https://doi.org/10.23925/2176-2724.2020v32i3p454-461

Risk of Dysphagia and Quality of Life in Healthy Elderly

Risco de Disfagia e Qualidade de Vida em Idosos Saudáveis

Riesgo de Disfagia y Calidad de Vida en Ancianos Sanos

Maria Sarah Tristão Ferraz[*]
Michelle Ferreira Guimarães[*]
Janaina de Alencar Nunes[*]
Elma Heitmann Mares Azevedo[*]

Abstract

Introduction: Aging involves changes that can compromise organs and functions. With the growth of the elderly population there is a great demand that is susceptible to changes in swallowing. **Objective:** To identify the risk of dysphagia and to evaluate the swallowing quality of life of healthy elderly. **Method:** Descriptive, observational and cross-sectional study, approved by the Ethics Committee, n. 1,797,382. Healthy elderly of both sexes aged 60 years and over were included. The research was carried out in the institution's facilities and the EAT-10 and SWAL-QOL protocols were applied. **Results:** 110 healthy elderly participated on the study with a mean age of 71 years. Forty-one (37.27%) elderly were identified with risk of dysphagia, most of them male (n = 26; 63.41%) and aged 70 years or older (n = 25; 60.98%). There was no statistical relationship between risk of dysphagia, gender and age. Regarding SWAL-QOL, there was a statistical difference between genders for the "swallowing as a burden", "frequency of symptoms" and "mental health" domains without differences in age groups. Regardless of gender and age, there was no impact on swallowing-related quality of life. There was no association between risk of dysphagia and quality of life. **Conclusion:** Healthy elderly are at risk of dysphagia after 70 years and have lower scores for the "sleep" and "fatigue" domains in SWAL-QOL.

Keywords: Deglutition Disorders; Mass Screening; Health of the Elderly; Quality of Life; Deglutition.

* Universidade Federal do Espírito Santo, Vitória – ES, Brazil.

Authors' contributions:
MSTF - data collection and study outline.
JAN - article writing and review.
MFG - article writing and review.
EHMA - study design; methodology; study outline, critical review and guidance

Correspondence e-mail: Elma Heitmann Mares Azevedo - kikahmazevedo@hotmail.com
Received: 8/20/2019
Accepted: 7/16/2020

Resumo

Introdução: Envelhecer envolve mudanças que podem comprometer órgãos e funções. Com o crescimento da população idosa há grande demanda de idosos saudáveis suscetíveis a alterações na deglutição. **Objetivo:** Identificar o risco de disfagia e avaliar a qualidade de vida em deglutição de idosos saudáveis. **Método:** Estudo descritivo, observacional e transversal, aprovado pelo Comitê de Ética, nº 1.797.382. Foram incluídos indivíduos com idade igual ou superior a 60 anos, de ambos os sexos e considerados saudáveis. A pesquisa foi realizada nas dependências da instituição e foram aplicados os protocolos EAT-10 e SWAL-QOL. **Resultados:** Participaram 110 idosos saudáveis com média de idade de 71 anos. Foram identificados 41 (37,27%) indivíduos com risco de disfagia, sendo a maioria do sexo masculino (n = 26; 63,41%) e com idade igual ou superior a 70 anos (n = 25; 60,98%). Não houve relação estatística entre risco de disfagia, sexo e faixa etária. Quanto ao SWAL-QOL houve diferença estatística entre os sexos para os domínos "deglutição como um fardo", "frequência de sintomas" e "saúde mental", porém sem diferença nas faixas etárias. Independente do sexo e idade, não houve impacto na qualidade de vida relacionada à deglutição. Não houve associação entre risco de disfagia e qualidade de vida. **Conclusão**: Idosos saudáveis apresentam risco de disfagia mais frequente após 70 anos e menores escores para os domínios "sono" e "fadiga" no SWAL-QOL.

Palavras-chave: Transtornos de Deglutição; Programas de Rastreamento; Saúde do Idoso; Qualidade de Vida; Deglutição.

