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SPECIFIC FEATURES OF OROFACIAL MYOFUNCTIONAL DISORDERS IN PRESCHOOL-AGE CHILDREN WITH SPEECH SOUND DISORDER: EXPLORATORY RESEARCH

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SHORT INTRODUCTION

- Orofacial myofunctional disorders (OMDs) are **abnormal patterns of oral and orofacial muscle function** that may interfere with the normal growth, development and function of orofacial structures, including speech production (Merkel-Walsh et al., 2025; D'Onofrio, 2018; Mason & Franklin, 2014).
- According to ASHA, **OMDs can co-occur across the lifespan** with a variety of speech and swallowing disorders, including speech sound disorder (SSD).
- Previous studies have reported a high prevalence of OMD signs in children with speech difficulties:
 - About **50%** of school-age children receiving speech-language therapy demonstrate signs of OMDs, most commonly incorrect tongue resting posture (59%), tongue thrust swallowing (51%) and open bite (24%) (Wadsworth et al., 1998).
 - **87%** of children with persistent speech sound disorders showed orofacial dysfunction during orofacial screening assessments (Mogren et al., 2020).
- However, evidence on the relationship between OMDs and SSD in preschool-age children remains limited.





OBJECTIVES, METHODS AND SAMPLE

Research objectives

To reveal the manifestation of specific features of OMDs in 6-7 years old children

To compare and describe differences in orofacial domains between groups of children with and without SSDs

Methods

Testing of children

A questionnaire-based survey of children's parents

Statistical analysis (descriptive statistics, Chi-square and Fisher's exact tests, the Phi correlation coefficient, and binary logistic regression)

Research sample

A total of 56 children, aged 6,1-7,0 years old, participated in the study: 29 with speech sound disorders (dyslalia) and 27 with typical speech development



RESEARCH INSTRUMENT

Interdisciplinary Orofacial Examination Protocol for Children and Adolescents (Bottini et al., 2008).

Consists of two parts:

- **Anamnesis** (parent-reported information about breathing, oral habits, voice and speech);
- **Assessment** of orofacial structures and functions.

Assessment includes **12 domains** (breathing, facial profile, nasal valve (nostril) shape, tongue frenulum, tonsils, lips, occlusion, tooth placement in the dental arch, swallowing, posture, adenoids).

TARPDISCIPLININIS OROFACIALINIS TYRIMO PROTOKOLAS VAIKAMS IR PAAUGLIAMS
(LOR, pediatrams, odontologams ir logopedams)

Tyrimą atliko: Profesija:

Paciento / Kliento asmens duomenys:
Vardas, pavardė: Amžius: Vertinimo data:
Lytis: Svoris: Ūgis: Kiti įrašai:

Koncepcija:
Papildomas ir intraoralinis tarpdisciplininis orofacialinis tyrimas, aptinkantis galimus morfologinius pakitimus ir (arba) disfunkcijas.
Šiam tyrimo protokolui būdingos 2 savybės:
1. Tyrimo greitis (5-8 minutės)
2. Paprastumas

Tėvų anamnezė:

	Taip	Ne	Nežinau
1 - Ar jūsų vaikas paprastai miegodamas knarkia?			
2 - Ar pastebite, kad jūsų vaikui sunku kvėpuoti, ar jam/jai kvėpuoti reikia didelių pastangų?			
3 - Ar pastebite, kad jūsų vaikas miegodamas: Kvėpuoja su pertraukomis ar pauzėmis? Miega neramiai ar jautriai? Laiko galvą neįprastoje padėtyje (per daug ištempta ir pan.)? Perdėtai prakaituoja?			
4 - Ar po miego lova šlapia nuo seilių?			
5 - Ar jis/i greitai pavargsta po bėgimo ar fizinių pratimų?			
6 - Ar jis/i žiūrėdamas/-a televizorių arba naudodamasis kompiuteriu būna praverta burna?			
7 - Ar jam/jai dienos metu teka seilės?			
8 - Ar jis/i dažnai serga peršalimo ligomis?			
9 - Ar jis/i yra alergiškas/-a?			
10 - Įpročiai: čiulpiuko/nykščio čiulpimas/nagų kramtymas/lūpų kramtymas ir pan.			
11 - Ar jis/i dažnai netenka balso?			
12 - Ar jis/i turi garsų tarimo problemų?			

