



Agreement in the assessment of the food pathway between speech therapists and physicians based on the FOIS scale: a retrospective cohort study

Concordância da avaliação da via alimentar entre fonoaudiólogo e médico baseado na escala FOIS: coorte retrospectiva

Concordancia en la evaluación de la vía alimentaria entre fonoaudiólogos y médicos basada en la escala FOIS: un estudio de cohorte retrospectivo

Jaqueline Bayer* 

Sheila Zampini* 

Ana Paula Duca*,** 

Rosane Sampaio* 

Helbert do Nascimento Lima*** 

Roxele Ribeiro Lima* 

Abstract

Introduction: Hospital-based speech-language pathology plays a crucial role in preventing and managing patients at risk of bronchoaspiration. However, the initial evaluation and determination of the feeding route in hospitalized patients may not always fall under the responsibility of the speech-

* Associação Educacional Luterana Bom Jesus/IELUSC, Joinville, SC, Brazil.

** Universidade Tuiuti do Paraná, Curitiba, PR, Brazil.

*** Universidade da Região de Joinville, Joinville, SC, Brazil.

Authors' contributions:

JB: data collection, article draft.

SZ, RS: critical review.

APD: article draft, critical review.

HNL: methods, critical review.

RRL: study design, article draft, supervision.

E-mail for correspondence: Jaqueline Bayer - bayer_jaque@hotmail.com

Received: 05/29/2023

Accepted: 02/06/2024



language pathologist. **Objective:** To compare the decisions of speech-language pathologists and medical professionals regarding the feasibility of the feeding route in a general hospital and identify factors associated with swallowing improvement. **Methods:** This is a retrospective study of patients admitted to a hospital in Joinville from March to August 2018. The feeding route was assessed based on the Functional Oral Intake Scale (FOIS), with the initial decision compared between the speech-language pathologist and the physician for the same patient. **Results:** Among 171 patients, there was higher agreement between medical and speech-language pathology decisions for nasogastric tube feeding (88.7%) and oral unrestricted intake (81.9%). However, there was only 35% agreement in defining an adapted diet, with overall moderate agreement (Kappa 0.486). Oral feeding improved in 62 patients (36%). The presence of nasogastric tube feeding (OR = 3.17; $p = 0.025$) and a higher number of in-hospital speech-language pathology appointments (OR = 1.09; $p = 0.020$) were identified as independent predictors for dysphagia improvement. **Conclusion:** Concordance was found in the dietary assessment for the use of nasogastric tube feeding or oral unrestricted intake between speech-language pathologists and physicians. The use of nasogastric tube feeding as an indicator of patient severity and a higher number of speech-language pathology sessions were associated with dysphagia improvement during hospitalization.

Keywords: Deglutition Disorders; Clinical evolution; Hospitals; Speech, Language and Hearing Sciences.

Resumo

Introdução: A avaliação fonoaudiológica hospitalar tem um importante papel na prevenção e manejo de pacientes com risco de broncoaspiração. No entanto, nem sempre cabe ao fonoaudiólogo a primeira avaliação e definição da via alimentar nos pacientes hospitalares. **Objetivo:** Comparar as decisões fonoaudiológicas e médicas quanto à viabilidade da via alimentar em um hospital geral e identificar fatores associados com a melhora da deglutição. **Métodos:** Trata-se de um estudo retrospectivo de pacientes internados em hospital em Joinville durante março a agosto de 2018. A via alimentar foi considerada com base na *Functional Oral Intake Scale* (FOIS) sendo a primeira decisão comparada entre o fonoaudiólogo e o médico para o mesmo paciente. **Resultados:** Dos 171 pacientes, houve maior concordância entre as condutas médica e fonoaudiológica para alimentação por sonda nasogastrica (SNE) (88,7%) e alimentação oral livre (81,9%). No entanto, houve apenas 35% de concordância na definição de dieta adaptada, sendo a concordância geral moderada (Kappa 0,486). Houve evolução na alimentação por via oral em 62 pacientes (36%). Maior limitação da via alimentar, verificado pela necessidade de SNE (OR = 3,17; $p = 0,025$) e o maior número de atendimentos fonoaudiológicos intra-hospitalares (OR = 1,09; $p = 0,020$) foram associados com a melhora da disfagia. **Conclusão:** Encontrou-se concordância entre a avaliação dietética de casos para uso de SNE ou dieta livre entre o fonoaudiólogo e médico. Uso de SNE, como indicador de gravidade do paciente, e o maior número de sessões de fonoterapia foram associados com a melhora da disfagia durante a internação.

