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Original articles

Quality-of-life self-assessment, risk of dysphagia, and swallowing disorders in COVID-19 inpatients

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ABSTRACT

Purpose: to identify the impact of swallowing changes and dysphagia complaints on quality-of-life and eating self-assessments of COVID-19 inpatients.

Methods: the study comprised 54 COVID-19 inpatients above 18 years old, whose swallowing was clinically assessed by a speech-language-hearing therapist. They were classified regarding food intake (with the FOIS scale) and degree of dysphagia. They also filled out a sample characterization questionnaire and the SWAL-QOL and EAT-10 protocols.

Results: the respiratory condition led to worse quality-of-life self-assessment Fatigue results, oral food intake and dysphagia severity classifications. Females had worse quality-of-life self-assessment Burden and Food selection scores. Swallowing complaints were associated with worse eating self-assessments. Patients at risk of dysphagia had worse quality-of-life self-assessments in five out of the 11 domains, worse oral food intake levels, and worse dysphagia severity.

Conclusion: COVID-19 inpatients commonly have swallowing complaints and are at risk of dysphagia, with worse quality-of-life self-assessment, lower oral food intake classification, and worse dysphagia severity rating.

Keywords: Deglutition Disorders; COVID-19; Quality of Life; Diet; Surveys and Questionnaires; Hospitalization

INTRODUCTION

The pandemic caused by the coronavirus, named COVID-19, began in the city of Wuhan, China, in December 2019, leading to a dangerous and deadly worldwide public health disaster[1]. COVID-19, which causes the severe acute respiratory syndrome, has wide-ranging symptom severity[2], from mild influenza-like conditions to severe pneumonia[3]. These symptoms may require hospitalization, sometimes in intensive care units[2,4].

Individuals with COVID-19 usually develop signs and symptoms caused by mild respiratory problems and persistent fever on average 5 to 6 days after infection (average incubation time: 5 to 6 days; interval: 1 to 14 days)[3]. A recent study of 55,924 confirmed COVID-19 cases showed that the most common symptoms are fever (87.9%), dry cough (67.7%), fatigue (38.1%), phlegm (33.4%), dyspnea (18.6%), sore throat (13.9%), headache (13.6%), myalgia or arthralgia (14.8%), chills (11.4%), nausea or vomits (5%), nasal congestion (4.8%), diarrhea (3.7%), hemoptysis (0.9%), and conjunctival congestion (0.8%)[5].

COVID-19 symptom severity is wide-ranging[2], and prolonged length of hospital stay can increase these patients' risk of undesired outcomes[2,4,6]. Risk is a multi-dimensional concept encompassing various characteristics of patients, such as age, sex, clinical instability, main diagnosis, and so forth[6,7]. Hospitalization increases the incidence of risks of oropharyngeal dysphagia[8].

A recent study of 2,465 university hospital inpatients showed a risk of dysphagia in 7.8% of them. They had been recruited through EAT-10[9] screening, an instrument also described in the literature for inclusion in the standard tests to screen swallowing and risk of dysphagia in COVID-19 patients[10].

Swallowing changes are among the greatly relevant physical and emotional conditions of patients diagnosed with COVID-19 infection. Dysphagia is a symptom that may be related to aspiration, pneumonia, malnutrition, prolonged length of hospital stay, and risk of death[11-14].

Many patients recover normal or functional swallowing function after intubation and tracheostomy with consequent decannulation, effectively responding to speech-language-hearing rehabilitation[15]. Swallowing changes inevitably influence the patient's quality of life (QOL) as well[16], with the possibility of a significant and negative correlation between QOL and dysphagia severity[17] in COVID-19 inpatients.

Hence, the overall aim of this research was to identify the impact of swallowing changes and dysphagia complaints in QOL self-assessment and eating self-assessment by patients hospitalized due to COVID-19 infection. The secondary objective was to verify the influence of the respiratory condition, sex, and age on COVID-19 patients' swallowing and QOL.

METHODS

This research was approved by the Research Ethics Committee of *Faculdade de Medicina do ABC \ Fundação do ABC* (FMABC), Brazil, under evaluation report no. 4.991.692, of September 23, 2021. All individuals involved in the research signed an informed consent form.

Sample and inclusion and exclusion criteria

A cross-sectional quantitative study was conducted in a convenience sample of inpatients that met the study inclusion (adult patients with a confirmed COVID-19 diagnosis, hospitalized in the institution's hospital units) and exclusion criteria (patients in orotracheal intubation at the time of collection; with neurological, psychological, or psychiatric changes that prevented self-assessment instruments from being adequately administered; under 18 years old; with anatomical and/or functional diseases and/or sequelae that previously interfered with the swallowing dynamics, regardless of the COVID-19 diagnosis). Data were collected between October 2021 and January 2022.