Kvėpavimas:
 Nosinis Burninis Mišrus

Veido profilis:

3

Šnervių forma (ikvėpimo metu):

4

Liežuvio pasaitėlis (paprašykite paciento / kliento visiškai atvira burna pakelti liežuvį ir pabandyti paliesti gomurį)

5

Tonzilės

6

Lūpos

7 Lūpos ramybės būsenoje suglaustos Lūpos ramybės būsenoje pravertos Sausos arba suskeldėjusios lūpos

Sąkandžio klasės (pagal Angle, 1907)

8

Dantų sąkandis

9

Dantų išsidėstymas

10

Rijimas

11 Normalus Ryjant mimikuoja Ryjant liežuvio stumia dantis ar lūpas

Lalkysena

12

Adenoidai:

13 Fonetinis testas („moneta“) Neįgijamas (tembras skirtingas) Endoskopija (tik LOR) Nėra obstrukcijos
 Teigiamas (tembras vienodas) Profilio rentgeno nuotrauka (tik ortodontams) Dalinė obstrukcija
 Sunki obstrukcija

Rekomenduojamo specialisto konsultacija:

14 LOR Odontologu Logopedu Pediatru



RESULTS. OROFACIAL MYOFUNCTIONAL FEATURES

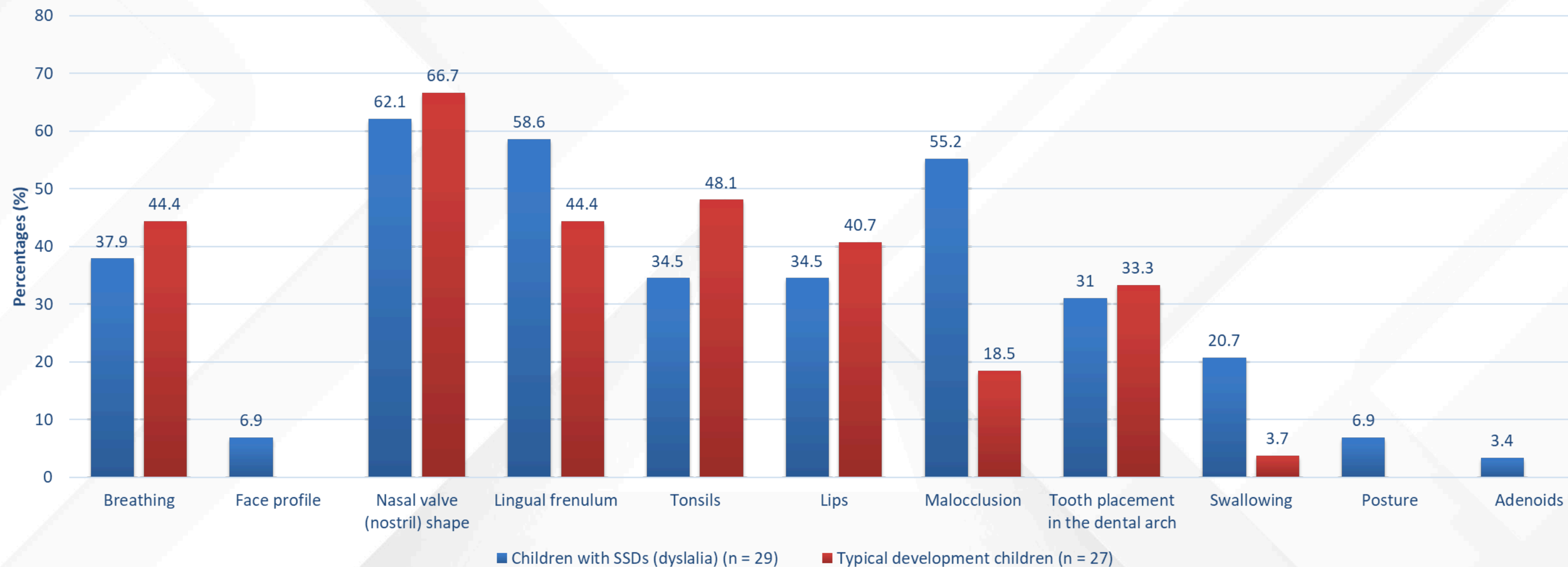
No.	Structures and functions of the mouth and face	Prevalence of orofacial domains	
		n	%
1	Breathing	23	41.10
2	Face profile	2	3.60
3	Nasal valve (nostril) shape	36	64.30
4	Lingual frenulum	29	51.80
5	Tonsils	23	41.10
6	Lips	21	37.50
7	Malocclusion	21	37.50
8	Tooth placement in the dental arch	18	32.10
9	Swallowing	7	12.50
10	Posture	2	3.60
11	Adenoids	1	1.80