Palavras-chave: Transtornos de deglutição; Evolução clínica; Hospitais; Fonoaudiologia.

Resumen

Introducción: La evaluación fonoaudiológica hospitalaria desempeña un papel crucial en la prevención y el manejo de pacientes con riesgo de broncoaspiración. Sin embargo, no siempre corresponde al fonoaudiólogo la primera evaluación y definición de la vía alimentaria en los pacientes hospitalizados. **Objetivo:** Comparar las decisiones fonoaudiológicas y médicas sobre la viabilidad de la vía alimentaria en un hospital general e identificar factores asociados con la mejora de la deglución. **Métodos:** Se trata de un estudio retrospectivo de pacientes hospitalizados en un hospital de Joinville durante marzo a agosto de 2018. La vía alimentaria se evaluó según la Escala Funcional de Ingesta Oral (FOIS), siendo la primera decisión comparada entre el fonoaudiólogo y el médico para el mismo paciente. **Resultados:** De 171 pacientes, hubo una mayor concordancia entre las decisiones médicas y fonoaudiológicas para la alimentación por sonda nasogastrica (SNE) (88,7%) y la alimentación oral libre (81,9%). Sin embargo, solo hubo un 35% de concordancia en la definición de una dieta adaptada, siendo la concordancia general

moderada (Kappa 0,486). La alimentación oral mejoró en 62 pacientes (36%). Una mayor limitación de la vía alimentaria, indicada por la necesidad de SNE (OR = 3,17; $p = 0,025$), y un mayor número de sesiones fonoaudiológicas intrahospitalarias (OR = 1,09; $p = 0,020$) se asociaron con la mejora de la disfagia.

Conclusión: Se encontró concordancia en la evaluación dietética para el uso de SNE o dieta libre entre el fonoaudiólogo y el médico. El uso de SNE, como indicador de la gravedad del paciente, y un mayor número de sesiones de fonoterapia se asociaron con la mejora de la disfagia durante la hospitalización.

Palabras clave: Trastornos de Deglución; Evolución clínica; Hospitales; Fonoaudiología.

Introduction

In-hospital speech therapy is an important factor in reducing dysphagia-related complications, especially respiratory complications, and the time required for alternative feeding route (AFR)^{1,2}. Speech therapy assessment of such patients in the hospital setting has minimized occurrences such as aspiration pneumonia, dehydration, and malnutrition with an impact on lethality rates and a reduction in length of stay and hospital costs^{1,3}. However, the presence of these professionals is still insufficient in many hospitals in underdeveloped or developing countries⁴.

Dysphagia in adult inpatients can be mechanical or neurological in origin⁵. The prevalence of dysphagia has been found in 36.5% of inpatients⁶. The diseases responsible for dysphagia vary according to etiology. Neurological causes account for between 48% and 89%⁷, and anatomical diseases, such as head and neck cancer, account for between 11% and 93%⁸. Inpatients with dysphagia have an average length of stay of 9 days and cost around 42% more per admission compared to patients without dysphagia⁹. Thus, the presence of a speech therapist in the assessment of patients at risk of dysphagia is essential in in-hospital care. However, not all hospitals have specialized professionals to care for these patients⁴, and the question arises regarding which patients a standard speech therapy assessment could benefit in the hospital setting.

The bedside swallowing assessment, commonly conducted in hospitals with the presence of speech therapists for patients with risk of dysphagia, differs because it is carried out by a comprehensive anamnesis and a clinical examination focused on swallowing². The clinical assessment in speech therapy has shown a consistent correlation with more advanced methods, such as videofluoroscopy of swallowing or videoendoscopy of swallowing

