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Original articles

# Swallowing disorders in nursing home residents in a city in northern Chile

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## ABSTRACT

**Purpose:** to know the prevalence and characteristics of swallowing disorders in older people, institutionalized in nursing homes, in the city of Iquique.

**Methods**: an observational, descriptive study, composed of 86 institutionalized older people, which evaluated for swallowing, by applying a food history, the MECV-V swallowing protocol, and the FOIS severity scale. The data were analyzed through descriptive statistics.

**Results:** a prevalence of 70.9% of some types of swallowing disorders was estimated. The age range in which these difficulties predominate is between 75 and 90 years.

**Conclusion:** swallowing disorders are highly prevalent in institutionalized older people, with variability in the degrees of severity. The implementation of routine protocols in nursing homes could help detect and prevent dysphagia and presbyphagia among residents.

**Keywords:** Health of Institutionalized Elderly; Aged; Deglutition; Deglutition Disorder

Research conducted at the Santo Tomás University, Iquique, Chile.

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## INTRODUCTION

Swallowing is a process by which food passes from the mouth to the stomach[1]. The physical and functional integrity of the anatomical structures involved is needed to carry out this process. It is a complex act that consists in the performance of voluntary and involuntary motor sequences[2], which can be divided into four phases[3]: a) preparatory phase, where the bolus is prepared, thanks to chewing, lingual movements, and salivation; b) oral phase, where the bolus is propelled by the tongue towards the pharyngeal cavity, c) pharyngeal phase, where an oropharyngeal motor response is triggered, and d) esophageal phase, where thanks to the peristaltic movements of the esophagus, the bolus reaches the stomach. Any problem that arises from this process is considered a swallowing disorder or dysphagia[4].

Swallowing can be affected for several reasons. One of them is the physiological changes associated with age[5-7]. It can also be affected by central or peripheral neurological compromise, chronic or acute, among others[5-8].

The signs and symptoms of swallowing difficulties can be observed at different stages of swallowing[7,9]. When the preparatory phase is affected, reduced lip closure can be seen. There is also difficulty in lingual movement to form the bolus. Likewise, oral sensitivity could fail, and the range of lateral and vertical movements of the jaw can be reduced. When there are difficulties in the oral phase of swallowing, the propulsion of the bolus is complex. The tongue could push food out of the oral cavity (anterior escape). If the pharyngeal phase is affected, the oropharyngeal motor response could be delayed or absent. This is particularly dangerous as it increases the risk of false pathways[1,7]. There could also be inadequate velopharyngeal closure and reduced laryngeal elevation-closure[10]. The esophageal phase could mean reduced esophageal peristalsis[9-11]. This increases the risk of developing gastroesophageal reflux, among other symptoms[1,7,9-11].

Depending on the etiology, presbyphagia, neurogenic dysphagia, and structural dysphagia can be found[11]. Age-related changes in the swallowing mechanism are called presbyphagia. This consists of predominantly slowness and weakness in the different stages of swallowing[10]. These changes do not always indicate a disorder and may even be functional[12]. Neurogenic dysphagia occurs because of injuries or dysfunctions of the central or peripheral nervous system[7,11]. These injuries may be due to stroke, trauma, tumors, or neurodegenerative diseases, among others[7,8,11]. Structural dysphagia is caused by anatomical alterations in the swallowing organs. This includes oral, pharyngeal, laryngeal, and esophageal tumors. Likewise, post-radiotherapy or post-chemotherapy conditions in neoplastic processes of the head and neck are included. Injuries to the upper airway, tracheostomy, and partial laryngectomy are also found in this category[11].

The aging process brings a series of changes in the stomatognathic system[1]. These changes can impact the person's functionality[1,5,9]. Among these changes is the decrease in muscle mass and loss of teeth[10,12]. Likewise, a reduction in the speed and strength of mandibular movements is observed[12]. This deterioration of structures and some functions makes it difficult to have safe and effective swallowing[6].

Swallowing disorders in older people are of permanent interest to health professionals as well as to users and their families since they are becoming more prevalent[6]. According to Aslam and Vaezi[1], between 16 to 22% of people over 50 years of age have dysphagia. A study carried out in the city of Chillán, Chile, reported a prevalence of presbyphagia of 29.5% and dysphagia 14.5%[5]. Both studies were conducted in active older people. Older people living in long-stay establishments (ELEAM) are particularly vulnerable to presenting these difficulties[10]. The prevalence of dysphagia in institutionalized older people ranges from 13.44 to 52.7%[6].

