

Association study between natural chronic diseases of aging and swallowing changes referred by community elderly

Estudo da associação entre doenças crônicas naturais do envelhecimento e alterações da deglutição referidas por idosos da comunidade

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ABSTRACT

Purpose: To investigate the association between self-reported swallowing changes with natural chronic diseases of aging, socioeconomic, demographic, nutrition and oral health aspects in the elderly community. **Methods:** We conducted a cross-sectional study, from a health survey of 900 elderly with 65 years or older, recruited at home, in the urban area of Campinas, São Paulo/Brazil, in the context of the “Frailty in Elderly Brazilians”. All patients underwent sociodemographic and anthropometric measures, of cognitive screening, among others. The elderly with no signs suggestive of dementia was applied protocol with dichotomous questions (yes/no), based on self-reported chronic disease, depressive symptoms, oral health and swallowing changes. Associations and prevalence ratios were investigated by Cox regression and p-values <0.05 were considered significant. **Results:** The sample comprised 507 elderly with 72 (+/- 5.2) years, on average, most women (62%). Natural chronic diseases of aging were most mentioned hypertension (62.1%) and arthritis / rheumatism (43.5%). Only 12.4% reported no chronic disease. Sensation of food stopped (16%) and gagging to feed or drinking liquid (14.4%) were the most mentioned swallowing changes. Dry mouth sensation, more diseases that are chronic, heart disease and osteoporosis were associated with swallowing changes. Increasing age was only related to the hoarseness after ingestion of a food. **Conclusion:** The co-occurrence of chronic diseases and the sensation of dry mouth were the most related to factors of swallowing changes. The age was associated only to report of throat clearing after feeding.

Keywords: Deglutition disorders; Health of the elderly; Epidemiology; Chronic disease; Aged

RESUMO

Objetivo: Investigar associação entre as alterações de deglutição autor-referidas com doenças crônicas naturais do envelhecimento, aspectos socioeconômicos, demográficos, nutricionais e de saúde bucal, em idosos da comunidade. **Métodos:** Foi realizado um estudo de corte transversal, proveniente de um inquérito de saúde com 900 idosos de 65 anos ou mais, recrutados em domicílio, na zona urbana de Campinas, São Paulo/Brasil, no contexto do estudo “Fragilidade em Idosos Brasileiros”. Todos foram submetidos a medidas sociodemográficas, antropométricas, de rastreio cognitivo, entre outras. Aos idosos sem sinais sugestivos de demência foi aplicado protocolo com questões dicotômicas (sim/não), baseadas no autorrelato de doenças crônicas, sintomas depressivos, saúde bucal e alteração da deglutição. As associações e as razões de prevalência foram investigadas por meio de regressão de Cox e valores de p<0,05 foram considerados significativos. **Resultados:** A amostra foi composta por 507 idosos com 72 (+/-5,2) anos de idade, em média, sendo a maioria mulheres (62%). As doenças crônicas naturais do envelhecimento mais referidas foram hipertensão (62,1%) e artrite/reumatismo (43,5%). Apenas 12,4% não relataram nenhuma doença crônica. Sensação de alimento parado (16%) e engasgos ao se alimentar ou ingerir líquido (14,4%) foram as alterações de deglutição mais referidas. Sensação de boca seca, maior número de doenças crônicas, cardiopatias e osteoporose foram associados com alterações de deglutição. O aumento de idade foi relacionado apenas ao pigarro, após ingestão de algum alimento. **Conclusão:** A coocorrência de doenças crônicas e a sensação de boca seca foram os fatores mais relacionados às alterações de deglutição. A idade foi associada apenas ao relato de pigarro após alimentação.

Descritores: Transtornos de deglutição; Saúde do idoso; Epidemiologia; Doença crônica; Idoso

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INTRODUCTION

For years Brazil has experienced the effects of demographic and epidemiological transitions, whose results led to increased life expectancy and the growth of elderly population. The fragility of this population and their constant needs motivate studies and actions that promote and protect their health in large ways, which may be related to your physical, mental and social well-being.

