Development and Evaluation of a Comprehensive Screening for Orofacial Dysfunction

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Introduction

Orofacial function includes a multitude of vital actions such as breathing, chewing and swallowing, communication and speech. Currently, no widely used comprehensive classification of orofacial disability or screening test covering several orofacial functions is available. A working group was formed at the Second Nordic Conference on Orofacial Therapy in Gothenburg 2002 with the mission to develop an instrument for assessment of orofacial function.

Aim

The aim was to develop a standardized, comprehensive screening instrument for assessment of orofacial dysfunction applicable for all individuals from the age of three years and older and easy to perform for different health professionals without special equipment.

Materials and Methods

The Nordic Orofacial Test – Screening (NOT-S) consisted of a structured interview and a clinical examination. The examination form with interview questions, examination instructions and criteria was used together with a picture manual (*Figure 1–3*) illustrating different tasks. No other equipment was needed for the screening. NOT-S was first tested in a Swedish version, and later translated to other Nordic languages, and to English.

The interview reflected six domains: sensory function, breathing, habits, chewing and swallowing, drooling and dryness of the mouth. The examination included six domains representing the face at rest, and tasks regarding nose breathing, facial expression, masticatory muscle and jaw function, oral motor function, and speech. One or more "yes" for impairment in a domain resulted in one point (maximum NOT-S score 12 points).

Figure 1

Figure 2

Figure 3

Results

NOT-S was easy to administer and the screening time was 5–13 min. The mean NOT-S score (±SD) in 120 patients (3–86 yr), referred to five centers for specialized dental care or speech and language pathology in Sweden, Norway and Denmark, was 4.1±2.6, and 0.4±0.6 in 60 control subjects (3–78 yr). NOT-S had a low method error (5.3 %), the intra- and interexaminer agreement on points given in each domain was high after recalibration (95–99 % and 85 %), and the interexaminer agreement on the NOT-S total score was fair (kappa 0.42–0.44). The relative distribution of points in the 12 domains are presented in *Table 1* and the relative distributions of NOT-S total scores in the two groups are shown in *Figure 4*. The scores from the clinic-referred sample differed significantly from the controls, and the sensitivity of the screening was 0.96 and specificity 0.63.

Figure 4

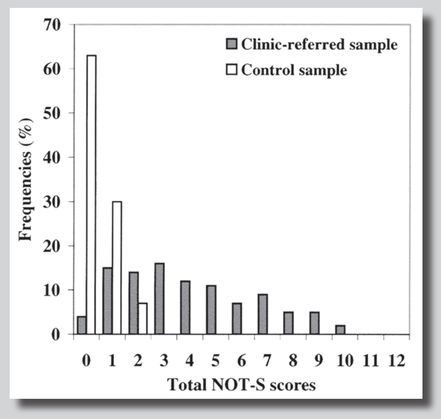

Table 1

Relative distribution of points per domain for the ICD-10 classification represented with more than five patients (chapters F, G, K, M, Q and R), for all patients in the clinic-referred sample (All) and for the control sample

		Clinic-referred sample (n)							Control sample (n)
Domain		ICD-10 classification chapter						All	
		F	*G*	*K*	*M*	*Q*	*R*		
		(18)	(30)	(8)	(8)	(28)	(20)	(120)	(60)
NOT-S interview		%	%	%	%	%	%	%	%
I	Sensory function	50.0	23.3	37.5	12.5	32.1	50.0	35.8	3.3
II	Breathing	33.3	26.7	12.5	37.5	39.3	40.0	30.0	11.7
III	Habits	50.0	50.0	37.5	50.0	42.9	25.0	41.7	11.7
IV	Chewing and swallowing	55.6	50.0	62.5	87.5	53.6	80.0	63.3	3.3
V	Drooling	33.3	26.7	12.5	0.0	32.1	10.0	25.0	0.0
VI	Dry mouth	0.0	36.7	25.0	0.0	21.4	5.0	21.7	1.7
NOT-S examination		%	%	%	%	%	%	%	%
1	Deviation with the face at rest	44.1	60.0	37.5	12.5	50.0	55.0	47.5	6.7
2	Nose breathing	11.1	3.3	0.0	0.0	3.6	10.0	5.8	0.0
3	Facial expression	27.8	23.3	12.5	0.0	28.6	55.0	30.8	0.0
4	Masticatory muscle and jaw function	16.7	20.0	12.5	0.0	21.4	20.0	20.0	0.0
5	Oral motor function	44.4	26.7	12.5	0.0	39.3	45.0	35.0	1.7
6	Speech	88.9	26.7	0.0	0.0	50.0	70.0	46.7	1.7

Conclusions

The NOT-S identified areas of orofacial dysfunction in need of further attention. In conclusion NOT-S allows different health professionals to perform an easy, reliable and valid screening of orofacial function, but the examiners have to be trained and calibrated before performing the screening and interpreting the results.

Reference

Bakke M, Bergendal B, McAllister A, Sjögreen L, Åsten P. Development and evaluation of a comprehensive screening for orofacial dysfunction. *Swed Dent J* 2007;31:75–84