

# A11 Cross-sectional study to investigate the presence of sarcopenic dysphagia in a Portuguese geriatric population.

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## Introduction

Oropharyngeal Dysphagia (OD) and sarcopenia have been recognized as geriatric syndromes and have shown a higher prevalence in institutionalized elderly, being associated with increased socioeconomic burdens [1-3]. Prevalence of Sarcopenic Dysphagia (SOD) seems to increase with the average age of population [4]. The objectives are to investigate the presence of sarcopenia and risk of OD in an institutionalized geriatric population and to analyse the relationship between the factors associated with SOD.

## Methods

Cross-sectional study conducted in two nursing homes in Tomar. All participants included in the study were aged  $\geq 65$  years and living in nursing homes. The OD was screened using The Gugging Swallowing Screen (GUSS) [5]. Sarcopenia was assessed according to the criteria defined by the European Working Group on Sarcopenia in Older People [6]. To identify individuals at risk for sarcopenia, the SARC-F questionnaire [7] was used. To assess for evidence of sarcopenia, muscle strength was measured using a handheld Jamar dynamometer. To confirm sarcopenia by detection of low muscle mass, muscle quantity was calculated using Bioelectrical Impedance Analysis (BIA). In addition, to evaluate the sarcopenia severity, usual walking speed (meters per second - m/s) on a 4-m course was used as an objective measure of physical performance. The nutritional status was screened using the Mini Nutritional Assessment - Short Form (MNA-SF), and independence in daily living activities (ADL) was assessed using the Barthel Index (BI). The sample was divided into 4 groups, based on the diagnosis: G1 - Without pathology; G2 - Only being at risk of having OD; G3 - Only with sarcopenia; G4 - With probable SOD. For testing the existent association between qualitative variables, the Chi-Square test was used when the requirement were verified (otherwise, the Fisher exact test was used). For Gender group analysis, the independent t-test was used (when normality was present or the Mann-Whitney test was used, if otherwise). Comparisons were made between the different groups (using one-way analysis of variance), univariate analyses were performed to find the predictors for each group (using logistic regression), and finally, a correlational study between the different scales used (using Spearman correlation). All the results were produced using IBM SPSS Statistics V25.0 (Armonk, NY), and considered significant if  $p$ -value  $< 0.05$ .

## Results

We studied 36 institutionalized elderly people (23 women; 13 men; age  $88.0 \pm 5.6$ ), 55.6% were at risk for DO, 52.8% had sarcopenia and 36.1% were probable SOD (see Table 1 for sample characterization and further details). Literacy was lower ( $p < .05$ ) in women. The prevalence of malnutrition based on MNA-SF was 19.4%. The most elderly were independent in ADL (91.7%). The results of the univariate analysis of individuals in different groups showed that the SARC-F questionnaire was a significant predictor (OR=9.0; CI95%=1.285-63.025) for the risk of having SOD.

## Discussion

The prevalence of OD risk and sarcopenia has increased with age and with the risk of malnutrition or malnourishment. We have observed that female gender, low educational level and score  $\geq 4$  on the SARC-F screening test are associated with higher odds of being at risk for OD, sarcopenia, and even probable SOD.

### Keywords:

aging; oropharyngeal dysphagia; sarcopenia; sarcopenic dysphagia; speech and language therapy

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### Conflict of interest:

The authors declare no conflict of interests

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Table 1 – Sample characterization

