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Speech therapy performance in tracheostomized patients in the context of COVID-19

Atuação fonoaudiológica em pacientes traqueostomizados no contexto da COVID-19

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ABSTRACT

Purpose: To describe the contributions of speech therapy performance in tracheostomized patients in the context of COVID-19. **Methods:** Retrospective descriptive and quantitative analysis research, using medical records to collect clinical and general variables from patients and speech therapy interventions. For statistical analysis, the Pearson or Spearman correlation coefficient was adopted and a significance level of 5% ($p< 0.05$). **Results:** Twenty-eight medical records of patients were included (57.1% male) and an average age of 52 years and 1 month, who were hospitalized for approximately 53.7 days and progressed to tracheostomy after 22.1 days of orotracheal intubation. There were ten speech therapy sessions per patient, which started on average 38.4 days into hospitalization and were requested in 39.3% of cases for the progression of tracheostomy and oral feeding. The tracheostomy cuff was kept deflated on the third intervention, decannulation was suggested seven days after the start an d the patient was given an oral diet after five interventions. When we analyzed the time speech therapy interventions began, it showed a positive correlation with the length of hospital stay ($p<0.0001$), but not with the decannulation process and the length of time with the tracheostomy. On the other hand, the number of speech therapy interventions had a positive correlation with the length of time the tracheostomy was in use and the time until the oral diet was released. **Conclusion:** Speech therapy performance contributes to swallowing rehabilitation and the safe return to oral feeding in patients submitted to tracheostomy in the context of COVID-19.

Keywords: Speech, language and hearing sciences; COVID-19; Tracheostomy; Deglutition disorders; Hospital care

RESUMO

Objetivo: Descrever as contribuições da atuação fonoaudiológica em pacientes traqueostomizados no contexto da COVID-19. **Métodos:** Estudo retrospectivo de natureza descritiva e análise quantitativa, com coleta em prontuários de variáveis clínicas e gerais dos pacientes e dos atendimentos fonoaudiológicos. Para análise estatística, foi adotado o coeficiente de correlação de Pearson ou Spearman e nível de significância de 5% ($p< 0,05$). **Resultados:** Foram incluídos 28 prontuários de pacientes (57,1% gênero masculino) com média de idade de 52 anos e 1 mês, que permaneceram internados por, aproximadamente, 53,7 dias e evoluíram para traqueostomia após 22,1 dias de intubação orotraqueal. Foram registrados dez atendimentos fonoaudiológicos por paciente, que iniciaram, em média, 38,4 dias de internação e foram solicitados em 39,3% para progressão da traqueostomia e da dieta por via oral. O cuff da traqueostomia foi mantido desinsuflado no terceiro, sugerida a decanulação em sete dias após o início e liberada dieta por via oral com cinco atendimentos. Quando analisado o tempo de início dos atendimentos fonoaudiológicos, verificou-se correlação positiva com o tempo de internação hospitalar ($p<0,0001$), mas não com o processo de decanulação e com o tempo de traqueostomia. Já o número de atendimentos fonoaudiológicos teve correlação positiva com o tempo de uso da traqueostomia e até a liberação da dieta por via oral. **Conclusão:** A atuação fonoaudiológica contribuiu para reabilitação da deglutição e retorno seguro à alimentação por via oral de pacientes internados por COVID-19 e submetidos à traqueostomia.

Palavras-chave: Fonoaudiologia; COVID-19; Traqueostomia; Transtornos de deglutição; Assistência hospitalar

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INTRODUCTION

The COVID-19 pandemic, a disease caused by the new coronavirus (SARS-CoV-2), was declared by the World Health Organization (WHO) in March 2020. The characterization and manifestation of respiratory infection caused by SARS-CoV-2 can vary in severity, from mild symptoms such as fever, cough, fatigue and myalgia, to serious complications including pneumonia, multiple organ dysfunction and severe acute respiratory syndrome (SARS)[1,2].

Faced with hypoxemia secondary to SARS due to COVID-19, patients are indicated for ventilatory support through invasive mechanical ventilation (IMV), undergoing orotracheal intubation (OTI) to maintain airway patency and control pulmonary ventilation[2,3], and may progress to tracheostomy, depending on prolonged dependence on IMV[4]. This procedure varies between ten[5] and 24[6] days of OTI, but early tracheostomy (before 14 days of OTI) in COVID-19 patients is associated with shorter duration of IMV and ICU stay, with no change in mortality rate, when compared to late tracheostomy[7].