Resumen

Introducción: El envejecimiento implica cambios que pueden comprometer los órganos y las funciones. Con el crecimiento de la población de ancianos, existe una gran demanda de ancianos sanos susceptibles a cambios en la deglución. **Objetivo:** identificar el riesgo de disfagia y evaluar la calidad de vida de deglución de ancianos sanos. **Método:** Estudio descriptivo, observacional y transversal, aprobado por el Comité de Ética, 1,797,382. Se incluyeron individuos de 60 años y más, de ambos los sexos y considerados saludables. La investigación se realizó en las instalaciones de la institución y se aplicaron los protocolos EAT-10 y SWAL-QOL. **Resultados:** 110 participantes ancianos sanos con una edad media de 71 años. Se identificaron cuarenta y un (37.27%) individuos con riesgo de disfagia, la mayoría de ellos hombres (n = 26; 63.41%) con 70 años o más (n = 25; 60,98%). No hubo relación estadística entre el riesgo de disfagia, el género y la edad. Con respecto a lo SWAL-QOL, hubo una diferencia estadística entre los géneros para los dominios "tragar como una carga", "frecuencia de síntomas" y "salud mental", pero sin diferencias en los grupos de edad. Independientemente del género y la edad, no hubo impacto en la calidad de vida relacionada con la deglución. No hubo asociación entre el riesgo de disfagia y la calidad de vida. **Conclusión:** Los ancianos sanos corren el riesgo de disfagia más frecuente después de 70 años y tiene mayor puntaje para los dominios "sueño" y "fatiga" en SWAL-QOL.

Palabras clave: Trastornos de Deglutición; Tamizaje Masivo; Salud del Anciano; Calidad de Vida; Deglución.

Introduction

Estimates from the Brazilian Institute of Geography and Statistics (IBGE) suggest that Brazilian population will reach a life expectancy of 78.15 years by 2027[1]. Population aging is a worldwide phenomenon reported in the twentieth century and is growing rapidly[2]. Given the IBGE data and, as the Brazilian legislation considers any individual aged 60 years or older as an elderly person, Brazil has become a third age country.

Along with body aging, the swallowing function also undergoes changes, becoming slower and more difficult. There may be an imbalance in the function and onset of dysphagia in the presence of stressors, such as diseases and medications[3].

In the later stages of dysphagia, the elderly may have oral and pharyngeal stasis, penetration and aspiration (audible or silent) at different times and degrees, that worsen with nutritional, water and lung deficits impacting on their quality of life. If dysphagia is not treated properly, the elderly may be at risk of death[4-11].

In addition to the advanced changes associated with dysphagia, the elderly may also have a concomitant decline in the sensory function of the pharynx. This decline tends to be more severe in elderly patients with oropharyngeal dysphagia, becoming a critical pathophysiological element with a potential need for the treatment of swallowing dysfunction in this population[12].

Some authors report the efficiency of swallowing with greater variability in healthy advanced age up to 100 years of age. Such deviations from normative data on swallowing and dysphagia symptoms, leading to aspiration or nutritional risk imply functional swallowing disorder rather than simply being a common feature related to the aging process[13].

Therefore, dysphagia is an important health indicator for the elderly population and is often associated with morbidity and mortality. This condition is not always identified and the adaptations made to food are often followed by feelings of frustration, discouragement, shame and embarrassment when eating[14]. Thus, the early identification of the risk of dysphagia may enhance primary/secondary action and enable speech-language pathology intervention as early as possible, reducing functional changes and improving the quality of life of individuals[15].

Given the effects of aging on swallowing and studies investigating the quality of life in swallowing in the elderly population, this study aimed to identify the risk of dysphagia and assess the quality of life in swallowing in healthy elderly people. The results may enable the development of new health care strategies and the improvement of the decision-making process in Speech-Language Pathology, providing benefits to the elderly population.

Material and Methods

This was a descriptive, observational and cross-sectional study approved by the Research Ethics Committee of the institution under no. 1.797.382. All subjects enrolled in the research were previously informed of the procedures and signed the Free, Prior and Informed consent (FPIC).

The study included individuals aged 60 years or over, of both genders and considered healthy, with receptive and expressive communication skills. Individuals with a history of neurological, neoplastic, psychiatric, diabetes mellitus, heart, pulmonary and/or other diseases, and who had undergone previous speech-language pathology therapy, were excluded from the sample population.