This increase in prevalence may be due, among other reasons, to the demographic changes that the world population is experiencing. In 2019, it was estimated that 2.260.222 older adults lived in Chile[13]. This corresponds to 11.9% of the country's total population. It is projected that by 2035, there will be 3.993.821 people aged 60, equivalent to 18.9% of the total population[13].

There is a considerable number of institutionalized older adults. According to Chile Atiende[14], it was estimated that 26.854 older adults in Chile are possibly institutionalized. The vast majority (87%) live in Long Stay Establishments for the Elderly (ELEAM), which specializes in residential and care services for people aged 60 or over[14].

Despite this demographic reality, in Chile, there are few epidemiological studies on swallowing disorders in older people. Even fewer are the number of studies that refer to institutionalized people[15]. Notably, these aspects relevant to public health are unknown in

the northern part of Chile. That is why this research aimed to know the prevalence and characteristics of swallowing disorders in institutionalized older people, in the city of Iquique.

## METHODS

*Design:* An observational-descriptive study was designed. This type of study is limited to measuring and describing the phenomenon without manipulating the researchers[16]. The scientific ethics committee of the Universidad Santo Tomás, Chile, reviewed and approved this research under protocol number 29-22.

### Participants

The population corresponded to all older people residing in ELEAM, which was established in Iquique. In 2022, there were 7 ELEAMs, totaling N=102 residents. A convenience sample was conducted based on availability and access. Those residents over 60 years of age who gave informed consent to participate in the research were included. In those cases, diagnosed with some cognitive alteration (e.g., dementia), authorization from the representative was requested. Elderly people who were not permanent residents of the ELEAM, whose cognitive, visual, or hearing status did not allow them to adapt to the evaluation procedure, or who were diagnosed with COVID-19 at the time of data collection were excluded. In this way, n=86 participants (29 men and 57 women) were obtained, with an average age of 73.74 years (SD+4.43). For further analysis, the participants were classified into age groups: 60-74, 75-90, and 91 or older. The data was collected from July to October 2022. It should be noted that all participants agreed to be evaluated voluntarily. The evaluations were conducted in the respective ELEAM, in a procedure room equipped for the activity.

### Instrument and procedure

The instruments used to collect data were food and morbidity history, orofacial complex assessment guideline (PEOFA), MECV-V[17] protocol, and FOIS scale[18]. The first two instruments were created by the research team and were subjected to content validation through expert judgment. The anamnesis was answered by the caregivers. The application of the MECV-V[17] protocol was accompanied by a Yonker TM 80C pulse oximeter, 20ml syringe, graduated glasses, Enterex brand thickener, and Aquarius grape flavored water. Before data collection, the researcher/evaluator team received training for applying the instruments. In this way, an attempt was made to unify criteria for decision-making during the evaluation.

The purpose of the feeding and morbidity history was to detect possible signs of swallowing risk in the different consistencies, especially in the solid consistency, since this type of consistency is not considered in the MECV-V. Likewise, information on the participants' morbidity (e.g., if they have any underlying pathology) was considered since this affects the diagnosis of swallowing. The PEOFA protocol was designed and applied to identify the anatomical and functional status of the organs involved in swallowing and detect changes associated with age.

After the feeding history and PEOFA protocol, MECV-V[17] was applied. This instrument seeks to detect signs of dysphagia by administering different consistencies and volumes. Nectar, liquid, and pudding consistencies are evaluated in 5,10, and 20ml volumes. If signs of altered safety appear during nectar or liquid consistency administration, it should be changed to pudding consistency. The evaluation is stopped if signs of altered security appear in this last consistency, as indicated by its authors[17]. Signs of altered efficacy, such as anterior escape, difficulties in propulsion of the bolus, etc. They are registered in the protocol, but they do not prevent progress.