The growing number of elderly in Brazil and in the world comes with chronic noncommunicable diseases (NCD), the natural aging process, which are considered a serious public health problem, because they can worsen and / or promote the occurrence of other diseases⁽¹⁾. The four major NCD are cardiovascular diseases, cancer, chronic respiratory diseases and diabetes⁽¹⁾, however, kidney diseases, musculoskeletal, like rheumatism and arthritis, and mental health disorders are also classified as NCD.

The aging process also involves changes in swallowing^(2,3,4,5), involving different systems - musculoskeletal, neuromuscular, dental, sensory - in addition to the side effects of drug treatments. Thus, the changes observed are tooth loss, atrophy of dental alveolus, presence of dental prosthesis, often ell-adapted, increase in adipose and connective tissue of tongue, salivary flow reduction and changes in the sensory system, which, in turn, cause decrease of taste⁽²⁾. Such factors contribute to the decrease of the masticatory force, formulation and propulsion of the food bolus. We can also, decreased muscle tone of the pharynx, reduced sensory response pharyngolaryngeal and decrease in elevation and foregoing the larynx, requiring a greater number of swallows for efficient cleaning of the pharynx and causing the penetration or laryngeal suction^(3,4,5).

The signs most commonly related to changes in the mechanism of swallowing are the stasis, penetrations and laryngeal aspirations. In clinical practice, it has been empirically observed that these changes are usually identified by individuals and sensation of food stuck on the throat, need liquid to assist swallowing solids, coughing, gagging or throat clearing, during or after feeding.

International epidemiological studies state that swallowing changes are present in 13% to 40% of the elderly population. The tools used to identify such changes are several, including questionnaire with reports of complaints, clinical evaluation of swallowing and objective exams, as video fluoroscopy^(6,7,8,9,10,11).

Few studies analyze the interference of the chronic diseases of aging process on aspects of swallowing, especially studies^(11,12) with elderly over 65 years. Researchers⁽¹¹⁾ found that the presence of NCD related with increased pharyngeal transit time, which, in turn, may increase the risk of aspiration bronchial pneumonia. Another study⁽¹²⁾ noted that the number of diseases and the amount of drugs ingested were predictors of risk for develop aspiration pneumonia, by reflecting on

change of the oropharyngeal flora and at worst response of the immune system.

Previous studies in the elderly community have been limited to a small number of individuals and not controlled by the presence of NCD⁽¹¹⁾. Studies that seek to understand the changes arising from the aging process, usually exclude only neoplasms, by their more direct interference in the biomechanics of swallowing. So far, little is known about which changes are natural aging and which are a result of the deterioration caused by the presence of chronic diseases, in the senescence process.

Factors such as gender and income can also be related to the general health of the elderly⁽¹³⁾. In addition, nutrition^(2,8), presence of teeth, prosthodontics⁽¹⁴⁾ and dry mouth⁽²⁾ can connect directly to the process of swallowing and deserve attention to studying the elderly population.

To investigate the factors that are associated to swallowing changes in the elderly may assist in the prevention of nutritional and pulmonary changes, favoring greater life expectancy and better people's quality of life⁽¹⁵⁾. In addition, the knowledge of these factors can contribute to the creation of intervention programs aimed at improving the quality of life and to the perfection of caring for this population.

Thus, this article aims to discuss the association between self-report swallowing changes and the natural chronic diseases of aging, demographic, socioeconomic, nutritional aspects and oral health by elderly community.

METHODS

Selection of subject

Cross-sectional study from a health survey with 900 elderly of 65 years or older, recruited at home in the urban area of Campinas, São Paulo (Brazil), in the context of the study "Frailty in Elderly Brazilians", conducted by a multicentric network of researchers and known by the acronym FIBRA. This investigation took place between September 2008 and June 2009.

According to the *Instituto Brasileiro de Geografia e Estatística* (IBGE), in 2008, the number of elderly with 65 years or older, living in Campinas, it was estimated at 82,560, which corresponded to 7.8% of the city's population. Therefore, the sample for this study was calculated in 601 elderly (4% error).

For the selection of subjects was performed simple random sampling of census urban sectors, whose number corresponded to the ratio of the number of elderly and the number of census urban sectors⁽¹⁵⁾. According to the IBGE, in 2008, the city of Campinas had 835 census urban sectors.