^{10,11}. In a study covering 23 hospitals in Germany and Switzerland, the investigation of the safety and tolerability of videoendoscopy of swallowing revealed a significant correlation with the scores of the *Functional Oral Intake Scale* (FOIS)¹². Speech therapists have commonly used the FOIS¹³, which aims to classify the type of oral intake, graded from the worst to the best condition of the feeding route. This scale is based on anamnesis and swallowing examination, facilitating the classification of the patient's best feeding route. It aims to prevent aspiration pneumonia and to direct therapies toward swallowing^{1,3,14}. However, the speech therapist's presence at the hospitalized patient's first visit is not always possible, and it is up to the medical team to decide on the initial feeding route. The diet assessment defined by the medical team is generally based on the level of consciousness^{15,16}, and the Glasgow Coma Scale is often used to define the need for NTF^{17,18}. Dysphagia and the risk of bronchoaspiration not only increase mortality but also impact the length of hospitalization and the costs associated with health care^{1,3}. Therefore, a proactive approach to the identification and management of dysphagia in patients with altered states of consciousness is essential to mitigate adverse complications and improve clinical and economic outcomes.

This study aimed to compare speech therapy and medical decisions regarding the feasibility of the feeding route at the first visit of patients admitted to a general hospital. Furthermore, it aimed to identify factors associated with improved swallowing after follow-up by a hospital speech therapy team.

Methodology

It is a retrospective cohort study that reviews the electronic medical records of patients admitted to the Centro Hospitalar Unimed (CHU), Joinville, Santa Catarina. The sample included all



patients over the age of 18 who were assessed by the speech therapy service in the first 24 hours of hospitalization between March and August 2018 due to swallowing disorders. Patients whose reason for the speech therapy assessment was not related to swallowing were excluded. Those who did not have complete speech therapy assessment data were also excluded. All the individuals involved (or their guardians) signed an Informed Consent Form. The study was approved by the local Research Ethics Committee under number 2.026.063.

Collected Data and Oral Intake Scale

We collected sociodemographic data, such as age and gender, and variables associated with the patient's severity or limitation of the feeding route at the beginning of the speech therapy service, such as use of supplemental oxygen and presence of tracheostomy (TQT), gastrostomy (GTT), or NTF. Moreover, we verified the number of speech therapy appointments during hospitalization. The underlying pathologies or clinical situation that led to the hospitalization were classified as neurogenic (stroke, neurodegenerative diseases, traumatic brain injury) or non-neurogenic (central nervous system neoplasms, chronic obstructive pulmonary disease, renal failure, sepsis, or other clinical diagnoses). The FOIS instrument was used to classify the final behavior of the oral intake route (OIR). The levels of the FOIS scale include Level I: alternative feeding route (AFR), with no OIR offer; Level II: AFR, with gustatory stimulation by OIR; Level III: AFR, with constant food offer by OIR; Level IV: OIR, with a single consistency (the scale considers homogeneous pasty and thick liquid to be a single consistency); Level V: OIR, with multiple consistencies, but requiring special preparation; Level VI: OIR, with multiple consistencies, without special preparation, but with specific limitations, such as avoiding dry grains or fizzy liquids; Level VII: OIR, without restriction¹.

The attending physician initially determined the OIR diet's consistency or the need for an alternative feeding route in the first 24 hours of hospitalization, which the hospital's speech therapist later confirmed. The medical assessment included collecting information regarding any previous swallowing difficulties and assessing the patient's level of consciousness using the Glasgow Coma Scale¹⁹. A score above 9 indicated the need for an OIR¹⁵. The speech therapy assessment included

structural and functional analysis of swallowing and observation of the patient during swallowing attempts, such as premature spillage, oral transit time, number of swallows, laryngeal elevation, cervical auscultation, residue in the oral cavity after swallowing, and vocal changes after testing different food consistencies². The FOIS pre-speech assessment is the one in which the physician is the first to assess the patient and determine the appropriate course of action. Then, the speech therapist carries out the FOIS post-speech assessment after the initial swallowing assessment. Finally, the speech therapist carries out the FOIS-discharge assessment at the time of hospital discharge.