The presence of a tracheostomy can have an impact on mechanical and functional changes related to breathing, swallowing and oral communication (vocal production and speech articulation)[8], making speech therapy essential in the rehabilitation of these patients, with active participation in the decannulation process alongside the multi-professional team in the context of COVID-19[9,10].

The available evidence on this process in COVID-19 patients is limited (mostly from case studies) and shows varied results[9,11]. Among these results, we highlight the complete deflation of the cuff within 22 days of speech therapy follow-up, the exchange of the TQT cannula for a metal model, if according to the service's protocol, occlusion training and the adaptation of the speech valve, when available. The literature also shows that the ability to tolerate occlusion should be assessed over a period of 24 to 48 hours for subsequent decannulation, which usually takes place between seven and 59 days of device use[9,11]. During the period described, the patients received between five and 37 sessions of speech therapy, which also contributed to the reintroduction of exclusive oral feeding[9,11].

During the COVID-19 pandemic, speech therapy clinical practice has needed to adapt due to the implementation of precautionary and safety measures. In relation to patients with a tracheostomy and a positive test for the virus, the initial guidelines did not recommend manipulating the cuff and clinically assessing swallowing, given the potential risk of spreading aerosols[12-14].

In addition, it was recommended that speech therapy interventions be postponed until the patient tested negative for COVID-19 or when the benefits for the patient outweighed the risks of the intervention[13,15].

Of the two pieces of evidence in the literature[9,11] that presented data on the process of tracheostomy decannulation and swallowing rehabilitation in patients affected by COVID-19, only one[9] mentioned recommendations for precautionary and safety measures and the other[11] did not specify when the speech therapy interventions began. In any case, it can be seen that the results presented by them are varied, justifying this research in order to contribute to this information.

Therefore, more scientific evidence is needed to better understand and elucidate professional practice in relation to these patients during the pandemic. In view of this, this study aims to describe the contributions of speech therapy performance in tracheostomized patients in the context of COVID-19.

METHODS

This is a retrospective, descriptive, and quantitative analysis research, based on a medical records database of users with a confirmed diagnosis of COVID-19, admitted to a public tertiary-level teaching hospital in the central region of the state of Rio Grande do Sul.

The database used was constructed from the list of medical records provided by the Medical and Statistical Archive Service (Serviço de Arquivo Médico e Estatística, SAME) of the hospital, and belongs to the project approved by the Research Ethics Committee the Universidade Federal de Santa Maria – UFSM with CAAE: 52260621.30000.5346, in accordance with Resolution 510/2016 of Brazil's National Health Council (Conselho Nacional de Saúde). All individuals involved or their legal guardians signed the Informed Consent Form (ICF).

Data collection took place from November 2021 to July 2022 through the University Hospitals Management Application (Aplicativo de Gestão dos Hospitais Universitários, AGHU), which is the online document management system implemented as a standard in all Federal University Hospitals of the Brazilian Company of Hospital Services (Empresa Brasileira de Serviços Hospitalares, EBSERH) network. For this purpose, we validated 664 medical records, and extracted information provided by the SAME of users admitted from March 2020 to May 2022, covering a total of 26 months.

For the selection of medical records to analyze in this study, the inclusion criteria were defined as follows: users aged 18 years or older, hospitalized for COVID-19 (positive RT-PCR)[15], subjected to tracheostomy, and who received speech therapy intervention during hospitalization and/or in the home health care service linked to the hospital. The exclusion criteria were as follows: medical records not found or repeated; users with only a record of speech therapy anamnesis, without any more interventions; and medical records that did not show clinical outcomes regarding the use of tracheostomy or progression of oral feeding, due to death, transfer to another hospital, or permanent and prior use of tracheostomy.

The systematization of the selected medical records for this study was based on the extraction of the following variables, that were recorded in an Excel spreadsheet for subsequent analysis:

1. General characteristics of patients: age; gender; pre-existing comorbidities - systemic arterial hypertension (SAH), diabetes dellitus (DM), obesity, alcoholism, and smoking; cardiac, pulmonary, gastroenterologic, neurological, psychiatric, endocrine, kidney, and oncologic diseases.
2. Hospitalization data: length of hospital stay; duration of connection with the home health care service; medical specialty responsible for hospital admission.

It is worth noting that no distinction was made between the hospital units, considering that during the pandemic, all

patients admitted with a positive diagnosis for COVID-19 were considered critical and remained in a hospital wing called COVID ICU.