The census sectors were selected by probabilistic sampling with a quota of 90 preset sectors to the city of Campinas.

Trained Recruiters visited the elderly at home and invited them to appear in given to location, close to their homes to participate in the data collection. It were recruited men and

women from 65 to 69 years, 70-74, 75-79 and 80 years or older in conformity with the sex and age ratios in the elderly population at the time⁽¹⁵⁾.

At the time of visit, recruiters interviewed the individuals and took into account the following inclusion criteria: age less than 65 years, agree to participate in the research and signed an informed consent, be a permanent resident in the home and in urban census. Exclusion criteria were considered: cognitive deficit suggestive of dementia, evidenced by memory problems, attention, spatial and temporal orientation and communication; use of a wheelchair or transient or permanent subjection to the bed; diseases that knowingly interfere with swallowing (as sequelae of stroke with loss in strength and / or aphasia, Parkinson's disease in severe or unstable stage, or serious compromises of motor skills, speech or affection); serious deficits of hearing or vision, hindering communication and any other disease in terminal stage. The sample was composed of 900 elderly, who participated in a session of sociodemographic and anthropometric data collection, blood pressure, weakness and cognitive screening, carried out by trained teams.

For cognitive screening, we used the Mini Mental State Examination (MMSE). After its completion, were kept in the research the elderly who scored above the note to your education level ($n=689$)⁽¹⁶⁾, participating in the second part of the protocol.

The second part of the protocol included questions based on self-report. For this study, were considered the answers of the questions dichotomous (yes / no) regarding chronic diseases, the depressive symptoms, oral health and swallowing changes. On that occasion, the elderly were excluded who reported that, last year, a doctor said that had cancer and stroke (hemorrhagic or ischemic).

Among 689 elderly without cognitive deficit suggestive of dementia were excluded those who have not responded completely to instruments of interest and included those who met certain criteria (Figure 1).

At the end of the data collection, the elderly have received generic information about the results and were given a health booklet.

Investigated factors

- Socioeconomic and demographic (age, gender and family income on a gross basis). Ages were calculated in years and grouped into four tracks: 65 to 69; 70 to 74; 75 to 79; 80 or more. The income values were grouped into five tracks of minimum wages (MW): <1; From 1.1 to 3; From 3.1 to 5; From 5.1 to 10 and > 10 MW.
- Chronic diseases self-reported, evaluated through six dichotomous items (yes / no) that investigated whether, in the last year, a doctor said that the individual had the following diseases: heart disease, such as angina, myocardial infarction or heart attack; hypertension or high blood pressure; diabetes mellitus; arthritis or rheumatism; lung diseases such as bronchitis and emphysema; depression and osteoporosis. For the purpose of data analysis, self-reported depression was regarded as one of the chronic diseases.
- Depressive symptoms: investigated by means of the geriatric depression scale⁽¹⁷⁾, consisting of 15 self-report questions about observed symptoms in the last week, with possible of yes / no answers. For cases of depression, settled the cut-off 6, according to national validated protocol⁽¹⁸⁾. The elderly were classified into two groups according to the presence or absence of depressive symptoms.