The research was carried out in the outdoor area adjacent to a University Hospital. At first, a short form prepared by the main researcher was applied, which included identification data and information related to general health, such as: name, age, marital status, educational level, presence of disease, use of medication and previous speech-language pathology therapy. Individuals were selected through this instrument. The Eating Assessment Tool (EAT-10)[16,17] and Quality of Life in Swallowing Disorders (SWAL-QOL)[18-21] protocols were applied to all subjects able to participate in the study.

Although EAT-10 and SWAL-QOL are usually applied to individuals with complaints or suspected dysphagia, it is believed that they could be useful in individuals considered healthy due to the great possibility of underdiagnoses. In addition, the EAT-10 is seen as a robust self-assessment tool for identifying the risk of dysphagia. Although all individuals responded to the protocols alone, the researcher read the questions and the possibilities for answers in the presence of illiterate individuals and the elderly indicated the most appropriate alternative.

The EAT-10, which consists of ten simple questions, identifies the risk of dysphagia and aims to provide information on functionality, emotional impact and physical symptoms that a swallowing problem may cause in an individual's life. The total score of three points or more is considered as a cut-off point for the risk of dysphagia[16,17].

In turn, SWAL-QOL is a self-assessment tool that reflects the impact of dysphagia on quality of life. It consists of 44 questions that assess eleven domains: 1. Swallowing as a burden; 2. Eating desire; 3. Eating duration; 4. Frequency of symptoms; 5. Food selection; 6. Communication; 7. Fear to eat; 8. Mental health; 9. Social; 10. Sleep; and 11. Fatigue. The individual must indicate the frequency with which each question occurs, in each domain, given the following options: always, often, sometimes, a little or never. The score ranges from 0 to 100: the lower the score, the worse the quality of life related to swallowing[18-21].

The collected data entered into a specific database using the Microsoft Office Excel Starter® 2010. A descriptive statistical analysis was per-

formed using the IBM® SPSS® Statistics v.24 in order to characterize the data related to frequency, percentage, minimum, maximum, median, mean and standard deviation. Pearson's Chi-Squared Test was used to verify the risk of dysphagia related to gender and age group. In turn, the Student's t test was used to verify the relationship between quality of life, gender and age group. Logistic regression assessed the association between the questionnaires. The odds ratio was also reported to quantify this association, when significant ($p<0.05$). A significance level of 5% with a 95% confidence interval was adopted for all analysis.

Results

179 healthy elderly individuals were interviewed. Of these, 69 (38.5%) were excluded due to a history of diseases or having undergone speech-language pathology therapy. Therefore, 110 individuals participated in the study, 57 (51.8%) men and 53 (48.2%) women, with a mean age of 71 years (SD±9.13).

41 (37.27%) healthy elderly individuals were identified at risk of dysphagia. Of these, 26 (63.41%) were male and 25 (60.98%) aged over 70 years. There was no statistically significant association between the risk of dysphagia, gender and age group.

Table 1. Relationship between risk of dysphagia, gender and age group (n=110).

Variable	Category	Score		P value*
		EAT-10 0-2	EAT-10 ≥ 3	
		N (%)	N (%)	
Gender	Male	31 (44.93)	26 (63.41)	0.077
	Female	38 (55.07)	15 (36.59)	
Age group	60-69 years	40 (57.97)	16 (39.02)	0.076
	70 years or more	29 (42.03)	25 (60.98)	

Legend: EAT-10= Eating Assessment Tool; * Pearson's Chi-Squared Test.

As for the scores of the SWAL-QOL domains, it was noticed that most domains: "Swallowing as a burden", "Eating desire", "Eating duration", "Frequency of symptoms", "Food selection", "Communication", "Fear to eat", "Mental health" and "Social" had average scores close to the maximum value of 100 points (ranging from 82.4 to 97.7) indicating little self-reported interference by the elderly. The lowest scores were recorded for "Sleep" (69.5) and "Fatigue" (75.5) domains.

Table 2. Characterization of the SWAL-QOL domains in healthy elderly people (n=110).