3. Speech therapy intervention data: time from admission to the start of interventions; reason for intervention; total number of interventions during hospitalization and in the hospital's home health care service; time from hospital admission to OTI; time from OTI to tracheostomy.

   3.1 Progress in the tracheostomy decannulation process: type of tracheostomy and need for oxygen (O2) support via a T'Ayre tube on the first visit; total number of visits during the stages of keeping the tracheostomy cuff deflated, suggesting changing the tracheostomy to a metal model, occluding the tracheostomy and suggesting decannulation[16]; length of time using the tracheostomy, time elapsed in this process.

   3.2. Speech therapy clinical evaluation of swallowing: feeding route/diet at the first and last speech therapy intervention; total number of speech therapy interventions until oral feeding was allowed.

All speech therapy interventions were conducted by three professionals from the hospital, according to the service routine during the pandemic period, starting with a negative test result for COVID-19. These speech therapists have between 8 and 15 years of experience in the field of dysphagia and had their practice guided by the Manual de Gerenciamento da Rotina da Unidade Multiprofissional - Fonoaudiologia (Manual of Routine Management for the Multiprofessional Unit - Speech Therapy)[17], currently in effect in the service, document provides all standard operating procedures to be adoted in service, including the clinical evaluation of swallowing and the patients with tracheostomy.

The Speech Therapy Protocol for Risk Assessment for Dysphagia (Protocolo Fonoaudiológico de Avaliação do Risco para Disfagia, PARD)[18] and the Functional Oral Intake Scale (FOIS)[19] were used as a basis for the assessment, classification, and speech therapy diagnosis of swallowing for treated patients. Furthermore, the professional conduct suggested by PARD were also adapted according to safe food consistencies for the patient, following the standard of hospital diets: free diet - normal consistency and no restriction on the type or preparation of food; bland diet - food that is softened and low in residue, with no raw food, considered a transition diet; soft diet - food that is soft or in the form of puree, porridge or mashed potatoes, indicated for patients with chewing difficulties; pureed diet with free liquids - food that has been liquefied into a creamy consistency, with water and liquids not needing to be thickened; complete liquid - composed only of liquid food, not thickened.

The routine of the speech therapy interventions provided to the subjects of this study is shown in a flowchart (Figure 1). It should be noted that all assessments were carried out with the patient sitting, alert and responsive, with priority given to the patient offering the diet himself or, when this was not possible, with the help of a companion, aiming to stimulate independence and functionality of the patient.

Finally, we analyzed the collected data using the statistical software GraphPad Prism 5 (GraphPad Software Inc., San Diego, CA, USA). To assess the normality of the variables, we used the Shapiro-Wilk test. Continuous variables with a normal distribution and those with a non-normal distribution were presented, respectively, as mean (standard deviation) and median (interquartile range, IQR), while categorical variables were presented as frequencies and percentages. For correlations, we used the Pearson correlation coefficient (parametric data) or Spearman correlation coefficient (non-parametric data). The correlations were classified as weak