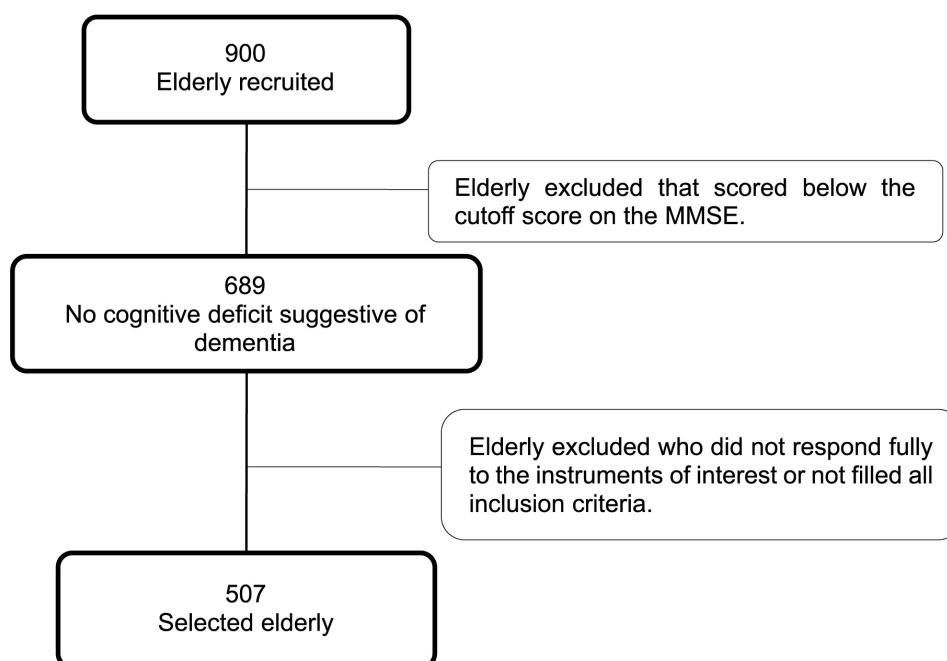


Figure 1. Composition of the sample selected for this study in the fibra study context, Campinas (São Paulo/Brazil) 2008-2009 ($n=507$)

- Body mass index (BMI) calculated from the formula “weight in kilograms divided by height in meters, squared high” ($BMI = W / H^2$). The BMI were used to classify the elderly as underweight ($BMI < 23$), normal weight ($BMI = 23$ to 27.99), pre-obese ($BMI = 28$ to 29.99) and obese ($BMI > 30$), according to recommendation of the Organização Pan-Americana de Saúde (OPAS)⁽¹⁸⁾.
- Oral health referred to: evaluated by three questions that behaved dichotomous responses (yes / no) and covered the following aspects: the presence of a natural tooth, use of denture and mouth feel dry in the last four weeks^(18,19,20,21).

Factors of interest

- Swallowing changes referred to: we verified through five questions with dichotomous answers (yes / no) for the presence or absence of difficulties that have occurred in the last 12 months: pain or difficulty on swallowing; feeling of food still stuck; throat clearing after ingesting some food; gagging to feed or ingest liquids and need to ingest liquid to help swallow the food⁽²²⁾. The total prevalence of swallowing changes referred to was based on, at least, an affirmative answer to the questions. The reason for prevalence evaluated in the exploratory analysis was calculated based on the total prevalence and on each change separately.

Data analysis

Descriptive and exploratory analysis was performed of the investigated variables and the variables of interest. Nominal variables (gender, self-reported diseases, depressive symptoms, oral health, swallowing changes referred to) were dichotomized into 1 (reference) and 0 (contrast) and ordinal variables (age, household income, BMI, number of diseases) had as reference the answer.

Associations between variables, the prevalence ratio estimates and their confidence intervals were investigated by Cox regression with variable assignment of time common to all subjects⁽²³⁾.

Statistical analysis was performed by means of the Statistical Package for the Social Sciences (SPSS) version 13.0 for Windows (SPSS Inc., Chicago, IL, USA) and only p values < 0.05 were considered significant.

The study has met the ethical criteria contained in the Declaration of Helsinki and was approved by the Research Ethics Committee of the Medical Sciences Faculty at *Universidade Estadual de Campinas* (process number 208/2007).

RESULTS

Five hundred and seven elderly participated in the study, mostly women (69.2%, 351 elderly), aged often between 65 and 69 years (38.9%, 197 participants), concentrated household income between one and three minimum wages (38,3%, 143 participants). The average age was 71.9 (+/- 5.2) years, with at least 65 and of 90 years maximum.

More than 40% of the individuals reported a two NCD, concentrating the largest number of diseases in individuals between 65 and 75 years. Only 63 (12.4%) elderly did not report NCD (Table 1).

The geriatric depression scale revealed that 99 (19.5%) elderly had depressive symptoms.

As the measure of BMI, 220 (43.4%) elderly were classified as normal weight, 127 (25%) as obese, 84 (16.6%) as preobese and 76 (15%) with low weight. As for oral health, 358 (70.6%) elderly reported using dentures, 272 (53.6%) reported the presence of teeth, 235 (46.4%) reported not having teeth and 227 (44.8%) reported dry mouth during the past four weeks.