Statistical analysis

Quantitative variables are presented by their mean and standard deviation. Qualitative variables are presented as absolute numbers and percentages. We compared the means of the quantitative variables between individuals with or without swallowing improvement and improvement in the FOIS-discharge level compared to the FOIS post-speech level using the Mann-Whitney test. The chi square test or Fischer's exact test was used to compare the frequency distributions between patients with and without swallowing improvement. The Kappa agreement test was used to evaluate the agreement regarding the consistency of the diet and the administration route between the physician and the speech therapist (FOIS pre-speech versus FOIS post-speech). Kappa values for the strength of agreement were defined as < 0.39 (weak), 0.40 to 0.59 (moderate), 0.60 to 0.79 (high), and ≥ 0.80 (almost complete)²⁰. For this last analysis, the FOIS scale levels were grouped into three categories: AFR (levels I to III of the FOIS scale); adapted (levels IV to V of the FOIS scale); and free (levels VI to VII). We evaluated the predictor variables for improvement in swallowing regarding FOIS post-speech and FOIS-discharge using univariate logistic regression in patients whose conduct was FOIS at the time of discharge and who were not using a gastrostomy and/or total parenteral diet at the time of the first speech therapy assessment. Then, all the variables with a value of $p < 0.05$ were considered in the multivariate model for the same outcome using logistic regression. The analyses were carried out using IBM SPSS software version 23.



Results

General findings of the sample

The 206 patients' mean age was 69.32 ± 19.51 years, and 50.5% were men. The most prevalent

underlying diseases were non-neurogenic (53.6%). Most patients (74.8%) had OIR cleared by the attending physician before the first speech therapy assessment. Table 1 details further characteristics of the sample.

Table 1. General characteristics (n = 206).

Variable	Mean or Frequency	% or standard deviation
Men	104	50.5%
Age	69.3	19.5
Underlying Disease		
Neurogenic	91	46.4%
Non-Neurogenic	105	53.6%
Feeding route before the speech therapist's assessment		
Gastrostomy	6	2.9%
NTF	42	20.4%
TPN	4	1.9%
Oral route	154	74.8%
With tracheostomy	16	7.8%
Videofluoroscopy. yes	14	6.8%
Number of speech therapy appointments	6.04	10.1
Indication of speech therapy after discharge	52	27.8%
Deaths	19	9.2%

NTF = Nasoenteral tube; TPN = Parenteral Nutrition

When compared to the speech therapist's approach, the medical approach showed higher rates of agreement for using AFR (88.7%) and free OIR (81.9%), as shown in Table 2. Regarding the definition of an adapted diet, the medical approach had

35% more agreement than the speech therapist's. The final comparison between the definition of the feeding route among physicians and speech therapists showed moderate agreement (Kappa agreement test = 0.49; $p < 0.001$).

Table 2. Inter-evaluator agreement (n = 206)

FOIS Physician	FOIS Speech therapist						Total
	AFR*		Adapted		Free		
	Frequency	%	Frequency	%	Frequency	%	
AFR*	47	88.7%	21	26.2%	4	5.5%	72
Adapted	2	3.8%	28	35.0%	9	12.5%	39
Free	4	7.5%	31	38.7%	59	81.9%	94
Total	53	100%	80	100%	72	100%	205

**AFR = alternative feeding route. Kappa agreement test = 0.49; $p < 0.001$.

Of the 206 patients evaluated, 19 died, six had no record of the FOIS scale at the time of discharge, and ten were using total parenteral nutrition (TPN) or gastrostomy. We observed the evolution in the oral intake route (OIR) for the remaining 171 patients (83% of the total sample) and, consequently, dysphagia (assessed by the high FOIS-discharge compared to the FOIS post-speech). Of these, 62 patients (36%) showed a favorable evolution of dysphagia based on the FOIS scale.

Improvement in dysphagia occurred more frequently among patients using NTF compared to those on an adapted OIR diet (70% versus 29%; $p < 0.001$), with use of a tracheostomy compared to those without a tracheostomy (67% versus 34%; $p = 0.032$), with use of supplemental oxygen therapy at the time of the speech therapy assessment (55% versus 28%; $p = 0.001$), and those who had a higher average number of in-hospital speech therapy appointments (7.8 versus 3.7; $p < 0.001$), as shown in Table 3.

Table 3. Characteristics of the sample considering the evolution of dysphagia in the patient (n = 171).