Thus, the study included 54 adult inpatients above 18 years old with a confirmed diagnosis of COVID-19 infection.

Procedures

Individuals had their swallowing clinically assessed by a speech-language-hearing therapist as part of the routine inpatient care. The assessment firstly addressed the oral sensory-motor system, then the swallowing of saliva and foods in different consistencies (thin liquid and pureed and solid food), preferably self-served, but helped by the speech-language-hearing therapists when necessary. The patients' cervical auscultation, oximetry measures, and clinical signs concluded the clinical swallowing assessment, confirming whether they had dysphagia and its degree classification (mild, moderate, or severe), and suggesting and defining the safest feeding route. After the clinical swallowing assessment, the patients filled out the following

instruments in the company of the assessing speech-language-hearing therapist:

1. Sample characterization and identification questionnaire: name initials, age, date of birth, sex, confirmed medical diagnosis of COVID-19, respiratory condition at data collection (room air, oxygen catheter, Venturi mask, non-rebreather mask, or high-flow catheter), and the presence or absence of swallowing complaints.

2. Quality of Life in Swallowing Disorders (SWAL-QOL)[18,19]: dysphagia-related QOL self-assessment protocol with 44 items distributed into 11 domains: Burden, Eating desire, Eating duration, Symptom frequency, Food selection, Communication, Fear, Mental health, Social, Sleep, and Fatigue. The score in each domain ranges from 0 to 100 – the higher the score, the better the dysphagia-related QOL in that domain.

3. Eating Assessment Tool (EAT-10)[20,21]: protocol with 10 questions and a total score ranging from 0 to 40 points. The cutoff score in the instrument is 3 points[21] – scores equal to or higher than the cutoff indicating individuals at risk of dysphagia[21].

After the clinical swallowing assessment was finished and the abovementioned questionnaires were filled out, the speech-language-hearing therapist classified food ingestion and swallowing changes:

4. Functional Oral Intake Scale (FOIS)[22]: this ordinal scale reflects functional oral ingestion in patients with dysphagia on seven levels, namely: level 1: Nothing by mouth; level 2: Tube dependent with minimal attempts of food or liquid; level 3: Tube dependent with consistent oral intake of food or liquid; level 4: Total oral diet of a single consistency; level 5: Total oral diet with multiple consistencies, but requiring special preparation or compensations; level 6: Total oral diet with multiple consistencies without special preparation, but with specific food limitations; level 7: Total oral diet with no restrictions.

5. Swallowing/dysphagia classification[23]: normal/functional swallowing (no swallowing changes), mild dysphagia (abnormal lip sphincter, tongue incoordination, delayed triggering of swallowing reflex, absence of coughs, no sharp decrease in laryngeal elevation, no change in voice quality after swallowing, and no change in cervical auscultation), moderate dysphagia (abnormal lip sphincter, tongue incoordination, delayed or absent swallowing reflex, absence of coughs, presence of coughs before, during, or after swallows, decreased laryngeal elevation, changes in voice quality after swallowing, and changes in cervical auscultation), or severe dysphagia (delayed or absent swallowing reflex, decreased laryngeal elevation, absence of coughs, presence of coughs before, during, or after swallows, changes in voice quality after swallowing, evident respiratory changes, incomplete swallowing, and changes in cervical auscultation). The analyses in this study considered the following values: 0 for normal/functional swallowing, 1 for mild dysphagia, 2 for moderate dysphagia, and 3 for severe dysphagia.

Data analysis

Descriptive and inferential data analyses were performed in SPSS 25.0. The significance level was set at 5% in inferential analyses.

The measures of central tendency (mean and median), variability (standard deviation), and position (minimum, maximum, and quartiles 1 and 3) of the quantitative variables were calculated for descriptive analyses. The absolute and relative percentage frequencies of the qualitative variables were calculated for descriptive analyses. The normality of the quantitative variables was analyzed with the Shapiro-Wilk test, and they were found to be non-normal.

The Mann-Whitney test was used in inferential analysis to compare non-normal quantitative variables and nominal qualitative variables between two independent groups. The Kruskal-Wallis test was used in inferential analysis to compare non-normal quantitative variables in relation to multiple independent groups. In the case of statistical differences in the Kruskal-Wallis test, a pairwise comparison was performed and significance values were adjusted with Bonferroni multiple-test correction. The Pearson's chi-square test was used to associate nominal two-category qualitative variables in the inferential analysis. The Spearman's correlation test was used to correlate non-normal quantitative and ordinal qualitative variables.

RESULTS

The study comprised 54 inpatients with COVID-19 infection, aged 22 to 86 years, with a mean of 53 years and 4 months; 20 were females (37.04%), and 34 were males (62.96%). Most patients' respiratory conditions required supplemental oxygen (n = 45; 83.33%), mostly with non-rebreather masks (n = 24; 44.44%) and oxygen catheters (n = 21; 38.89%). Most patients had swallowing complaints (n = 44; 81.48%).