Domain	Min-Max	Median	Average	Standard Deviation
Swallowing as a burden	60-100	100.0	97.7	7.7
Eating desire	53-100	100.0	92.1	12.9
Eating duration	40-100	100.0	88.0	19.7
Frequency of symptoms	67-100	94.3	93.0	7.8
Food selection	20-100	100.0	87.0	23.0
Communication	20-100	100.0	84.8	25.7
Fear to eat	20-100	85.0	82.4	18.4
Mental health	52-100	100.0	97.7	8.6
Social	44-100	100.0	94.1	13.4
Sleep	20-100	60.0	69.5	25.5
Fatigue	20-100	73.3	75.5	21.6

Legend: SWAL-QOL= *Quality of Life in Swallowing Disorders*; * Min-Max = Minimum-Maximum

Specifically in relation to quality of life in swallowing and gender, there was a significant difference in "Swallowing as a burden", "Frequency of symptoms" and "Mental health" domains with lower scores for women. In eight of the eleven domains ("Swallowing as a burden", "Eating desire", "Eating duration", "Frequency of symptoms", "Fear to eat", "Mental health", Sleep" and "Fatigue"), male individuals had higher average quality of life, but not discrepant when compared to women.

Table 3. Characterization of the SWAL-QOL domains in healthy elderly regarding gender (n=110).

Domain	Category	Median	Average	Standard Deviation	P value*
Swallowing as a burden	Male	100	100	0	0.002*
	Female	100	95.3	10.7	
Eating desire	Male	100	94.1	10.4	0.083
	Female	100	89.8	14.9	
Eating duration	Male	100	88.6	20.6	0.743
	Female	100	87.4	18.8	
Frequency of symptoms	Male	97.1	95.1	6.1	0.003*
	Female	92.9	90.7	8.7	
Food selection	Male	100	86.8	22.6	0.941
	Female	100	87.2	23.7	
Communication	Male	100	82.6	27.2	0.358
	Female	100	87.2	24	
Fear to eat	Male	80	83	16.7	0.717
	Female	90	81.7	20.3	
Mental health	Male	100	100	0	0.004*
	Female	100	95.1	11.9	
Social	Male	100	93	14.4	0.376
	Female	100	95.3	12.3	
Sleep	Male	60	71.1	21.8	0.502
	Female	60	67.7	29.1	
Fatigue	Male	73.3	78.1	18.2	0.185
	Female	73.3	72.6	24.6	

Legend: SWAL-QOL= *Quality of Life in Swallowing Disorders*; *Student's t test for independent samples.

There was no difference in any of the 11 domains in the comparison of the average scores reported in the SWAL-QOL between the age groups. However, elderly people aged 70 years or more had lower averages, but not discrepant when compared to the group of elderly people aged 60 to 69 years.

As shown, there was no association between the risk of dysphagia and quality of life in swallowing ($p>0.05$).

Table 4. Characterization of the SWAL-QOL domains in healthy elderly regarding age group (n=110).

Domain	Age Range	Median	Average	Standard Deviation	P value*
Swallowing as a burden	60-69 years	100	98	7	0.672
	70 years or more	100	97.4	8.5	
Eating desire	60-69 years	100	93.8	12.1	0.149
	70 years or more	100	90.2	13.6	
Eating duration	60-69 years	100	91.6	17.3	0.051
	70 years or more	100	84.3	21.3	
Frequency of symptoms	60-69 years	96.4	93	8.4	0.938
	70 years or more	94.3	93.1	7.1	
Food selection	60-69 years	100	89.8	22.1	0.192
	70 years or more	100	84.1	23.8	
Communication	60-69 years	100	88.4	22.5	0.14
	70 years or more	100	81.1	28.5	
Fear to eat	60-69 years	87.5	82.9	19.1	0.737
	70 years or more	80	81.8	17.8	
Mental health	60-69 years	100	97.8	7.5	0.836
	70 years or more	100	97.5	9.6	
Social	60-69 years	100	93.3	14.1	0.537
	70 years or more	100	94.9	12.7	
Sleep	60-69 years	60	67.9	26.7	0.506
	70 years or more	70	71.1	24.3	
Fatigue	60-69 years	83.3	78.6	21.9	0.124
	70 years or more	73.3	72.2	21	

Legend: SWAL-QOL= *Quality of Life in Swallowing Disorders*; *Student's t test for independent samples.