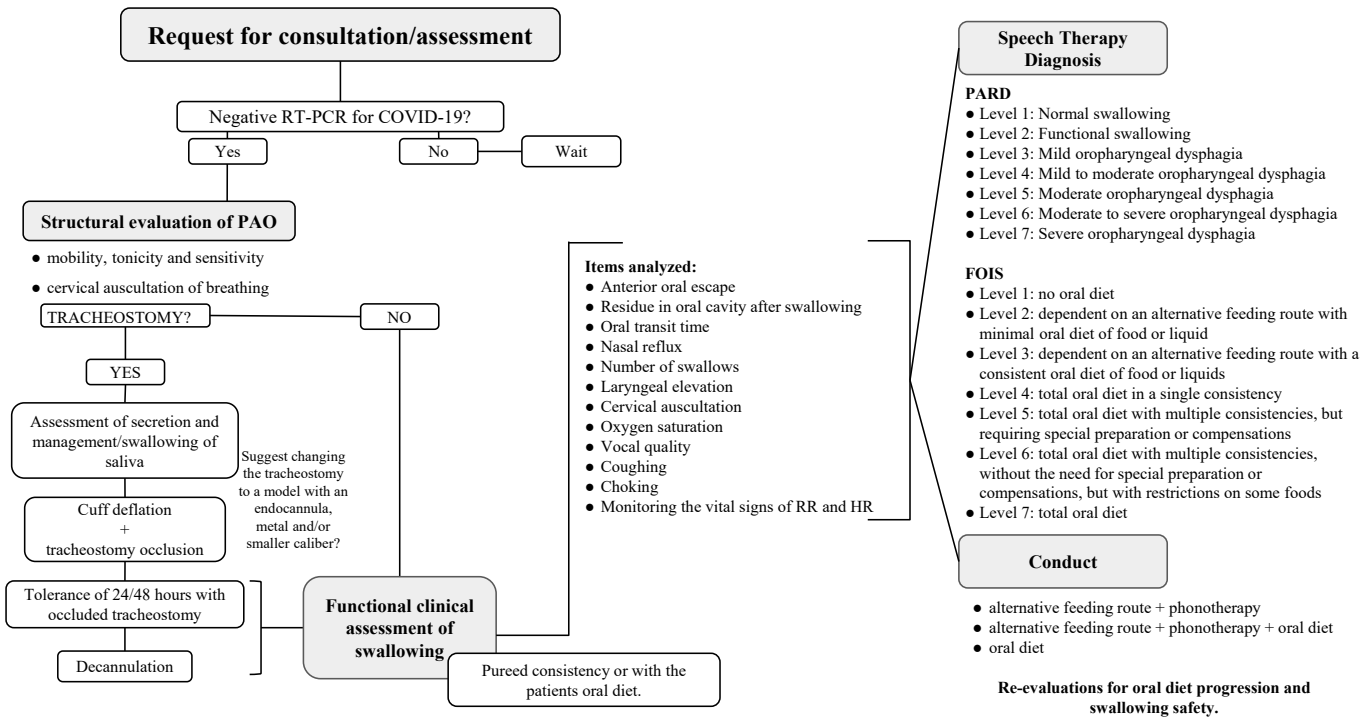

Figure 1. Flowchart of speech therapy interventions

Subtitle: RT-PCR = reverse transcription polymerase chain reaction; PAO = phono-articulatory organs; RR = respiratory rate; HR = heart rate; PARD = Protocolo Fonoaudiológico de Avaliação do Risco para Disfagia; FOIS = Functional Oral Intake Scale. For the pureed consistency, a measure of 100 ml of water and three measures of thickener (or according to the instruction of each brand) was used

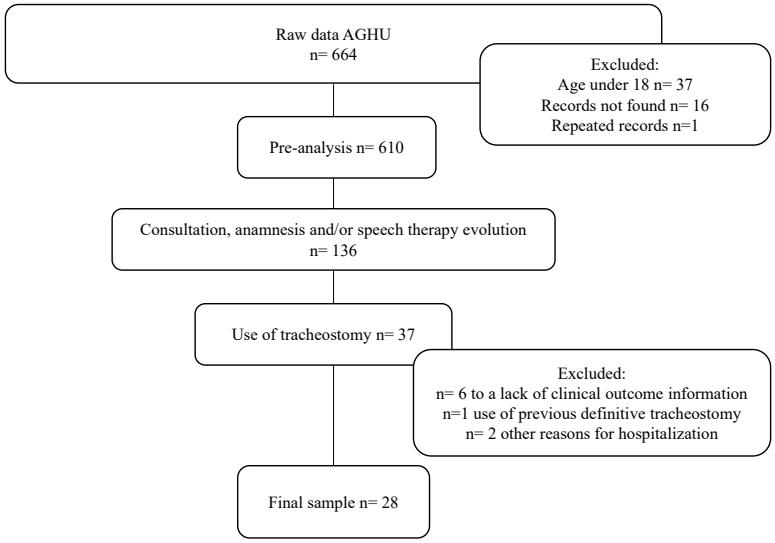

Figure 2. Study flow diagram
Subtitle: AGHU = Aplicativo de Gestão para Hospitais Universitários; n = number of medical record

(r values between 0.10 and 0.39), moderate (r values between 0.40 and 0.69), and strong (r values between 0.70 and 1.00). The significance level was 5% ($p < 0.05$).

RESULTS

The period corresponding to this study, 136 (20.48%) patients aged 18 years or older, hospitalized for COVID-19, and with records in their medical history, underwent speech therapy consultation (request for speech therapy assessment by the medical team), anamnesis, and/or evaluation, of which only 37 had information regarding the use of tracheostomy. Of these, 6 were excluded due to a lack of clinical outcome information regarding tracheostomy and oral feeding, with 2 patients who died during hospitalization, and 4 were transferred to another rehabilitation hospital; 1 was excluded due to prior permanent tracheostomy before admission due to tracheal stenosis, and the speech therapy intervention was solely for adapting the oral diet; 2 other patients were excluded because their hospitalization was not due to COVID-19 (severe traumatic brain injury and decompensated human immunodeficiency virus), resulting in the analysis of 28 medical records in this research (Figure 2).