The worst means in the 11 SWAL-QOL domains occurred in Sleep (57.18), Eating duration (61.81), and Fatigue (70.06), whereas the best means were in Social (96.20), Communication (90.97), and Symptom frequency (90.64). The mean EAT-10 score was 4.24 points – 61.11% were above the 3-point cutoff score for the risk of dysphagia. The mean FOIS score was 5.28, which is between levels 5 (Total oral diet with multiple consistencies, but requiring special preparation or compensations) and 6 (Total oral diet with multiple consistencies without special preparation, but with specific food limitations). The mean dysphagia classification score was 0.98, which is between 0 (normal/functional swallowing) and 1 (mild dysphagia).

Table 1 shows that dysphagia classification was negatively correlated with SWAL-QOL Burden and Mental health domains and with FOIS classification level and positively correlated with EAT-10 scores. FOIS classification level was negatively correlated with SWAL-QOL Eating desire domain and EAT-10 score and positively correlated with SWAL-QOL Mental health and Fatigue domains. EAT-10 score was negatively correlated with SWAL-QOL Burden, Symptom frequency, Fear, Mental health, Sleep, and Fatigue domains.

As for SWAL-QOL domains, Fatigue was positively correlated with Symptom frequency, Fear, Mental health, and Sleep; Sleep was negatively correlated with Eating duration; Social was positively correlated with Fear; Mental health was positively correlated with Burden, Symptom frequency, Food selection, and Fear; Fear and Communication were positively correlated with Symptom frequency; Food selection and Symptom frequency were positively correlated with Burden; and Eating duration and Eating desire were positively correlated.

Table 1. Correlation between the Quality of Life in Swallowing Disorders Protocol, the Eating Assessment Tool, the Functional Oral Intake Scale, and dysphagia classification in COVID-19 inpatients

		SWAL-QOL Burden	SWAL-QOL Eating desire	SWAL-QOL Eating duration	SWAL-QOL Symptom frequency	SWAL-QOL Food selection	SWAL-QOL Communication	SWAL-QOL Fear	SWAL-QOL Mental health	SWAL-QOL Social	SWAL-QOL Sleep	SWAL-QOL Fatigue	EAT-10	FOIS
SWAL-QOL Eating desire	r	0.136												
	p-value	0.328												
SWAL-QOL Eating duration	r	-0.010	0.422											
	p-value	0.945	0.001*											
SWAL-QOL Symptom frequency	r	0.433	-0.061	0.073										
	p-value	0.001*	0.660	0.597										
SWAL-QOL Food selection	r	0.500	0.148	0.011	0.257									
	p-value	<0.001*	0.284	0.937	0.060									
SWAL-QOL Communication	r	0.210	0.257	0.113	0.369	0.185								
	p-value	0.128	0.060	0.415	0.006*	0.180								
SWAL-QOL Fear	r	0.248	-0.025	0.132	0.507	0.185	0.205							
	p-value	0.071	0.860	0.342	<0.001*	0.181	0.136							
SWAL-QOL Mental health	r	0.621	-0.101	0.037	0.602	0.360	0.227	0.319						
	p-value	<0.001*	0.469	0.789	<0.001*	0.008*	0.098	0.019*						
SWAL-QOL Social	r	0.047	-0.026	0.134	0.115	-0.013	-0.135	0.289	-0.133					
	p-value	0.736	0.854	0.333	0.406	0.924	0.331	0.034*	0.337					
SWAL-QOL Sleep	r	0.059	0.021	-0.291	-0.038	0.141	0.072	-0.012	0.005	-0.063				
	p-value	0.672	0.881	0.033*	0.784	0.309	0.607	0.932	0.970	0.651				
SWAL-QOL Fatigue	r	0.129	-0.076	-0.147	0.384	0.129	0.119	0.406	0.381	-0.148	0.399			
	p-value	0.353	0.584	0.288	0.004*	0.351	0.393	0.002*	0.005*	0.285	0.003*			
EAT-10	r	-0.373	0.114	-0.064	-0.591	-0.255	-0.241	-0.354	-0.522	-0.181	-0.314	-0.392		
	p-value	0.005*	0.410	0.645	<0.001*	0.063	0.079	0.009*	<0.001*	0.190	0.021*	0.003*		
FOIS	r	0.202	-0.270	-0.249	0.203	0.110	0.055	0.221	0.462	0.029	0.249	0.287	-0.484	
	p-value	0.144	0.049*	0.070	0.141	0.429	0.693	0.108	<0.001*	0.836	0.070	0.035*	<0.001*	
Dysphagia classification	r	-0.379	0.053	0.056	-0.238	-0.040	-0.246	-0.168	-0.506	-0.041	-0.143	-0.111	0.381	-0.687
	p-value	0.005*	0.705	0.689	0.083	0.775	0.073	0.225	<0.001*	0.771	0.302	0.425	0.004*	<0.001*

