutions.

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