The FOIS[18] Scale was used to determine each participant's swallowing severity level. This scale provides seven levels of swallowing performance, with level 1 being total oral feeding restriction and level 7 without oral feeding restrictions[18] (Table 1). To determine swallowing performance, both the MECV-V results and what was reported in the feeding history and PEOFA protocol were considered. The diagnostic labels used to classify the swallowing disorders found were the following: normal swallowing[11], neurogenic dysphagia[19], and presbyphagia[20] according to the following criteria: neurogenic dysphagia was considered those swallowing difficulties, with or without risk of false passage in those people with neurological pathology—baseline (e.g., stroke, neurodegenerative disease). Presbyphagia was considered a sign of swallowing impairment associated with age but without underlying neurological pathology (e.g., slowness and weakness in the different stages of swallowing, oral dryness, time taken to eat, and exclusion of food)[5,10].

**Table 1.** Severity levels of the FOIS Scale[18]

| Level | Description |
|---|---|
| 1 | Nothing by mouth. |
| 2 | Tube dependent with minimal attempts of food or liquid. |
| 3 | Tube dependent with consistent oral intake of food or liquid. |
| 4 | Total oral diet of a single consistency |
| 5 | Total oral diet with multiple consistencies but requiring special preparation or compensations. |
| 6 | Total oral diet with multiple consistencies without special preparation, but with specific food limitations. |
| 7 | Total oral diet with no restrictions. |

An Excel spreadsheet was used to tabulate and organize the data. The descriptive analysis of the data was carried out using the SPSS v19 program, obtaining measures of central tendency (mean, mode) with their respective measures of dispersion. The prevalence of swallowing disorders was calculated using the ratio a/(a+b)[21]. In this sense, a=number of institutionalized older people who presented some swallowing disorder and b=number of institutionalized older people with swallowing without alteration.

## RESULTS

The research results are presented below. Table 2 allows visualizing the characterization of the participants according to sex and age group. The majority age group corresponds to the 60-74 age range. Regarding sex, the sample was mainly made up of women.

**Table 2.** Characteristic of participants according to gender and age group

| Age range | Sex | | Total | |
|---|---|---|---|---|
| | M | F | Sample n | % |
| 60 – 74 | 19 | 25 | 44 | 51.2 |
| 75 – 90 | 7 | 24 | 31 | 36.0 |
| 91 or more | 3 | 8 | 11 | 12.8 |
| Total | 29 | 57 | 86 | 100 |

Captions: M= male; F= female; %= percentage of the total

According to the nutritional and morbidity anamnesis, most participants present some diagnosed underlying pathology (n=90.9%), whether neurogenic, chronic non-communicable disease, or both (Table 3).

**Table 3.** Characteristic of participants according to age range and morbidity

| Age range | Morbidity | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | NCD* only | | Neurological Pathology Only | | Both conditions | | Without underlying pathologies | |
| | Sample n | % | Sample n | % | Sample n | % | Sample n | % |
| 60 – 74 | 4 | 9.1 | 6 | 13.7 | 30 | 68.1 | 4 | 9.1 |
| 75 – 90 | 0 | 87.1 | 2 | 6.4 | 25 | 80.6 | 4 | 12.9 |
| 91 or more | 0 | 0.0 | 1 | 9.1 | 10 | 90.9 | 0 | 0.0 |
| Total | 4 | 4.7 | 9 | 10.4 | 65 | 75.6 | 8 | 9.3 |

*Noncommunicable Diseases

In Figure 1, Alzheimer's Disease is the predominant neurological diagnosis, with 65%.