The overall prevalence of swallowing changes referred to be 35.9%, i.e. 182 participants reported at least one of the investigated changes. Feeling of food stopped (16%, 81 participants) and gagging to feed or ingest liquid (14.4%, 73 participants) were the most reported. Complaint of hoarseness after ingesting some food, need to ingest liquid feed and difficulty or pain swallowing were referred to by 70 (13.8%), 68 (13.4%) and 27 (5.3%) elderly, respectively. The exploratory analysis showed some factors associated with swallowing changes (Table 2).

Table 1. Descriptive analysis of chronic disease self-reported by elderly community in the fibra study context, Campinas (São Paulo/Brazil) 2008-2009 (n=507)

Chronic noncommunicable diseases	Categories	Absolute frequency (n)	Relative frequency (%)
Heart disease	Yes	116	22.9
Hypertension	Yes	315	62.1
Diabetes	Yes	103	20.3
Arthritis rheumatism	Yes	219	43.2
Pulmonary disease	Yes	49	9.7
Osteoporosis	Yes	140	27.6
Number of diseases	None	63	12.4
	1 - 2	245	48.3
	≥ 3	199	39.2

Table 2. Factors significantly associated with swallowing changes referred by elderly community in the fibra study context, Campinas (São Paulo/Brazil) between 2008 and 2009 (n=507)

Complaints	Independent variables	Reference	Contrast	p-value	Prevalence ratio	CI 95%
Difficulty or pain of swallowing	Heart Disease	No	Yes	0.03	2.31	1.11–5.18
	Osteoporosis	No	Yes	0.01*	2.51	1.18–5.35
Feeling of food stopped or stuck	Dry mouth	No	Yes	<0.001*	2.46	1.52–3.94
	> number of chronic diseases	0	(CR)	0.003*	1.22	1.06–1.42
Hoarseness after feeding	Dry mouth	No	Yes	0.002*	2.22	1.34–3.68
	> age	65	(CR)	0.03*	1.04	1.00–1.09
Gagging the feed or drink liquids	Dry mouth	No	Yes	0.04*	1.62	1.00–2.62
	> number of chronic diseases	0	(CR)	0.002*	1.28	1.09–1.49
Need liquid to swallow	Dry mouth	No	Yes	0.02*	1.77	1.07–2.92
	> number of chronic diseases	0	(CR)	<0.001*	1.36	1.16–1.60

*Significant differences ($p < 0.05$) – Cox regression test

Subtitle: CR = Continuous Response; CI = Confidence Interval

Heart diseases (prevalence ratio PR=2.31; confidence interval CI=1.11 – 5.18) and osteoporosis (PR=2.51; CI=1.18 – 5.35) were associated with difficulty or pain on swallowing, increasing more than twice the prevalence of these complaints.

Feeling of dry mouth (PR=2.46; CI=1.52 – 3.94) and higher number of chronic diseases (PR=1.22; CI=1.06 – 1.42) appeared as factors associated with the feeling of food still stuck, increasing the appearance of this complaint, as the NCD were added.

Feeling of dry mouth (PR=2.22; CI=1.34 – 3.68) and age (PR=1.04; CI=1.00 – 1.09) presented themselves as factors associated with the presence of throat clearing after eating some food, increasing its occurrence per year of age.

Feeling of dry mouth and number of chronic diseases were also associated with higher prevalence of gagging to feed or to ingest liquids (PR=1.62; CI=1.00 – 2.62 and PR=1.28; CI=1.09 – 1.49, respectively) and the need of liquid to help swallow the food (PR=1.77; CI=1.07 – 2.92 and PR=1.36; CI=1.16 – 1.80, respectively), increasing the prevalence of these complaints every comorbidity.

The overall prevalence of swallowing changes referred to was not statistically associated with any of the factors investigated in multivariate analysis. In addition, the factors the absence of teeth, denture use, depressive symptoms and BMI were not related to any of changes which have been investigated in the study population.

DISCUSSION

In the present study, it was observed that the elderly population considered by society as healthy, in his minority, was free of NCD⁽¹³⁾. The co-occurrence of chronic disease was common in this population and associated to self-reported swallowing changes.