Table 5. Association between risk of dysphagia and quality of life (n=110).

EAT (≥ 3) as Dependent variable	P value*	OR	95% Confidence Interval for OR	
			Lower	Higher
Swallowing as a burden	0.584	0.980	0.913	1.052
Eating desire	0.928	1.002	0.965	1.040
Eating duration	0.685	1.005	0.980	1.031
Frequency of symptoms	0.996	1.000	0.937	1.067
Food selection	0.216	0.987	0.968	1.007
Communication	0.865	1.002	0.983	1.020
Fear to eat	0.102	0.980	0.956	1.004
Mental health	0.699	0.989	0.933	1.047
Social	0.250	1.025	0.983	1.068
Sleep	0.782	1.003	0.985	1.021
Fatigue	0.388	0.991	0.970	1.012

* Multiple logistic regression; OR - *Odds Ratio*

Discussion

The aging of the population increases the imminent need to incorporate measures to screen for dysphagia in primary care for later confirmation of its diagnosis, in addition to a better management in the presence of penetration/aspiration in the elderly, preventing the morbidity and mortality associated with this condition[9,22-24].

This study identified individuals at risk for dysphagia, with results suggesting an incidence of 37.27% of healthy elderly people with impaired swallowing. Although the findings do not show a statistically significant association between the risk of dysphagia, gender and age group, the literature reports that, in relation to age in the elderly population, studies are heterogeneous, and age ranges from 60 to 99 years[6,7,9,12,25,26]. These data are similar

to the age range found in the individuals participating in this study.

Another recent study found that the risk of dysphagia increases with age and also with the level of daily care required by the elderly. Independent elderly people have a 25.1% risk of dysphagia, while dependent elderly people have a higher chance of risk of dysphagia (53.8%)[27].

Although the literature reports the prevalence of females when relating dysphagia in healthy elderly people[20,21], this study noticed that of the 37.27% healthy elderly people at risk of dysphagia, the majority were male and aged 70 years and over. The findings corroborate the result of Butler et al. (2018)[9] who showed the prevalence of dysphagia in men when evaluating healthy elderly people in different age groups.

Regarding the quality of life in swallowing, the averages in the 11 domains of the SWAL-QOL were very close to 100; that is, healthy elderly people indicated a positive self-perception regarding the quality of life in swallowing. These results corroborate a Brazilian study, which reported that the elderly, in general, did not self-report difficulties related to swallowing and/or feeding[5].

It should be noted that the individuals selected in the study did not have a history of neurological, neoplastic, psychiatric, diabetes mellitus, heart, pulmonary and/or other diseases. Thus, it is believed that they may see discrete symptoms, such as inconsistent coughs, difficulties in chewing, throat clearing and others, as a natural aging process and that, therefore, would not generate concerns and discomfort, with no specific complaint related to swallowing.

Studies using the SWAL-QOL protocol in healthy elderly people are still scarce and, although swallowing changes are a symptom in this population, the topic is still rarely addressed in the literature. Thus, it is emphasized the importance of increasing the awareness of health professionals that some healthy elderly people may have dysphagia without clinical complaints.

When characterizing the SWAL-QOL domains regarding gender, it was observed that women had lower scores in relation to men, but with positive self-perception regarding quality of life. There was a difference in "Swallowing as a burden", "Frequency of symptoms" and "Mental health" domains. These results are in line with the data obtained in a previous study that, when comparing both genders, noticed that men had better perception of quality of life in some domains of the SWAL-QOL, explained by the natural aging process[5].

According to the literature, women are at higher risk of anxiety and hormonal changes with an impact on quality of life[28]. In addition, it is possible that elderly men adapt to body changes caused by aging, and therefore do not self-report complaints regarding these aspects[28].