Regarding the general characteristics of patients hospitalized for COVID-19 who underwent tracheostomy, there was a male prevalence (57.1%), with a mean age of 52 years and 1 month± 14 years and the main comorbidities were SAH in 15 cases, and obesity in 14 cases (Table 1).

Regarding hospitalization data, there was an average length of stay of 53.7 ± 20.0 days, with 53.6% of patients admitted under the medical specialty of Pulmonology (Table 2).

All patients hospitalized for COVID-19 in this study underwent OTI and progressed to tracheostomy in an average of 22.1 ± 6.4 days. Speech therapy interventions started after an average of 38.4 ± 17.4 days of hospitalization, with the patient on room air or Ayre's T-piece oxygen support (46.4%). Furthermore, speech therapy interventions were requested in 39.3% for the progression of tracheostomy and oral feeding, with an average of 10 (IQR 7.8-5) interventions during this process, tracheostomy cuff was kept deflated on the third (IQR 1°-4,5°)

Table 1. General characteristics of patients hospitalized for COVID-19 and who used a tracheostomy

Characteristics	n= 28
Male gender, n (%)	16 (57.1)
Female gender, n (%)	12 (42.9)
Age (years), mean ± SD	52.1 ± 14.0
Previous comorbidities, n (%)	
SAH	15 (53.6)
Diabetes mellitus	5 (17.9)
Obesity	14 (50.0)
Smoking	4 (14.3)
Alcoholism	1 (3.6)
Heart disease, n (%)	
Heart disease	2 (7.1)
Abdominal aortic dissection	1 (3.6)
Acute myocardial infarction	2 (7.1)
Arrhythmia	2 (7.1)
Aneurysm	1 (3.6)
Lung diseases, n (%)	
Asthma	4 (14.3)
Gastroenterological diseases, n (%)	
Gastroesophageal reflux	1 (3.6)
Neurological diseases, n (%)	
Epilepsy	1 (3.6)
Cognitive impairment	2 (7.1)
Cerebrovascular accident	1 (3.6)
Parkinson's disease	1 (3.6)
Psychiatric diseases, n (%)	
Depression	1 (3.6)
Bipolar disorder	1 (3.6)
Endocrinological diseases, n (%)	
Hypothyroidism	7 (25.0)
Dyslipidemia	2 (7.1)
Kidney diseases, n (%)	
Chronic kidney disease	3 (10.7)
Oncological diseases, n (%)	
Small cell non-Hodgkin's lymphoma	2 (7.1)
Laryngeal squamous cell carcinoma	1 (3.6)

Values expressed as mean ± standard deviation or frequency and percentage
Subtitle: n = number of patients; % = percentage; SD = standard deviation; SAH = systemic arterial hypertension

Table 2. Hospitalization data for patients with COVID-19 and tracheostomy treated by speech therapy

Variables	n= 28
Hospitalization	
Hospital stay (days), mean ± SD	53.7 ± 20.0
Medical specialty (subjects), n (%)	
Pulmonology	15 (53.6)
Internal medicine	8 (28.6)
Infectious Diseases	3 (10.7)
Hematology	1 (3.6)
Nephrology	1 (3.6)
Home Care Service	
Submitted (subjects), n (%)	14 (40.0)
Time (days), median (IQR)	40.5 (29-62.8)

Values expressed as mean ± standard deviation, median (interquartile range) or frequency and percentage
Subtitle: n = number of patients; % = percentage; SD = standard deviation; IQR = interquartile range

Table 3. General characteristics of speech therapy interventions and progression of oral diet

Variables	n= 28
Speech therapy interventions	
Start of interventions(days), mean ± SD	38.4 ± 17.4
Reason for interventions, n (%)	
Progression of tracheostomy + oral diet	11 (39.3)
Swallowing assessment for oral diet release	7 (25.0)
Progression from tracheostomy to decannulation	6 (21.4)
Post-COVID-19	2 (7.1)
Dysphagia/alteration of swallowing	2 (7.1)
Hospitalization (number of interventions), median (IQR)	9.5 (7-15)
Home hospitalization (number of interventions), median (IQR)	1 (1-4)
Total interventions, median (IQR)	10 (7.8-15)
Clinical phonoaudiological assessment of swallowing	
Diet on first intervention, n (%)	
Nasoenteral tube	26 (92.8)
Oroenteral tube	1 (3.6)
Nasoenteral tube + parenteral nutrition	1 (3.6)
Diet at last intervention, n (%)	
Free oral diet	11 (39.3)
Bland oral diet	2 (7.1)
Soft oral diet	13 (46.4)
Pureed oral diet with free liquids	2 (7.1)
Release from oral diet (number of interventions), median (IQR)	5 (4 – 8.2)

