소아재활

게시일시 및 장소 : 10 월 18 일(금) 13:15-18:00 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 16:21-16:25 Room G(3F)

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Development and Validation of Functional Oral Intake Scale for Children

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Purpose

There is currently no objective tool for assessing the functional eating abilities of young children. This study aimed to investigate the reliability and validity of the Functional Oral Intake Scale (FOIS) for children.

Materials and Methods

Children (age < 7 year, ≥ 1 year) who underwent a videofluoroscopic swallowing study (VFSS) were included in this retrospective study. Their nutrition records at the time of the VFSS were separately evaluated by two raters using the FOIS for children. Categorical swallowing and aspiration impairment scale data were also obtained from the VFSS.

Results

The mean age of the 194 children was 2.49 years (range: 1.01–6.97 years). The 5-point scale pediatric FOIS (Table 2) evaluated by two occupational therapists showed a high absolute agreement (97.4%) for the 194 children (kappa = 0.966; Cronbach's alpha = 0.998; 95% confidence interval [CI] 0.998–0.999). Disagreement between the two observers was noted for one individual (disagreement in terms of pediatric FOIS Levels 2 and 3 (n = 1), and for four individuals (disagreement in terms of pediatric FOIS Level 4 or 5). Significant associations were identified between the FOIS for children and aspiration severity ($p < 0.001$, Spearman's correlation coefficient = 0.319) as well as dysphagia severity (p value < 0.001, Spearman's correlation coefficient = 0.287) determined from the VFSS.

Conclusions

The 5-point scale FOIS for children has adequate reliability and validity. These findings suggest that the scale could be appropriate for documenting feeding abilities and evaluating the effectiveness of interventions in children.

Table 1. Functional Oral Intake Scale (FOIS) for children, Age group <7 year, ≥ 1 year, [1]Special preparation includes grinding, fluid thickening, but not chopping. [2]FOIS level 4 was assigned when food expansion did not occur with other diets than whole bottle feeding after 1 year of age.

Level	Description of oral diet
Level 1	Nothing by mouth
Level 2	Tube dependent with minimal attempts of food or liquids. Pediatric example: Pacifier dips, 1 oz. puree 3x/day, 15 cc's of honey consistency 2x/day
Level 3	Tube dependent with consistent oral intake of food or liquids. Pediatric example: One or more textures ad lib, but continues to be tube dependent
Level 4	Total oral diet but requiring special preparations[1] or compensations or not expanded from whole bottle feeding[2]. Pediatric examples: Purees with nectar consistency liquids; Mechanically softened to a liquid with honey consistency; Formula thickened using 1 Tablespoon rice cereal: 2 oz
Level 5	Total oral diet without special preparation[1] or compensations.

[1]Special preparation includes grinding, fluid thickening, but not chopping.

[2]FOIS level 4 was assigned when food expansion did not occur with other diets than whole bottle feeding after 1 year of age.

Table 2. Characteristics of subjects at the time of the videofluoroscopic swallowing study (n = 194)

Characteristics	Eating abilities in infants		
	Non-oral diet (n = 52)	Partial oral diet (n = 38)	Total oral diet (n = 104)
Female sex (%)	24 (46.2)	22 (57.9)	40 (38.5)
Mean age (range), years	2.59 (1.05-6.73)	1.99 (1.07–5.83)	2.62 (1.01–6.97)
Main diagnosis, n (%)			
Brain lesion	30 (57.7)	14 (36.8)	54 (51.9)
Myopathy/motor neuron disease	4 (7.7)	6 (15.8)	7 (6.7)
Gastrointestinal	3 (5.8)	1 (2.6)	3 (2.9)
Cardiac	0 (0)	3 (7.9)	3 (2.9)
Otolaryngology	2 (3.8)	1 (2.6)	9 (8.7)
Metabolic	3 (5.8)	1 (2.6)	2 (1.9)
Pulmonary	1 (1.9)	4 (10.5)	4 (3.8)
Immunologic	0 (0)	0 (0)	1 (1.0)
Unknown	2 (3.8)	1 (2.6)	6 (5.8)
Syndrome	7 (13.5)	7 (18.4)	15 (14.4)
Pierre Robin Syndrome		1	1
Marfan syndrome	1		
Dravet syndrome	1		
Cri-du-chat syndrome		2	
Kleefstra syndrome			1
VACTERL syndrome	1	2	
Cornelia de Lange syndrome			1
Alagille syndrome			1
Sotos syndrome		1	1
Lowe syndrome			1
Down syndrome	1		3
Miller–Dieker syndrome	1		
Trisomy 8 mosaicism			1
CHARGE syndrome	1		1
Treacher Collins syndrome	1	1	
Prader–Willi syndrome			1
Goldenhar syndrome			1
CATCH 22 syndrome			1
Smith–Lemli–Opitz syndrome			1

Table 3. Interrater reliability of FOIS Levels 1 to 5 for children, rater 1 versus rater 2. Values shaded in grey indicate agreement between raters. Absolute agreement 97.4%; kappa = 0.966; Cronbach's alpha= 0.998 (95% CI 0.998–0.999)

	Rater 2					
Rater 1	1	2	3	4	5	Total
1	52	0	0	0	0	52
2	0	22	0	0	0	22
3	0	1	15	0	0	16
4	0	0	0	64	1	65
5	0	0	0	3	36	15
Total	52	23	15	67	29	194