A previous study[4] found that advancing age was not considered a determining factor in the quality of life of healthy individuals, since older elderly people did not have differences in self-assessment when compared to younger elderly people. In our study, elderly people over 70 years old had lower scores for "sleep" and "fatigue" domains, but without negatively impacting their self-perception in the quality of life in swallowing. The result of the self-assessment of these elderly people was similar to the results of elderly people between 60 and 69 years old with regard to food. Therefore, it can be inferred that, regardless of age, healthy individuals respond in a similar way to the SWAL-QOL protocol.

There was also no association between the risk of dysphagia and quality of life. Therefore, the instruments can be considered independent from each other for this population, but it is worth mentioning the limitation or scope of the EAT-10 and SWAL-QOL protocols for the general population, as they are not specifically indicated for prevalence studies in the elderly population.

Dysphagia is often neglected in the elderly population and can lead to several complications[29]. Further studies are recommended in order to investigate dysphagia in elderly people of different socioeconomic levels, considering their work and leisure activities, as well as possible emotional difficulties faced during the aging process.

Conclusion

Healthy elderly people are at a higher risk of dysphagia after 70 years of age and lower scores for "sleep" and "fatigue" domains regarding the quality of life related to swallowing.

References

1. Instituto Brasileiro de Geografia e Estatística (IBGE) http://www.ibge.gov.br/apps/populacao/projecao/. [acesso em 30 de Junho de 2017]. Disponível em: http:www.ibge.gov.br.

2. Novaes MRCG. Assistência farmacêutica ao idoso – uma abordagem multiprofissional. Brasília: Thesaurus, 2007. P. 31-41.

3. Azzolino D, Damanti S, Bertagnoli L, Lucchi T, Cesari M. Sarcopenia and swallowing disorders in older people. Aging Clin Exp Res. 2019; 31(6): 799-805.

4. Leow LP, Huckabee ML, Anderson T, Beckert L. The impact of dysphagia on quality of life in ageing and Parkinson's disease as measured by the swallowing quality of life (SWAL-QOL) questionnaire. Dysphagia. 2010; 25(3): 216-20.

5. Cassol K, Galli JFM, Zamberlan NE, Dassie-Leite AP. Qualidade de vida em deglutição em idosos saudáveis. J Soc Bras Fonoaudiol. 2012; 24(3): 223-32.

6. Reginelli A, D'Amora M, Del Vecchio L, Monaco L, Barillari MR, Di Martino N, et al. Videofluoroscopy and oropharyngeal manometry for evaluation of swallowing in elderly patients. Int J Surg. 2016; 33(1): 154-8.

7. Alvarenga EHDL, Dall'Oglio GP, Murano EZ, Abrahão M. Continuum theory: presbyphagia to dysphagia? Functional assessment of swallowing in the elderly. European Archives of Oto-Rhino-Laryngology. 2017; 257(2): 443-9.

8. Shinozaki H, Tohara H, Matsubara M, Inokuchi N, Yamazaki Y, Nakane A, et al. Relationship between jaw opening force and hyoid bone dynamics in healthy elderly subjects. Clin Interv Aging. 2017;12, 629-34.

9. Butler SG, Stuart A, Markley L, Feng X, Kritchevsky SB. Aspiration as a Function of Age, Sex, Liquid Type, Bolus Volume, and Bolus Delivery Across the Healthy Adult Life Span. Ann Otol Rhinol Laryngol. 2018; 127(1): 21-32.

10. Hara K, Tohara H, Kobayashi K, Yamaguchi K, Yoshimi K, Nakane A, et al. Age-related declines in the swallowing muscle strength of men and women aged 20-89 years: A cross-sectional study on tongue pressure and jaw-opening force in 980 subjects. Arch of Gerontol Geriatr. 2018; 78(1): 64-70.

11. Garand KLF, Hill EG, Amella E, Armeson K, Brown A, Martin-H arris B. Bolus Airway Invasion Observed During Videofluoroscopy in Healthy, Non-dysphagic Community-Dwelling Adults. Ann Otol Rhinol Laryngol. 2019; 128(5): 426-32.