Variables	With evolution FOIS scale (n=62)		No evolution FOIS scale (n=109)		P* value
	Mean or Frequency	% standard deviation	Mean or Frequency	% standard deviation	
Age	69.6	20.8	66.9	19.5	0.255
Gender					0.919
Men	30	35.3	55	64.7	
Women	32	37.2	54	62.8	
Underlying Disease					0.552
Neurogenic	27	33.3	54	66.7	
Non-Neurogenic	35	38.9	55	61.1	
Feeding route					<0.001
NTF	21	70.0	9	30.0	
Adapted Oral Route	41	29.1	100	70.9	
With tracheostomy					0.031
Yes	8	66.7	4	33.3	
No	54	34.0	105	66.0	
Videofluoroscopy					0.123
Yes	7	58.3	5	41.7	
No	55	34.6	104	65.4	
O2 use					0.001
Yes	29	54.7	24	45.3	
No	33	28.0	85	72.0	
No. of speech therapy appointments	7.8	6.5	3.7	4.8	<0.001

* Mann-Whitney test, chi-square test, or Fischer's exact test; NTF = nasoenteral tube diet

Patients using NTF for feeding, supplemental oxygen therapy, tracheostomy, and more speech therapy visits during hospitalization had a greater chance of favorable swallowing outcomes in the univariate analysis (Table 4). In the multivariate model, the presence of NTF feeding (OIR 3.17;

95% CI 1.16 - 8.68, $p = 0.025$) and a greater number of in-hospital speech therapy appointments (OIR=1.09; 95% CI 1.01 - 1.18; $p = 0.020$) were associated with improved dysphagia based on the FOIS scale progression.

Table 4. Univariate and Multivariate Analysis by Logistic Regression of Predictor Variables for Improvement in Swallowing in Hospitalized Patients with Associated Dysphagia (n = 171).

Variables	Univariate			Multivariate		
	OIR	95% CI	p Value	OIR	95% CI	p Value
Age, years	1.01	0.99-1.02	0.470	1.01	0.99-1.03	0.361
Gender, Men x Women	0.92	0.49-1.72	0.795	0.82	0.40-1.69	0.596
Underlying disease, neurological vs. non-neurological	0.79	0.42-1.47	0.451			
Feeding route, NTF x adapted OIR	5.69	2.40-13.47	<0.001	3.17	1.16-8.68	0.025
Tracheostomy, yes x no	3.89	1.12-13.50	0.032	0.96	0.20-4.61	0.961
Videofluoroscopy, yes x no	2.65	0.80-8.73	0.110			
Use of supplemental oxygen, yes x no	3.11	1.59-6.11	0.001	1.80	0.84-3.89	0.132
Number of speech therapy appointments	1.13	1.05-1.22	0.001	1.09	1.01-1.18	0.020

NTF = nasogastric tube feeding; OIR = oral intake route

Discussion

As far as our review was possible, this study was the first to consider the agreement between the conduct of the speech therapist and the medical team using the FOIS scale. There was moderate agreement between the two professionals for the AFR and free oral route. However, in potentially intermediate situations of dysphagia severity, there was low agreement for other feeding routes and diet patterns. Regarding the factors related to the improvement of dysphagia during hospitalization, we found that a greater limitation in the normal feeding route, indicated by the need for NTF in the first speech therapy assessment, and an increase in the number of in-hospital speech therapy appointments were associated with an improvement in dysphagia.

In-hospital speech therapy has increasingly demonstrated its importance in the care of patients with dysphagia^{21,22}. However, there is still a shortage of qualified professionals to properly assess these patients in the hospital setting²³. In Brazil, according to data available from DATASUS, the total number of speech therapists working in public hospitals throughout Brazil was 5,436 in 2020²⁴. Of these, the lowest prevalence occurred in the north (399; 7%) and the highest in the southeast (2671; 49%). Thus, considering the estimated number of hospital beds in the public healthcare system at 419,000 in 2020²⁵, we obtain an estimated number of speech therapists per hospital bed of 77.07 beds per speech therapist, with a ratio of one speech

therapist for every 100 hospital beds in both the northern and southeastern regions²⁴. According to the Federal Council of Speech and Hearing Therapy, there must be at least one speech therapist in Neonatal, Pediatric, Adult, and Elderly Intensive Care Units, with a ratio of one speech therapist for up to eight beds with a 6-hour/day shift. In Open Units or Medical Clinics, there must be one speech therapist for up to ten beds, also with a 6-hour/day shift²⁶. In other words, even with the expansion of in-hospital speech therapy in Brazil in recent years, the number of professionals is still below the number recommended by the Federal Council of Speech and Hearing Therapy²³. This situation implies that many cases of dysphagia are routinely conducted by non-speech therapy professionals carrying out a less careful assessment²⁷. However, they prioritize the patient's safety for the feeding route based mainly on the patient's alertness and attention using the Glasgow Scale.