Values expressed as mean ± standard deviation, median (interquartile range) or frequency and percentage
Subtitle: n = number of patients; % = percentage; SD = standard deviation; IQR = interquartile range

intervention, decannulation was suggested 7 (IQR 5-20,2) days after the start and the patient was given an oral diet after five (IQR 4-8,2) interventions (Table 3 and 4). All the patients (100%) had a phonoaudiological diagnosis of severe oropharyngeal dysphagia(18) and FOIS 1[19] at the first intervention, while at the last, 15 (53.57%) had functional swallowing[18] and FOIS 6[19], 11 (39.29%) normal swallowing[18] and FOIS 7[19] and only 2 (7.14%) mild oropharyngeal dysphagia[18] and FOIS 5[19].

Table 4. Characteristics of speech therapy interventions in terms of tracheostomy progression

Variables	n= 28
Orotracheal tube	
Time from hospitalization to OTI (days), median (IQR)	0 (0-2.2)
Time from OTI to tracheostomy (days), mean ± SD	22.1 ± 6.4
Tracheostomy	
Type of tracheostomy on first intervention, n (%)	
Simple plastic with cuff	24 (85.7)
Simple obese tracheostomy with cuff	2 (7.1)
Plastic with endocannula and cuff	1 (3.6)
Metal	1 (3.6)
O2 support by T'Ayre on first intervention, n (%)	
Yes	13 (46.4)
Cuff kept deflated (intervention), median (IQR)	3° (1°-4.5°)
Change from tracheostomy to metal (intervention), median (IQR)	4° (2.5°-7°)
Tracheostomy occlusion (intervention), median (IQR)	5° (3°-8°)
Decannulation (intervention), median (IQR)	8° (4.9°-11°)
Time from tracheostomy to decannulation (days), median (IQR)	30 (19-49)
Speech therapy intervention decannulation (days), median (IQR)	7 (5-20.2)

Values expressed as mean ± standard deviation, median (interquartile range) or frequency and percentage
Subtitle: n = number of patients; % = percentage; SD = standard deviation; IQR = interquartile range; OTI = orotracheal intubation; O2= oxygen

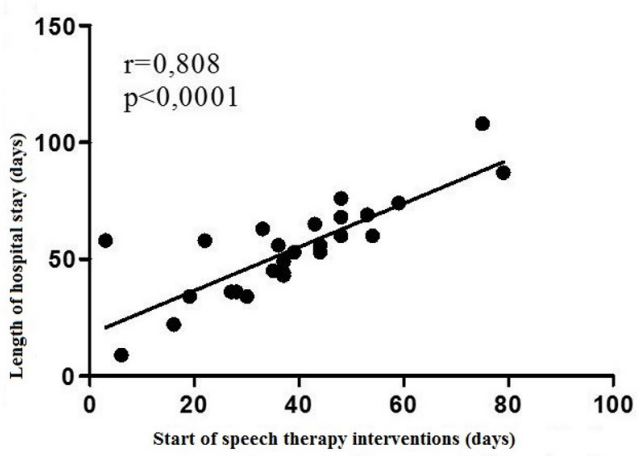

Figure 3. Correlation between length of hospital stay and start of speech therapy interventions
Pearson's test; statistical significance p<0.05

There was a strong positive correlation between the length of hospital stay and the time initiation of speech therapy interventions (r=0.808; p<0.0001) (Figure 3).

The number of speech therapy interventions showed a moderate positive correlation with the time of tracheostomy until decannulation (r=0.552; p=0.002) (Figure 4A). There was a moderate and positive correlation between the number of speech therapy interventions until clearance for oral feeding and the time of tracheostomy (r=0.533; p=0.004) (Figure 4B).

