

## INTRODUCTION

Temporo-mandibular disorders (TMD) include a variety of pathological conditions involving masticatory muscles, temporo-mandibular articulation and associated structures. Atypical swallowing is characterized by contact between tongue tip and maxilla or mandible, or interposed between them.

Dyslalia are disturbs in phoneme articulation, caused by problems in vocal apparatus.

As part of the multifactorial features of temporomandibular disorders can be useful to assess connections among these three factors. Therefore the main object remain the eventual correlations between TMD and atypical swallowing and TMD associated with dyslalia. Secondly was studied the association between atypical swallowing and dyslalia both in TMD and in patients clinically healthy.

## MATERIALS & METHODS

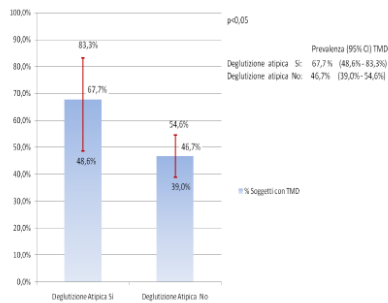
The observational case-control study has interested 100 adult patients and 100 healthy persons. The data were collected between 1/06 and 31/12 in 2014, in units of dentistry and oral prevention, San Paolo Hospital, Milano. All patients were submitted to gnatology test, using Helkimo disfunction index, a phonemic test linked to evaluation of spontaneous speech for dyslalias and eventually a swallowing test. The sample size was calculated to detect an odds ratio equal to or greater than 2.5 of atypical swallowing in patients with TMD compared to controls, assuming a first-type error of 5% and 80% power. Comparison between the two groups was made using the chi-square test or Fisher's exact test, or test-parametric Mann-Whitney. Significance values p less than 0.05 were considered statistically significant.

## RESULTS

Table 1 examines the association of TMD, with atypical swallowing and dyslalia.

	TMD		OR <sup>(a)</sup>	95% CI <sup>(a)</sup>	p <sup>(b)</sup>
	Yes (n=100) n (%)	No (n=100) n (%)			
Atypical Swallowing	21 (21,0%)	10 (10,0%)	2,39	1,01 - 5,83	<b>0,032*</b>
Dyslalia	10 (10,0%)	6 (6,0%)	1,74	0,55 - 5,65	<b>0,435</b>

The prevalence of TMD among subjects with or without atypical swallowing is equal to 67.7% and 46.7%, respectively, being statistically significant (p<0.05). (Figure 1)



The prevalence of TMD among subjects with or without dyslalia is 62.5%, and 48.9%, respectively, resulting not statistically significant (p = 0.435). (Figure 2)

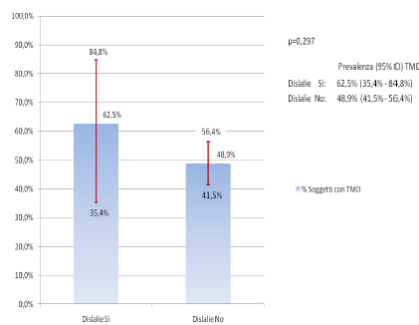
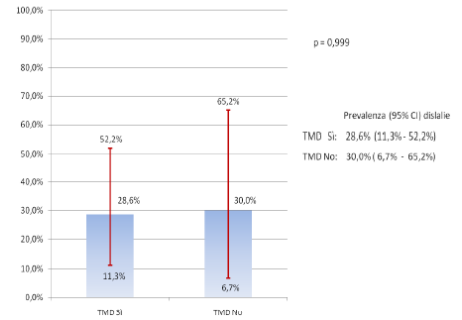


Figure 3 presents the prevalence of dyslalias in subjects with atypical swallowing in the two groups of subjects with or without TMD, prevalence found to be comparable in the two groups: 28.6% in the group with TMD vs. 30.0% in the group without TMD (p = 0.999).



## DISCUSSION & CONCLUSIONS

The results of this study, the first to our knowledge to be conducted on the adult population, suggest the existence of a statistically significant association between TMD and atypical swallowing but not between TMD and dyslalia. The results in literature relating to research conducted in children, are controversial regarding atypical swallowing, while no association was found between TMD and dyslalia. Our study confirmed secondarily, as widely reported in literature, the association between atypical swallowing and dyslalia, regardless of temporomandibular disorders. Given the nature of the study observation it is not possible to draw any conclusion on the possible etiologic relationship between TMD and atypical swallowing. Longitudinal studies with adequate statistical boosts are needed to clarify the possible inter-relationships between TMD and atypical swallowing.

## REFERENCES

Costen JB. A syndrome of ear and sinus symptoms dependent upon disturbed function of the temporomandibular joint. *Ann Otol Rhinol Laryngol* 1934;43:1-15.

McNeill C. Temporomandibular disorders. Guidelines for classification, assessment and management. Chicago IL: Quintessence, 1990.

Laskin DM. Temporomandibular disorders: a term past its time? *J Am Dent Assoc* 2008; 139: 124- 8.

Helkimo M. Studies on function and dysfunction of the masticatory system. IV. Age and sex distribution of symptoms of dysfunction of the masticatory system in the north of Finland. *Acta odontol scand* 1974; 32: 255-267.

Ingervall B, Mohlin B, Thilander B. Prevalence of symptoms of function disturbances of the masticatory system in Swedish men. *J oral Rehabil* 1980; 7:185-197.