A study carried out in two general hospitals in a city in the interior of Paraná State verified the criteria used by 48 health professionals, most of whom were physicians, regarding the approval of OIR diets for hospitalized patients¹⁵. All of them reported that the level of consciousness based on the Glasgow Coma Scale was the most commonly used parameter¹⁵. However, these professionals showed less ability to recognize other risk situations for dysphagia or the importance of being mindful of the patients' way of handling their saliva. Similarly, another study from a private hospital, also with a smaller number of speech



therapists, applied a questionnaire that explored how physicians and nurses identified and managed post-stroke dysphagia²⁸. According to the study, the professionals did not use other criteria apart from the patient's alertness and attention to identify potential cases of dysphagia, such as voluntary coughing and vocal quality. This study also found acceptable agreement between physicians and speech therapists on the AFR and free diets since these two are more easily defined by the patient's level of alertness and attention and do not require a more thorough assessment. However, our study found low agreement between the physician and the speech therapist for the adapted diet. A similar situation occurred when the nursing team established the feeding route without using criteria other than the patient's state of alertness and attention based on the Glasgow Scale⁽²⁷⁾.

In the hospital setting, the high demand for swallowing assessments puts the speech therapist in a challenging position, requiring the execution of tests with different consistencies and maneuvers to assess dysphagia. These procedures include tests to diagnose alterations in oral functions, such as premature spillage, oral transit time, nasal reflux, number of swallows, laryngeal elevation, cervical auscultation, oxygen saturation, vocal quality, coughing, choking, and other signs of clinical alteration (such as cyanosis, bronchospasm, and altered vital signs)⁽²⁾. In the hospital setting, the high demand for swallowing assessments, often due to a shortage of speech therapists, implies the need for other professionals to conduct these assessments. It can result in a less accurate indication of the degree of dysphagia, as well as an inappropriate indication of feeding route and/or dietary modifications, which can lead to increased hospital costs due to the unnecessary use of NTF.

In this study, patients with potentially worse clinical conditions (using oxygen therapy, patients with tracheostomy, or using NTF) were associated with improvements in dysphagia in the univariate analysis. In the case of using the NTF at the time of the speech therapy assessment, we used it as an approximate measure of the patient's severity regarding the feeding route possible at that time, either due to factors related to the disease with implications for swallowing, or due to neurological status^{27,29}. At the time of admission, due to the initial severity of the situation presented by the patient, using NTF is often the most common ap-

proach to ensure the feeding route³⁰. On the other hand, the favorable evolution of dysphagia may be associated with clinical and neurological improvement during hospitalization²⁹. Thus, patients who were potentially more clinically severe and required NTF proved to be the ones who progressed the most during speech therapy in this study. This finding can be explained both by the improvement in the clinical condition that led to hospitalization and by the speech therapy offered. The latter, considering that the number of speech therapy appointments was also associated with an improvement in dysphagia. Thus, our findings indicate that the frequency of appointments played an important role in the care of these patients, as shown in other studies^{29,31}. The frequency of speech therapy appointments plays a fundamental role in improving dysphagia, and it is imperative to properly understand the timing, intensity, and regularity of speech therapy^{14,31}. Speech therapy interventions aim to maintain or rehabilitate swallowing and can range from muscle strengthening exercises to swallowing maneuvers and sensory stimulation^{14,32}. Furthermore, patients using NTF could be more routinely assessed by hospital speech therapists, making a greater contribution to oropharyngeal dysphagia rehabilitation¹ in addition to favoring the shorter use of complementary feeding, nutritional gain⁵, and a reduction in the occurrence of aspiration pneumonia^{1,3,22}.

Our study has some limitations that must be considered. We used the underlying disease as the criterion for hospitalization or its direct complication, so it was not possible to consider other pre-existing diseases that could be related to the clinical outcome. Moreover, even though the clinical speech therapy assessment correlated well with the swallowing videofluoroscopy findings, it is not possible to rule out an observation bias on the part of the speech therapist who assessed the patients in this study regarding the real dysphagia condition. Furthermore, it was not possible to evaluate the specific parameters of dysphagia severity assessed by both the speech therapist and the medical professional due to the retrospective aspect of the study design. We acknowledge that categorizing the final approach adopted for the feeding route using the FOIS scale as an assumption of dysphagia severity is beyond the scope of this scale. Even though it was used as an indirect measure of the severity of dysphagia considered by the professional evaluated in this study. Further studies would be required



to better define the severity of dysphagia by each professional.