However, there was no correlation between the length of hospital stay and the total number of speech therapy interventions (r=0.372; p=0.051), the number of interventions until clearance

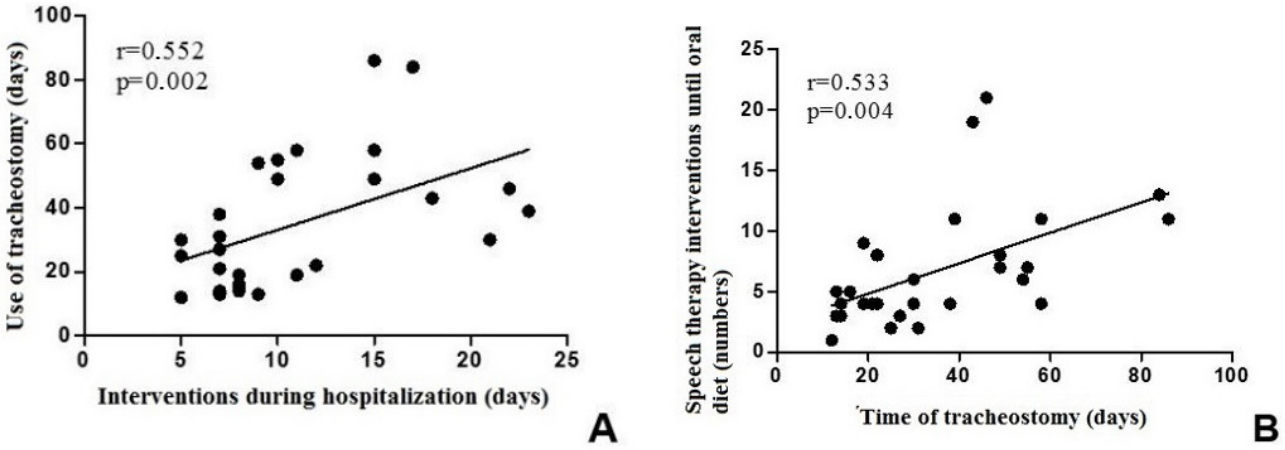

Figure 4. Correlations between: (A) days of speech therapy interventions and length of stay of tracheostomy during hospitalization; (B) number of speech therapy interventions until oral diet was released and time of tracheostomy
Spearman's test; statistical significance p<0.05

for oral feeding (r=0.378; p=0.053), and until tracheostomy decannulation (r=0.154; p=0.444). Similarly, the length the start time before speech therapy interventions did not show a correlation with the number of interventions until occlusion (r=0.131; p=0.516) and decannulation of tracheostomy (r=0.111; p=0.580), as well as with the duration of tracheostomy use (r=0.115; p=0.305).

DISCUSSION

In this study, there was a prevalence of males among adult patients hospitalized for COVID-19 and subjected to tracheostomy, as other studies related to the topic also identified[4,9,20]. With the aim of evaluating this prevalence, the literature discourse about the biological differences related to sexual hormones that mediate innate immune cells, which can influence functional responses to SARS-CoV-2 infection differently in men and women[21,22]. A systematic review and meta-analysis confirmed that COVID-19 severity and mortality are higher in men, but age was not an important factor in modulating these interactions[22].

A greater involvement was observed in younger patients, with an average age of 52 years and 1 month, similar to other studies conducted in Brazil[5,9], with a possible variation in the literature, reaching an average age of 65 years in an Australian study[23].

The presence of SAH and obesity as pre-existing comorbidities and exacerbating factors for COVID-19 symptoms is frequently presented in the literature[4,23,24], with SAH being considered the most frequent[4], as we also observed in this research. Regarding obesity, in addition to predisposing individuals to the development of other cardiovascular and metabolic diseases, its negative interference with the immune system is evident, increasing inflammation with the potential exacerbation of SARS-CoV-2 infection, the need for IMV and admission to the ICU[24].

The average length of hospital stay for the patients in this study was 53.7 days, with the vast majority undergoing IMV on the day of admission. The length of time of orotracheal tube until the implementation of tracheostomy during this period was an average of 22 days, which is longer than the majority of studies in the literature, which vary between ten[5], 15[25], 19[9], and 24[6] days. The initial guidelines recommended performing tracheostomy later, after 21 days, assuming that the delay would allow a reduction in viral load and the amount of disseminated aerosols, as well as reducing the possibility of patients not tolerating apnea during the procedure[26]. However, a more recent meta-analysis study showed that early tracheostomy (up to 14 days of OTI), when compared to late tracheostomy, was associated with shorter length of stay in IMV and ICU, without changing the mortality rate of COVID-19 patients[7].