The prevalence of self-reported swallowing changes proved to be high, when compared to the literature. International studies with the elderly living in the community observed prevalence of self-reported swallowing changes around 15%^(9,10). Raise two hypotheses to explain the higher prevalence of swallowing changes in the elderly studied here. The first suggests an influence, direct or indirect of factors about the perception of diseases, such as access to health services, socioeconomic conditions and cultural aspects, as well as symptoms and self-care the place of residence of the elderly. The second shows that the discrepancy between the prevalence may be linked to differences between the data collection instruments. It is believed that, when considering several complaints on the instrument used for this study, may have promoted greater sensitivity to the presence or not of some difficulty for process of swallowing.

It was observed that the population studied no longer reports none of swallowing changes. Food stopped and gagging were the most referred to, which is comparable with the results of national and international studies with elderly in the community^(10,24). It should be noted that the feeling of food stopped and gagging are considered by the literature as risk factors for the development of aspiration pneumonia^(6,7), studying with decreased functional capacity and increased mortality in the elderly⁽⁸⁾.

Difficulty to swallow was changing less referred to elderly patients, however, it is the most commonly investigated and valued in the praxis of health professionals. Thus, this study found the importance of also thoroughly investigates other complaints associated with swallowing disorders in the elderly, with a view to adoption of earliest and effective care.

Study⁽⁹⁾ with 107 elderly living in the community showed that 23.4% of them believed that the changes in swallowing was a natural aging, suggesting the possibility of undervaluation the perception of these changes. It is worth noting that the difficulties encountered during swallowing can influence

directly the choice of foods ingested and lead to decreased food and water intake, which may be reflected in the state of hydration and nutrition of the individual and, consequently, in increase morbidities and infections in the elderly population⁽⁸⁾.

The Ministry of Health in one of the plans of confronting the NCD in Brazil (2011-2002)⁽²⁵⁾, considered the inadequate nutrition as an important factor to be countered, because of its association with the incidence and prevalence of NCD. In addition, changes in swallowing have strong interference in the quality of life, social, physical, emotional and global⁽⁹⁾.

The co-occurrence of NCD, quite often in the elderly population, was one of the factors associated with self-reported swallowing changes. In the literature⁽¹¹⁾, the number of chronic diseases was related with the highest probability of pharyngeal prolonged transit time, generating more risk of pulmonary aspiration. In addition, studies suggest that swallowing changes in elderly are not only consequences of aging and the number of diseases and the amount of ingested drugs are predictors of risk for the developing aspiration pneumonia, by reflecting on modification of oropharyngeal flora and worse immune system response^(11,12).

In this study, some diseases alone showed association with swallowing changes. Osteoporosis was associated with difficulty or pain swallowing. Commonly observed during the process of aging, osteoporosis may be related to changes in swallowing in elderly⁽²⁶⁾. Due to the interference in cervical spine position and consequent pressure on the pharyngeal and esophageal regions, there is greater chance of food or estases food bolus passage failed due to the obstruction of these regions.

Self-reported heart disease associated with difficulty or pain swallowing. Study⁽²⁷⁾ observed decreased transit time in elderly with heart disease, oropharyngeal when compared with the control group. Such finding suggests the adaptation of cardiac patients at increased speed to start swallowing, in order of reduced need for respiratory pause duration⁽²⁷⁾.

Dryness of the mouth and tooth loss is commonly observed in individuals with heart disease⁽²⁸⁾. Dryness of the mouth, ataxia, muscle weakness and peripheral neuropathy are side effects of cardiovascular medicines and can interfere with the process of swallowing⁽²⁹⁾.

Elderly eat often medicines at high levels and suffer from the side effects and interaction between medicinal products and the feeling of dry mouth one of the most common side effects⁽²⁹⁾. It is important to stress that the feeling of dry mouth caused by decrease for saliva, is not necessarily a reflection of senescence. It is often increased by multiple side effects medicines used by the elderly population and can be directly related to the difficulty in swallowing.