We believe that our results can help further studies to assess gaps in the definition of the best feeding route in borderline cases, especially considering the reality of the hospital environment, where there is often a shortage of speech therapists to meet the required demand.

Conclusion

This study shows an agreement between speech therapy and medical approaches in cases of unrestricted oral intake and NTF for patients with greater or lesser severity. In the case of patients with an intermediate clinical situation regarding the feeding route, the speech therapy assessment for the diet could favor adapted diet approaches and less use of NTF compared to the medical assessment. Patients with a more limited feeding route at the start of speech therapy, as well as those who underwent a greater number of speech therapy appointments, showed an improvement in dysphagia. These conclusions point to the importance of integrated action by medical and speech therapy teams. The aim is to provide more assertive and safer procedures for patients with dysphagia, especially in hospital contexts with limited resources and involving patients for whom the use of clinical parameters based on level of consciousness is not so clear to define the best feeding route.

References

- Silvério CC, Hernandez AM, Gonçalves MIR. Ingesta oral do paciente hospitalizado com disfagia orofaríngea neurogênica. *Revista CEFAC*. 2010; 12: 964-70.
- Padovani AR, Moraes DP, Mangili LD, Andrade CRFd. Protocolo fonoaudiológico de avaliação do risco para disfagia (PARD). *Revista da sociedade Brasileira de Fonoaudiologia*. 2007; 12: 199-205.
- Titworth WL, Abram J, Fullerton A, Hester J, Guin P, Waters MF, et al. Prospective quality initiative to maximize dysphagia screening reduces hospital-acquired pneumonia prevalence in patients with stroke. *Stroke*. 2013; 44(11): 3154-60.
- Fuhs AK, LaGrone LN, Porras MGM, Castro MJR, Quispe RLE, Mock CN. Assessment of rehabilitation infrastructure in Peru. *Archives of physical medicine and rehabilitation*. 2018; 99(6): 1116-23.
- Silva RGd. A eficácia da reabilitação em disfagia orofaríngea. *Pró-Fono Revista de Atualização Científica*. 2007; 19: 123-30.
- Rivelsrud MC, Hartelius L, Bergström L, Løvstad M, Speyer R. Prevalence of oropharyngeal dysphagia in adults in different healthcare settings: a systematic review and meta-analyses. *Dysphagia*. 2023; 38(1): 76-121.
- Ribeiro M, Miquilussi PA, Gonçalves FM, Taveira KVM, Stechman-Neto J, Nascimento WV, et al. The Prevalence of Oropharyngeal Dysphagia in Adults: A Systematic Review and Meta-analysis. *Dysphagia*. 2023: 1-14.
- García-Peris P, Parón L, Velasco C, De la Cuerda C, Camblor M, Bretón I, et al. Long-term prevalence of oropharyngeal dysphagia in head and neck cancer patients: impact on quality of life. *Clinical nutrition*. 2007; 26(6): 710-7.
- Patel D, Krishnaswami S, Steger E, Conover E, Vaezi M, Ciucci M, et al. Economic and survival burden of dysphagia among inpatients in the United States. *Diseases of the Esophagus*. 2018; 31(1): dox131.
- Lim SH, Lieu P, Phua S, Seshadri R, Venketasubramanian N, Lee S, et al. Accuracy of bedside clinical methods compared with fiberoptic endoscopic examination of swallowing (FEES) in determining the risk of aspiration in acute stroke patients. *Dysphagia*. 2001;16:1-6.
- Velasco LC, Imamura R, Rego APV, Alves PR, da Silva Peixoto LP, de Oliveira Siqueira J. Sensitivity and specificity of bedside screening tests for detection of aspiration in patients admitted to a public rehabilitation hospital. *Dysphagia*. 2021; 36(5): 821-30.
- Dziewas R, auf dem Brinke M, Birkmann U, Bräuer G, Busch K, Cerra F, et al. Safety and clinical impact of FEES—results of the FEES-registry. *Neurological Research and Practice*. 2019; 1: 1-8.
- Crary MA, Mann GDC, Groher ME. Initial psychometric assessment of a functional oral intake scale for dysphagia in stroke patients. *Archives of physical medicine and rehabilitation*. 2005; 86(8): 1516-20.
- Speyer R, Baijens L, Heijnen M, Zwijnenberg I. Effects of therapy in oropharyngeal dysphagia by speech and language therapists: a systematic review. *Dysphagia*. 2010; 25: 40-65.
- Furmann N, Costa F. Critérios clínicos utilizados por profissionais para liberação de dieta via oral em pacientes adultos hospitalizados. *Rev CEFAC*. 2015; 17 (4): 1278-87.
- Melotte E, Maudoux A, Delhalle S, Lagier A, Thibaut A, Aubinet C, et al. Swallowing in individuals with disorders of consciousness: A cohort study. *Annals of Physical and Rehabilitation Medicine*. 2021; 64(4): 101403.
- de Jesus Oliveira I, Couto GR, da Mota LAN. Nurses' preferred items for dysphagia screening in acute stroke patients: A qualitative study. *Nursing Practice Today*. 2020.
- Zhang G, Li Z, Gu H, Zhang R, Meng X, Li H, et al. Dysphagia management and outcomes in elderly stroke patients with malnutrition risk: results from Chinese stroke center alliance. *Clinical Interventions in Aging*. 2023: 295-308.
- Teasdale G, Jennett B. Assessment of coma and impaired consciousness: a practical scale. *The Lancet*. 1974; 304(7872): 81-4.
- Miot HA. Análise de concordância em estudos clínicos e experimentais. *SciELO Brasil*; 2016. p. 89-92.