Regarding the importance of speech therapy performance as part of the multi-professional team in the management of tracheostomized patients in the context of COVID-19[9,10], a large portion of the interventions recorded in this study were requested for progression in the decannulation process and consequently rehabilitation of the swallowing function in order to resume oral feeding. They started an average of 38.4 days after hospitalization, close to another recently published study[23].

In relation to tracheostomy, a scientific publication prior to the pandemic described as parameters considered predictive for the decannulation process the clinical and hemodynamic stability, favorable pulmonary functional condition, good secretion management, airway protection with effective cough, tolerance to cuff deflation and tracheostomy occlusion[16]. However, after noting the lack of studies on the detailed analysis of the decannulation process of patients with tracheostomy and COVID-19, researchers created a protocol, adapted from an existing one and developed for patients with severe acquired brain injury, in order to achieve best practices in terms of safety and prevention of tracheostomy complications[27]. Its phases correspond to: 1) cuff deflation; 2) assessment of oropharyngeal secretion management (Blue Dye Test carried out by the speech therapist); 3) assessment with an otolaryngologist for fibrobronchoscopy and replacement of the tracheostomy tube (fenestrated or not, with or without cuff); 4) 5-minute tracheostomy occlusion test (adaptation or not of a speech valve); 5) tracheostomy occlusion for 48-72 hours for decannulation.

In this study, recorded an average of ten speech therapy interventions. The tracheostomy cuff was kept deflated on the third day, there was a seven day progression until decannulation

was suggested and five interventions until the oral diet was released (data represented as median - interquartile range). In the end, all the patients were receiving exclusive oral feeding (no alternative route of complementary feeding). The literature, which is still scarce and has very varied results, reports the need for between five and 37 speech therapy interventions to complete these stages, with the cuff being deflated within 22 days of accompaniment, decannulation suggested between seven and 59 days of using the tracheostomy and the oral diet being released between six and 62 days of hospitalization, without presenting the number of sessions for this[9,11].

In this research, the duration of the tracheostomy until decannulation was approximately 30 days, agreeing with the literature[9,28]. Studies show that patients with tracheostomies after COVID-19 can have sequelae in different organs, physical conditions (long immobilization in pronation causing muscle and pharyngeal weakness, fatigue) and mental conditions (due to isolation from family and work, delirium) that result in the need for longer periods of rehabilitation, including a greater number of speech therapy interventions[6,29].Furthermore, authors found an association between the presence of tracheostomy and the severity of dysphagia, as well as the time for the initiation of rehabilitation and resolution of the condition. This association also extended to the initiation of oral feeding and the duration of enteral nutrition[23].

The positive correlation between the length of stay of the tracheostomy and the number of speech therapy interventions during hospitalization, as well as with the number of interventions until the release of the oral diet, highlighted in this study, is in line with the suggestion that professionals should take a more cautious approach to the process of weaning from the tracheostomy, with appropriate interventions for a safe return to oral feeding[28].

Furthermore, it is important to mention the high incidence of laryngeal injury among patients undergoing OTI and tracheostomy during the COVID-19 pandemic[6], which highlights the importance of a careful evaluation of the safety and efficacy of swallowing, as these patients are particularly prone to experiencing respiratory complications subsequent to laryngotracheal aspiration, due to the severity of the disease[30].

In addition to collaborating with recommendations for safer practices[6,28,30], this study showed that the sooner speech therapy was started for patients hospitalized for COVID-19 and submitted to tracheostomy, the quicker their discharge from hospital. The influence of speech therapy performance in the rehabilitation of these patients on the length of hospital stay can be used as a reference to encourage the early insertion of the professional, both in the hospital routine and in patient care in the face of new public health emergencies with an impact similar to the COVID-19 pandemic. No other studies were found in the current literature with analysis and results equal to or close to this one, justifying its scientific and clinical contribution.

The limitations of this study include the lack of information in medical records and progress notes for characterizing each speech therapy intervention. Additionally, it was not possible to classify the hospital unit according to the severity of the patient when interventions started, as all patients were in a unit called COVID-19 ICU.

New retrospective and meta-analysis studies on speech therapy performance in tracheostomized patients are strongly suggested, given the recent pandemic context and the scarcity of evidence in the literature on the subject, most of which are case studies.

CONCLUSION

Speech therapy performance contributed to the swallowing rehabilitation of patients hospitalized for COVID-19 and undergoing tracheostomy, helping in the process of progression and decannulation of tracheostomy and release of oral feeding, in a safer way, in addition to possibly having an impact on the on the length of hospital stay.

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