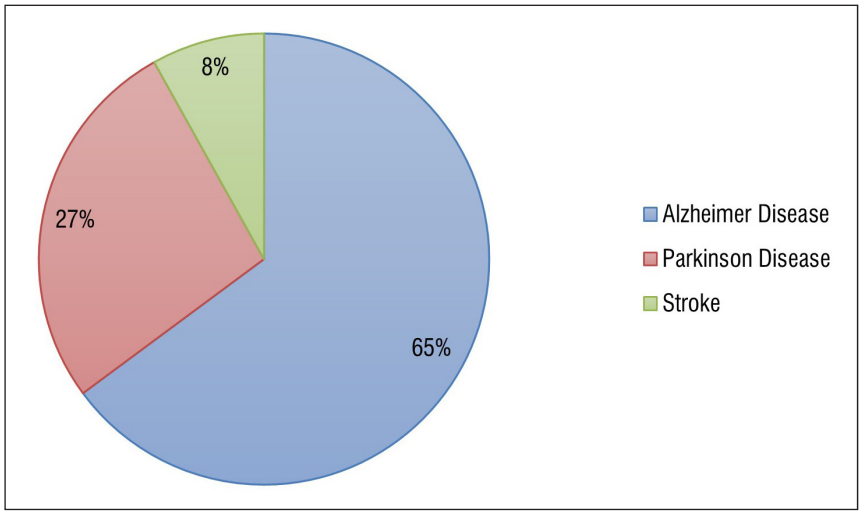


**Figure 1.** Frequency of underlying neurological diagnoses

Regarding prevalence (Table 4), 70.9% of institutionalized older people present some type of swallowing disorder. The age range with the highest prevalence was 75-90 years (90.3%). Of the participants who presented a swallowing diagnosis, neurogenic dysphagia was predominant in the three age ranges (Figure 2).

**Table 4.** Results of the swallowing assessment according to age range

| Age Range | Swallowing without signs of alteration (sample n) | Impaired swallowing (sample n) | Prevalence (%) |
|---|---|---|---|
| 60 – 74 | 20 | 24 | 54.5 |
| 75 – 90 | 3 | 28 | 90.3 |
| 91 or more | 2 | 9 | 81.8 |
| Total | 25 | 61 | 70.9 |

Caption: %= percentage of the total

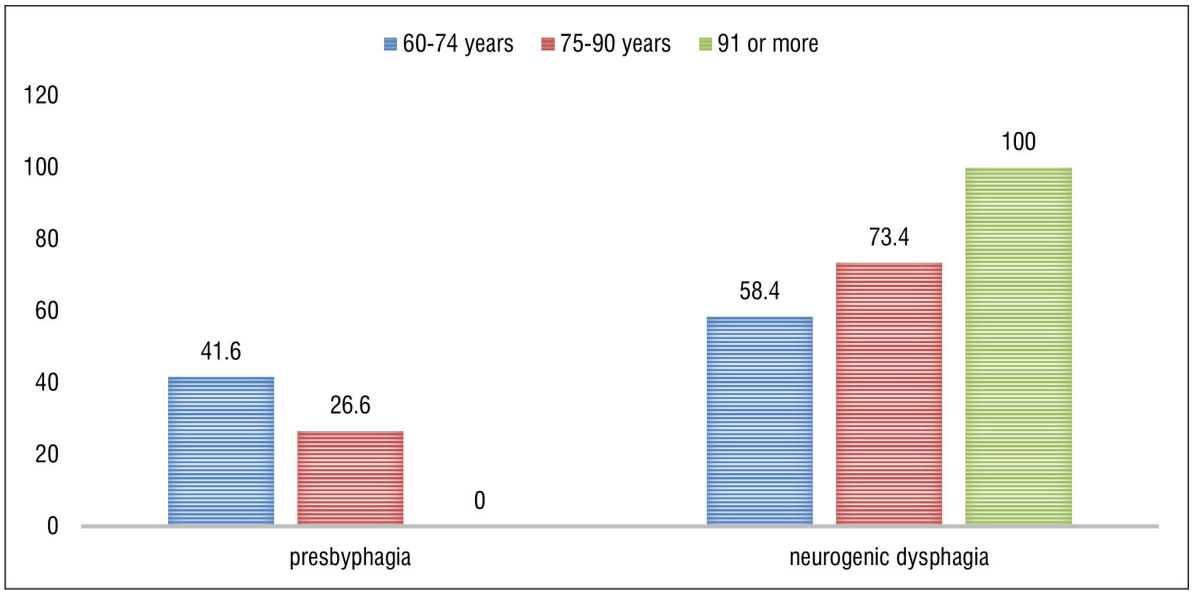


**Figure 2.** Distribution (%) of swallowing diagnosis according to age range

The type of swallowing disorder presented by the participants and the degree of functionality are summarized in Table 5.

**Table 5.** Diagnosis of swallowing and degree of functionality according to FOIS scale[18]

| Diagnosis of swallowing[11.19.20] | Functionality level | | | | | | | Total (sample n) | % |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| Normal Swallowing | | | | | | | 25 | 25 | 29.1 |
| Presbyphagia | | | | | 4 | 10 | | 14 | 16.3 |
| Neurogenic dysphagia | | 2 | 6 | 15 | 17 | 7 | | 47 | 54.6 |

Caption: %= percentage of the total

Regarding the swallowing characteristics and eating process presented by older people with swallowing difficulties (Table 6), it is notable that the vast majority reported the presence of cough after swallowing liquids (n=77%), oral dryness (n=88.5 %), and the need to modify the consistency of the foods consumed (n=81.9%).