Characteristic	Total, n=36	Male, n=13 (36.1%)	Female, n=23 (63.9%)	Statistical results <sup>a</sup>
Age, (years), M±SD	88.0±5.6	88.0±5.6	88.0±5.8	t(34)=0.0 p=0.983
MNA-SF, (no units), M±SD	12.0±1.5	12.4±1.0	11.8±1.7	t(34)=1.2 p=0.245
BI, (no units), M±SD	84.5±14.8	90.0±9.8	81.8±16.5	t(34)=1.6 p=0.112
SARC-F, (no units), M±SD	3.4±2.9	1.9±2.5	4.2±2.7	U=74 p=0.012*
Lips strength, (kPa), M±SD	19.5±5.3	18.9±6.3	19.9±4.7	t(34)=-0.6 p=0.567
Tongue strength, (kPa), M±SD	33.8±14.0	35.8±16.1	32.7±13.0	t(34)=0.6 p=0.530
ASM, (Kg), M±SD	15.4±3.7	18.8±4.0	13.4±1.5	U=28.5 p<0.001**
Maximum grip strength, (Kg), M±SD	18.5±5.9	22.7±6.6	16.1±3.9	U=53.5 p=0.002**
Gait speed, (m/s) M±SD	0.55±0.25	0.68±0.22	0.48±0.24	t(34)=2.6 p=0.01**
<b>Literacy, n (%)</b>				
<4th grade	18 (50.0)	3 (16.7)	15 (83.3)	χ <sup>2</sup> (1)=5.9
≥4th grade	18 (50.0)	10 (55.6)	8 (44.4)	p=0.015*
<b>Dentition status, n (%)</b>				
Natural teeth/Artificial teeth w. a.	18 (50.0)	8 (44.4)	10 (55.6)	
Artificial teeth bad adjusted	9 (25.0)	2(22.2)	7 (77.8)	Fisher=1.4
Absence of teeth	9 (25.0)	(33.3)	6 (66.7)	p=0.587
<b>Nutritional status (MNA-SF), n (%)</b>				
Normal	28 (77.8)	11 (39.3)	17 (60.7)	χ <sup>2</sup> (1)=0.550
Risk malnutrition/ Malnourished	8 (19.4)	2 (25.0)	6 (75.0)	p=0.682
<b>Physical function, n (%)</b>				
Dependent	3 (8.3)	0 (0.0)	3 (100)	χ <sup>2</sup> (1)=0.550
Independent	33 (91.7)	13 (36.1)	20 (60.6)	p=0.682
<b>Sarcopenia risk screening (SARC-F), n(%)</b>				
Yes (cut-off)	16 (44.4)	3 (18.8)	13 (81.3)	χ <sup>2</sup> (1)=3.8
No	20 (55.6)	10 (50.0)	10 (50.0)	p=0.052*
<b>Sarcopenia, n (%)</b>				
Yes	19 (52.8)	7 (36.8)	12 (63.2)	χ <sup>2</sup> (1)=0.009
No	17 (47.2)	6 (35.3)	11 (64.7)	p=1.00
<b>Risk of OD, n (%)</b>				
Yes (cut-off)	20 (55.6)	6 (30.0)	14 (70.0)	χ <sup>2</sup> (1)=0.73
No	16 (44.4)	7 (43.8)	9 (56.3)	p=0.493
<b>Probable SOD, n (%)</b>				
Yes	13 (36.1)	5 (38.5)	8 (61.5)	χ <sup>2</sup> (1)=0.049
No	23 (63.9)	8 (34.8)	15 (65.2)	p=1.00

M=mean; SD=standard deviation; ASM= Appendicular Skeletal Muscle Mass; MNA-SF= Mini Nutritional Assessment– Short Form; BI= Barthel Index; SARC-F= Simple Questionnaire to Rapidly Diagnose Sarcopenia; kPa= kilopascals; ASM= Appendicular Skeletal Muscle Mass; Kg= kilograms. n=sample size; Artificial teeth w. a.=artificial teeth well adapted; MNA-SF= Mini Nutritional Assessment–Short Form; SARC-F=Simple Questionnaire to Rapidly Diagnose Sarcopenia; n.a.=not available/ not applicable; OD=Oropharyngeal dysphagia; SOD= Sarcopenic dysphagia. <sup>a</sup>-P-Value (p) from T-test (t), Mann-Whitney test (U), Fisher exact test (Fisher) or Chi-square test(χ<sup>2</sup>). \*p<0.05; \*\*p<0.01

We found that the use of badly adjusted artificial teeth increases odds for sarcopenia by 50%, and that this condition was a significant predictor (p<0.05) of risk for OD. Based on the results, we suggested including a Speech and Language Therapist in the multidisciplinary geriatric teams to improve the prevention of OD, sarcopenia, and SOD, avoiding its consequences.

#### Ethics committee and informed consent

The current research was approved by an independent ethics committee and subjects gave their informed consent before they were enrolled in the study.

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