More than half of the children showed:

- **nasal valve (nostril) shape changes during inspiration**
- **short lingual frenulum**



RESULTS. COMPARISON BETWEEN GROUPS



Children with SSD more frequently presented with:

- **short lingual frenulum**
- **malocclusion**
- **swallowing alterations**



RESULTS. ASSOCIATIONS AMONG OROFACIAL MYOFUNCTIONAL FEATURES

No.	Structures and functions of the mouth and face	p	ϕ
1	Breathing	<0.001*	0.778
	Lip position at rest		
2	Lip position at rest	0.047*	0.265
	Swallowing		
3	Malocclusion	0.005*	0.376
	Swallowing		

Alterations in breathing, swallowing and occlusion tended to occur together



RESULTS. PREDICTORS OF SPEECH SOUND DISORDERS

No.	Orofacial myofunctional feature	B	p	Exp(B)
1	Breathing	0.223	0.833	1.249
2	Facial profile	17.185	0.999	~29 mln
3	Nasal valve (nostril) shape	-0.869	0.267	0.419
4	Lingual frenulum	1.206	0.096	3.341
5	Tonsils	-0.819	0.266	0.441
6	Lips	-1.353	0.218	0.258
7	Malocclusion	2.039	0.014*	7.682
8	Tooth placement in the dental arch	-0.415	0.584	0.66
9	Swallowing	1.149	0.417	3.156
10	Posture	20.93	0.999	~1.2 mlrd
11	Adenoids	21.016	1	~1.3 mlrd

Malocclusion showed a significant association with SSDs and was the only significant predictor (odds ratio = 7.7).



CONCLUSIONS

- Orofacial myofunctional signs were observed **across all assessed orofacial domains** in preschool-age children, with most children presenting multiple specific features of OMDs. The most common signs were **changes in nasal valve (nostril) shape during inspiration and short lingual frenulum**, together with breathing alterations, enlarged tonsils, open lips at rest, malocclusion, dental arch irregularities and swallowing alterations.
- The findings suggest that several orofacial myofunctional features—particularly **short lingual frenulum, malocclusion and swallowing alterations—tend to occur more frequently** in preschool children with speech sound disorders (dyslalia) than in typically developing children.
- Significant associations between breathing, lip posture, swallowing function and malocclusion indicate that **different orofacial functions are interrelated and may influence each other** in early childhood development.
- Among the assessed specific features of OMDs, **malocclusion emerged as the strongest factor associated with speech sound disorders**, suggesting that structural changes in the orofacial system may contribute to the development of articulation difficulties.



Malocclusion appears to be a key factor associated with speech sound disorders, highlighting the importance of early orofacial myofunctional assessment and interdisciplinary evaluation in preschool-age children.



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