**Table 6.** Characteristics of the swallowing-eating process of participants with swallowing disorders (n=61)

| Characteristics | n | % |
|---|---|---|
| Enteral feeding | 0 | 0.0 |
| Parenteral feeding | 1 | 1.6 |
| Consistency modification | 50 | 81.9 |
| Self-feeding | 21 | 34.4 |
| Cough during/after drinking liquids | 47 | 77.0 |
| Difficulty chewing solid foods | 25 | 40.9 |
| Dry mouth | 54 | 88.5 |
| Anterior food escape | 43 | 70.5 |
| Lack of teeth | 57 | 93.4 |
| Eat sitting in the space designated for it | 51 | 83.6 |
| Bedridden person eats in bed in a horizontal position | 10 | 16.4 |

Caption: %= percentage of the total

## DISCUSSION

The results of this study allowed determining the prevalence and characteristics of swallowing disorders in institutionalized older people in Iquique.

This study showed that 70.9% of the participants had some swallowing difficulty. If only the diagnosis of neurogenic dysphagia is taken, the prevalence is 54.6%. This result is considerably high compared to international research. A Swedish study reported that 14.9% of institutionalized older adults in that country present oropharyngeal dysphagia[22]. However, the Swedish research differs methodologically from this study since the authors[22] applied a survey to the caregivers of institutionalized people and did not perform a clinical evaluation of swallowing.

The SHELTER project[3,23], in which 3.451 institutionalized older people in Europe and Israel were evaluated, showed a prevalence of dysphagia of 30.3%. The SHELTER study and this study show the high prevalence of swallowing disorders in the institutionalized elderly population. The SHELTER study also measured mortality associated with dysphagia. Subjects with dysphagia were reported to have a significantly higher mortality rate (31.3% vs 17.0%, p = 0.001)[23]. However, the SHELTER study did not consider screening for presbyphagia.

A study conducted on ELEAM residents in nineteen countries in Europe and North America reported dysphagia prevalence data of 13.4%[4]. However, when clinical evaluation was used to detect the presence of dysphagia, it was estimated that the prevalence reached 52.7% in older adults in nursing homes[6], obtaining values like those found in this research.

To reaffirm the heterogeneous epidemiological figures reported in the literature regarding this topic, a systematic review[24] reported that the prevalence data of dysphagia in this type of residence ranged between 7 and 40%[24].

At the time of this research, no ELEAM in the city of Iquique had a specialized professional (e.g., speech therapist) who could perform a clinical evaluation of swallowing periodically. A similar situation is reported in Norway[23]. The authors mention that 75% of nursing homes do not perform swallowing evaluations routinely and preventively[19].

Regarding the underlying neurological diagnoses, the ELEAM residents in this study have characteristics similar to those of international studies. The Norwegian study[19] refers to stroke and dementia as the main underlying pathologies. A Swedish study[22] reports that 70% of the participants present cognitive impairment and even associate it with the presence of dysphagia in institutionalized older people. The SHELTER study reports that, of its study participants, 54.5% had dementia, 7.4% had Parkinson's disease, and 24.2% had a stroke.

Regarding the characteristics of the swallowing-eating process of participants with swallowing disorders, one of the most frequent was the presence of cough after drinking liquid consistency (77%). The study by Engh and Speyer[19] also reports that 96% of participants present this sign of swallowing disorder. A similar case occurs with missing teeth, which was found in 93.4% of the participants in this study, and the Norwegian study reports 70%.

*Limitations*

The gold standard for swallowing assessment is videofluoroscopy[7,11]. However, this procedure is difficult to access in the city where the study was conducted, so only clinical assessment was used.

Given that there are no specific tests for diagnosing presbyphagia, this study applied a feeding and morbidity history and the MECV-V[17]. However, the latter does not include the evaluation for solids, so the prevalence of presbyphagia could be higher if a study were carried out that included this consistency[5].

In the reviewed literature, no reference was found to studies where the level of swallowing functionality is considered in this type of participant, so it was not possible to compare the results.