12. Rofes L, Ortega O, Vilardell N, Mundet L, Clavé P. Spatiotemporal characteristics of the pharyngeal event-related potential in healthy subjects and older patients with oropharyngeal dysfunction. Neurogastroenterol Motil. 2017; 29(2): 1-11.

13. Jardine M, Miles A, Allen JE. Swallowing function in advanced age. Curr Opin Otolaryngol Head Neck Surg. 2018; 26(6): 367-74.

14. Cabre M, Serra-Prat M, Palomera E, Almirall J, Pallares R, Clavé P. Prevalence and prognostic implications of dysphagia in elderly patients with pneumonia. Age Ageing. 2010; 39(1): 39-45.

15. Chatindiara I, Allen J, Popman A, Patel D, Richter M, Kruger M, et al. Dysphagia risk, low muscle strength and poor cognition predict malnutrition risk in older adults at hospital admission. BMC Geriatr. 2018;18(1): 2-8.

16. Belafsky PC, Mouadeb DA, Rees CJ, Pryor JC, Postma GN, et al. Validity and reliability of the Eating Assessment Tool (EAT-10). Ann Otol Rhinol Laryngol. 2008;117(12): 919-24.

17. Gonçalves MIR, Remaili CB, Behlau M. Equivalência cultural da versão brasileira do Eating Assessment Tool - EAT-10. CoDAS. 2013; 25(6): 601-04.

18. McHorney CA, Bricker DE, Kramer AE, Rosenbek JC, Robbins J, Chignell KA, et al. The SWAL-QOL outcomes tool for oropharyngeal dysphagia in adults: I – conceptual foundation and item development. Dysphagia. 2000a;15:115-121.

19. McHorney CA, Bricker DE, Robins J, Kramer AE, Rosenbek JC, Chignel K. The SWAL-QOL outcomes tool for oropharyngeal dysphagia in adults: II –Item reduction and preliminary scaling. Dysphagia. 2000b; 15: 122-33.

20. McHorney CA, Robbins J, Lomax K, Rosenbek JC, Chignell K, Kramer AE, et al. The SWAL-QOL and SWAL-CARE outcomes tool for orofaryngeal dysphagia in adults: III - Documentation of reliability and validity. Dysphagia. 2002; 17: 97-114.

21. Portas JG. Validação para a língua portuguesa-brasileira dos questionários: qualidade de vida em disfagia (SWAL-QOL) e satisfação do paciente e qualidade do cuidado no tratamento da disfagia (SWAL-CARE) [Mestrado]. São Paulo: Fundação Antônio Prudente; 2009.

22. Almeida TM, Cola PC, Pernambuco LA, Magalhães Junior HV, Silva RG. Instrumentos de rastreio para disfagia orofaríngea no acidente vascular encefálico. Audiol Commun Res. 2015; 20(4): 361-70.

23. Andrade PA, Santos CA, Firmino HH, Rosa COB. Importância do rastreamento de disfagia e da avaliação nutricional em pacientes hospitalizados. Einstein (São Paulo). 2018;16(2): eAO4189.

24. Kletzien H, Cullins MJ, Connor NP. Age-related alterations in swallowing biomechanics. Exp Gerontol. 2019;118: 45-50.

25. Torres CMJ, Vazquez PM, Parellada SA, Gonzalez AME. Disfagia en ancianos que viven en residencias geriátricas de Barcelona. Gerokomos. 2011; 22(1): 20-4.

26. Mourão LF, Xavier DAN, Neri AL, Luchesi KF. Estudo da associação entre doenças crônicas naturais do envelhecimento e alterações da deglutição referidas por idosos da comunidade. Audiol Commun Res. 2016; 21: e1657.

27. Igarashi K, Kikutani T, Tamura F. Survey of suspected dysphagia prevalence in home-dwelling older people using the 10-Item Eating Assessment Tool (EAT-10). PLoS One. 2019; 23;14(1): e0211040.

28. Soares CN. Insônia na menopausa e perimenopausa: características clínicas e opções terapêuticas. Rev Psiquiatr Clín. 2006; 33(2):103-9.

29. Chebib N, Müller F, Prendik V. Pneumonia of the elderly and its link to oral health. Rev Med Suisse. 2018;14(626): 2007-11.