More than 2,000 drugs can contribute to feeling of dry mouth or influence in the upper esophageal sphincter relaxation via anticholinergic mechanism, interfering with food retention pharyngeal tract⁽²⁾. Some medications can cause slow response or neuromuscular extrapyramidal induction effect, changing

the movement of the tongue⁽²⁾, which can intervene directly in the functionality of swallowing.

The feeling of dry mouth was one of the factors referred to more associated to swallowing changes. The volume of saliva, as well as its composition, is important aspects to proper food bolus and cohesion necessary for the completion of the pharyngeal phase of swallowing. The feeling of dry mouth is recognized as a risk variable for changes in taste, chewing, swallowing, digestion and infection control^(19,20). Studies show association of dry mouth with a history of heart disease, use of anti-inflammatory drugs and painkillers, chewing difficulty, swallowing difficulty⁽²¹⁾ and most likely to liquid intake to help swallow the food⁽²⁰⁾. In addition, modification of salivary flow can increase the retention of food in the pharyngeal tract and the proliferation of bacteria, being a risk factor for aspiration pneumonia⁽²⁾ and for changes in the nutritional status of the elderly, due to the choice of food. In this study, the age was not a determining factor for most of swallowing changes. However, the higher prevalence of NCD was observed in individuals between 65 and 75 years of age, which may have caused an interaction between the variables age and presence of multiple NCD, causing only the NCD if associated to swallowing changes and not the variable age.

Age was significantly correlated only to self-report of throat clearing after eating some food. According to the literature, one of the most referred to the elderly is the sensation of food stuck on the throat^(10,24), which can lead to the need to throat clearing to estases cleaning or laryngeal penetrations of food or liquids. The throat clearing can also be a result of esophageal changes such as gastro esophageal reflux, commonly found among elderly⁽³⁰⁾. Compared to the young, the elderly have a higher pharyngeal transit time and transit time of opening of the cervical esophagus^(3,4,11). Such facts increases the chance of occurrence of laryngeal penetration and, consequently, tracheal aspiration, even after swallowing^(3,4).

Epidemiological studies are not fragile elderly, showing factors that may influence the modifications of swallowing process, for the aging. The present study suggests that the variability of NCD and, possibly, the consequent need of medicines to those elderly, considered healthy, are subject can bring greater occurrence of swallowing changes, beyond the expected in the senescence process. It is important to stress that the association between NCD and swallowing changes appear to reproduce a multifactorial and interdependent process, in which the components present relations between themselves, aggravating the health condition of the elderly.

In addition, the greater number of diseases in the elderly with symptoms of difficulty in swallowing reflects the overall degeneration state motivated by the aging process, plus environmental factors, social, economic and cultural. Thus, it is not possible to say that the NCD discussed have direct relation with the compromises of swallowing. However, they can be characterized by coexisting events in the aging process. It is noteworthy that the findings of this study are preliminary analyses, which reinforces

the need for greater understanding of factors associated with swallowing changes in elderly considered healthy in order to be formulated more campaigns and tracking studies directly related to the physical, mental and social aspects of this population.

It should be noted the need of health teams, starting preferably by the basic attention, question about the presence of updates of swallowing changes in elderly, for identification and early intervention of these disorders in order to promote the health of this population, fully and equitably.

Some limitations of the study should be considered: the data obtained are not generalizable to all elderly or community for the elderly hospitalized and retained in nursing homes. Exclusion criteria may have underestimated the prevalence of swallowing changes, modifying the strength of the associations found. However, the study reveals findings preliminary to the influence of natural aging process NCD on swallowing, often overlooked in studies of swallowing in elderly.

Due to the difficulty of comparing the results of this research with data from the literature, it is suggested to carry out longitudinal studies of case-control or cohort, using the same instruments described here, in order to compare individuals with and without complaints of swallowing. Thus, the hypothesis that the influence on aspects of swallowing would be better identified, with the possibility of meeting the additional risks to the swallowing changes in elderly living in the community.

CONCLUSION

The co-occurrence of chronic diseases and the feeling of dry mouth were the factors referred to more associated to swallowing changes in the studied population. The increase of the variable age proved to be associated only to the account of throat clearing after eating some food.

Factors such as gender, household income, lack of teeth, denture use, depressive symptoms and BMI were not related to any of the changes which have been investigated.

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