## CONCLUSION

The prevalence of disorders in institutionalized older adults in the city of Iquique was 54.5% in adults aged 60 to 74 years, 90.3% in adults aged 75 to 90 years, and 81.8% in people aged 91 years or more. In all groups, the predominant swallowing diagnosis was neurogenic dysphagia, either due to neurodegenerative-based pathology or stroke.

Based on the results of this study, it can be deduced that detecting swallowing disorders in institutionalized older people is not a common practice. This is worrying, since the severity of swallowing disorders can be prevented, reversed, or reduced by carrying out swallowing evaluations early, timely, and periodically. In this way, it directly impacts increasing the quality of institutionalized people.

Given the high prevalence of swallowing disorders in this study's population, it becomes relevant to have speech pathologists within the multi-professional team of the ELEAMs. Speech pathologists, competent and trained professionals in this field, should address the characteristics of the swallowing disorders found in this study, for example, change in consistency and cough after drinking liquids.

Due to the methodological heterogeneity of the research reported in the literature and the assessment for detecting dysphagia, the figures vary widely worldwide.

Although presbyphagia and dysphagia in the elderly population have a high prevalence and the consequences could be severe, it is considered that they are underdiagnosed and that it is necessary to continue collecting epidemiological data at the national level, both in institutionalized and active older people.

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## REFERENCES

1. Aslam M, Vaezi MF. Dysphagia in the elderly. Gastroenterol Hepatol. 2013;9(12):784-95. www.ncbi.nlm.nih.gov/pmc/articles/PMC3999993/ PMCID: PMC3999993. PMID:24772045.
2. González C, Casado M, Gómez A, Pajares S, Dávila R, Barroso L et al. Guía de nutrición de personas con disfagia. 1ra ed. Madrid: INMERSO; 2017.
3. Marks L, Rainbow D. Working with dysphagia. 1st ed. London: Routledge; 2001.
4. Streicher M, Wirth R, Schindler K, Sieber CC, Hiesmayr M, Volkert D. Dysphagia in nursing homes - results from the nutritionday project. J Am Med Dir Assoc. 2018;19(2):141-7. https://doi.org/10.1016/j.jamda.2017.08.015 PMID: 29030310.
5. Barrón-Pavón V, Artiaga C, Higuera V, Rodríguez-Fernández A, García-Flores V, Sanhueza-Garrido M et al. Ingesta alimentaria y presbifagia en adultos mayores activos de la comunidad de Chillán, Chile. Rev. chil. nutr. 2020;47(4):580-7. http://dx.doi.org/10.4067/S0717-75182020000400580
6. Park Y-H, Han H-R, Oh B-M, Lee J, Park J, Yu S-J et al. Prevalence and associated factors of dysphagia in nursing home residents. Geriatr Nurs. 2013;34(3):212-7. https://doi.org/10.1016/j.gerinurse.2013.02.014 PMID: 23528180.
7. Venegas M, Navia R, Fuentealba I, Diez de Medina M, Kunstmann P. Manejo hospitalario de la persona mayor con disfagia. Rev Med Clin Las Condes. 2020;31(1):50-64. https://doi.org/10.1016/j.rmclc.2019.09.005
8. González R, Bevilacqua J. Disfagia en el paciente neurológico. Rev Hosp Clín Univ Chile. 2009;20(3):252-62. https://www.redclinica.cl/Portals/0/Users/014/14/14/Publicaciones/Revista/disfagia.pdf
9. Eslick GD, Tally NJ. Dysphagia: Epidemiology, risk factors and impact on quality of life - A population-based study. Aliment Pharmacol Ther. 2008;27(10):971-9. https://doi.org/10.1111/j.1365-2036.2008.03664.x PMID: 18315591.
10. Dell'Aquila G, Peladic NJ, Nunziata V, Fedecostante M, Salvi F, Carrieri B et al. Prevalence and management of dysphagia in nursing home residents in Europe and Israel: The SHELTER Project. BMC Geriatrics. 2022;22(1):719. https://doi.org/10.1186/s12877-022-03402-y PMID: 36042405 PMCID: PMC9429699.
11. Cámpora H, Falduti A. Deglución de la A a la Z. 2da ed. Buenos Aires: Ed. Journal; 2019.
12. Schindler JS, Kelly JH. Swallowing disorders in the elderly. Laryngoscope. 2002;112(4):589-602. https://doi.org/10.1097/00005537-200204000-00001 PMID:12150508.
13. Instituto Nacional de Estadísticas, Chile. [Webpage on the internet] Population projections. 2020 [accessed 2023 Nov 3]. Available at: https://www.ine.cl/estadisticas/sociales/demografia-yvitales/proyecciones-de-poblacion