21. Rodrigues LKV, Pernambuco L. Produção científica sobre disfagia orofaríngea em idosos nos periódicos brasileiros: uma análise bibliométrica. *Distúrbios da Comunicação*. 2017; 29(3): 529-38.
22. Felipe B, Lima D, Mourão L. Role of the Speech-Language Pathologist in the Neurology inpatient clinic at a Teaching Hospital in Brazil.
23. Especialista por área [Internet]. 2021. Available from: <https://www.fonoaudiologia.org.br/fonoaudiologos/especialista-por-area/>.
24. Banco de dados do Sistema Único de Saúde- DATASUS [Internet]. 2021 [cited Acesso em 10/12/2022.]. Available from: <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?cnes/cnv/prid02br.def>.
25. Brasil MdS. Banco de dados do Sistema Único de Saúde-DATASUS 2021 [Available from: <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?cnes/cnv/leiintbr.def>].
26. CFFa CFDF. RESOLUÇÃO CFFa nº 580, de 20 de agosto de 2020 https://www.fonoaudiologia.org.br/resolucoes/resolucoes_html/CFFa_N_580_20.htm2020
27. Spronk PE, Spronk LE, Lut J, Gnacke E, Mijnes D, van Munster B, et al. Prevalence and characterization of dysphagia in hospitalized patients. *Neurogastroenterology & Motility*. 2020;32(3):e13763.
28. Pierpoint M, Pillay M. Post-stroke dysphagia: An exploration of initial identification and management performed by nurses and doctors. *South African Journal of Communication Disorders*. 2020; 67(1): 1-13.
29. Furkim AM, Sacco ABdF. Eficácia da fonoterapia em disfagia neurogênica usando a escala funcional de ingestão por via oral (FOIS) como marcador. *Revista Cefac*. 2008; 10: 503-12.
30. Nogueira SCJ, Carvalho APCd, Melo CBd, Morais EPGd, Chiari BM, Gonçalves MIR. Perfil de pacientes em uso de via alternativa de alimentação internados em um hospital geral. *Revista Cefac*. 2013; 15: 94-104.
31. Benfield JK, Everton LF, Bath PM, England TJ. Does therapy with biofeedback improve swallowing in adults with dysphagia? A systematic review and meta-analysis. *Archives of physical medicine and rehabilitation*. 2019; 100(3): 551-61.
32. Ferrucci JL, Sassi FC, Medeiros GCd, Andrade CRFd, editors. Comparação dos aspectos funcionais da deglutição e indicadores clínicos em pacientes com traumatismo cranioencefálico em UTI. *CoDAS*; 2019: SciELO Brasil.



This work is licensed under a Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