14. Chile Atiende. [Webpage on the internet]. Establecimientos de Larga Estadía para Adultos Mayores 2021 [accessed 2023 Nov 3]. Available at: https://www.chileatiende.gob.cl/fichas/9655-establecimientos-de larga-estadia-para-adultos-mayores-eleam

15. Marín P, Guzmán J, Araya A. Adultos mayores institucionalizados en Chile: ¿Cómo saber cuántos son? Revista médica de Chile. 2004;132(7):832-8 http://dx.doi.org/10.4067/S0034-98872004000700007

16. Manterola C, Otzen T. Estudios observacionales, los estudios diseños utilizados con mayor frecuencia en investigación clínica. Int. J. Morphol. 2014;32(2):634-45. http://dx.doi.org/10.4067/S0717-95022014000200042

17. Clavé P, Arreola V, Romea M, Medina L, Palomera E, Serra-Prat M. Accuracy of the volume-viscosity swallow test for clinical screening of oropharyngeal dysphagia and aspiration. Clinical Nutrition. 2008;27(5):806-15. https://doi.org/10.1016/j.clnu.2008.06.011 PMID: 18789561.

18. Crary MA, Carnaby Mann GD, Groher ME. Initial psychometric assessment of a functional oral intake scale for dysphagia in stroke patients. Arch Phys Med Rehabil. 2005;86(8):1516-20. https://doi.org/10.1016/j.apmr.2004.11.049 PMID:16084801.

19. Engh M, Speyer R. Management of dysphagia in nursing homes: A national survey. Dysphagia. 2022;37(2):266-76. https://doi.org/10.1007/s00455-021-10275-7 PMID: 33660070; PMCID: PMC8948132.

20. Muhle P, Suntrup-Krueger S, Wirth R, Warnecke T, Dziewas R. Schlucken im alter: Physiologische veränderungen, schluckstörungen, diagnostik und therapie [Swallowing in the elderly: Physiological changes, dysphagia, diagnostics and treatment]. Z Gerontol Geriatr. 2019;52(3):279-89. https://doi.org/10.1007/s00391-019-01540-4

21. Fuentes ME, del Prado N. Medidas de frecuencia y de asociación en epidemiología clínica. Anales de Pediatría Continuada. 2013;11(6);346-9. https://doi.org/10.1016/S1696-2818(13)70157-4

22. Hägglund P, Gustafsson M, Lövheim H. Oropharyngeal dysphagia and associated factors among individuals living in nursing homes in northern Sweden in 2007 and 2013. BMC Geriatrics. 2022;22(421):1-11. https://doi.org/10.1186/s12877-022-03114-3 PMID: 35562667 PMCID: PMC9107260.

23. Onder G, Carpenter GI, Finne-Soveri H, Gindin J, Frijters D, Henrard JC et al. Assessment of nursing home residents in Europe: The Services and Health for Elderly in Long Term care (SHELTER) study. BMC Health Serv Res. 2012;9(12):5. https://doi.org/10.1186/1472-6963-12-5 PMID: 22230771; PMCID: PMC3286368.

24. Namasivayam AM, Steele CM. Malnutrition and dysphagia in long-term care: A systematic review. J Nutr Gerontol Geriatr. 2015;34(1):1-21. https://doi.org/10.1080/21551197.2014.1002656 PMID: 25803601.

**Authors' contributions:**

KMP: Conceptualization; Formal analysis; Investigation; Methodology; Supervision; Writing - Original draft; Writing - Review & editing.

LOG, EPM: Conceptualization; Data curation; Investigation; Resources; Writing -Original draft.

CRC: Conceptualization; Data curation; Writing - Original draft.

FSD: Conceptualization; Formal analysis; Writing - Original draft.

**Data sharing statement:**

Individual data from unidentified participants will not be shared. The assessment guidelines used will be available immediately after publication up to 3 years later. To do so, you must request them from the corresponding author at kmora5@santotomas.cl