Spearman's correlation test
* $p < 0.05$
Captions: r = correlation coefficient; SWAL-QOL = Quality of Life in Swallowing Disorders Protocol; EAT-10 = Eating Assessment Tool; FOIS = Functional Oral Intake Scale

COVID-19 inpatients' ages were not correlated with SWAL-QOL domains, EAT-10, FOIS, or dysphagia classification. As for their sex, females had lower mean scores than males in SWAL-QOL Burden (females = 58.13, males = 82.72; p = 0.018) and Food selection domains (females = 70.75, males = 90.81; p = 0.003).

Table 2 shows a difference in SWAL-QOL Fatigue domain, FOIS, and dysphagia classification in relation to the current respiratory condition in COVID-19 inpatients. The post hoc analysis showed that patients whose respiratory condition required oxygen catheters had significantly higher SWAL-QOL Fatigue scores than those using non-rebreather masks. Regarding FOIS, patients breathing room air had significantly higher scores than those using non-rebreather masks or oxygen catheters. As for dysphagia classification, patients breathing room air had significantly lower classifications than those using non-rebreather masks or oxygen catheters.

Table 2. Comparison of the Quality of Life in Swallowing Disorders Protocol, the Eating Assessment Tool, the Functional Oral Intake Scale, and dysphagia classification regarding the current respiratory condition in COVID-19 inpatients

Variable	Current respiratory condition	Mean	SD	p-value	pairwise
	Room air	70.83	31.87		
SWAL-QOL Burden	Oxygen catheter	76.19	26.19	0.885	
	Non-rebreather mask	72.40	32.55		
	Room air	75.00	24.30		
SWAL-QOL Eating desire	Oxygen catheter	75.79	24.57	0.919	
	Non-rebreather mask	76.74	31.28		
	Room air	68.06	37.56		
SWAL-QOL Eating duration	Oxygen catheter	61.31	40.49	0.728	
	Non-rebreather mask	59.90	39.01		
	Room air	88.89	11.32		
SWAL-QOL Symptom frequency	Oxygen catheter	91.41	7.57	0.916	
	Non-rebreather mask	90.63	7.87		
	Room air	86.11	15.87		
SWAL-QOL Food selection	Oxygen catheter	88.69	18.50	0.362	
	Non-rebreather mask	80.21	24.15		
	Room air	87.50	19.76		
SWAL-QOL Communication	Oxygen catheter	87.50	26.22	0.228	
	Non-rebreather mask	95.31	14.19		
	Room air	84.03	24.43		
SWAL-QOL Fear	Oxygen catheter	79.17	22.65	0.391	
	Non-rebreather mask	75.00	24.24		
	Room air	95.56	5.83		
SWAL-QOL Mental health	Oxygen catheter	81.90	26.15	0.089	
	Non-rebreather mask	70.42	34.45		
	Room air	100.00	0.00		
SWAL-QOL Social	Oxygen catheter	90.24	30.02	0.086	
	Non-rebreather mask	100.00	0.00		
	Room air	51.39	35.60		
SWAL-QOL Sleep	Oxygen catheter	66.07	36.69	0.225	
	Non-rebreather mask	51.56	32.41		
	Room air	78.70	25.72		Oxygen catheter
SWAL-QOL Fatigue	Oxygen catheter	79.37	22.76	0.024*	> non-rebreather mask
	Non-rebreather mask	58.68	27.42		(p = 0.036)
	Room air	3.11	3.62		
EAT-10	Oxygen catheter	3.81	4.15	0.257	
	Non-rebreather mask	5.04	3.84		
	Room air	6.56	0.73		Room air > non-rebreather mask
FOIS	Oxygen catheter	5.05	1.53	<0.001*	(p < 0.001) = oxygen catheter
	Non-rebreather mask	5.00	0.98		(p = 0.007)
	Room air	0.33	0.50		Room air < non-rebreather mask
Dysphagia classification	Oxygen catheter	1.29	0.64	<0.001*	(p = 0.008) =
	Non-rebreather mask	0.96	0.55		oxygen catheter (p < 0.001)

Kruskal-Wallis test and pairwise, with Bonferroni correction
* p < 0.05
Captions: SD = standard deviation; SWAL-QOL = Quality of Life in Swallowing Disorders Protocol; EAT-10 = Eating Assessment Tool; FOIS = Functional Oral Intake Scale

COVID-19 inpatients with swallowing complaints had lower SWAL-QOL Mental health scores, lower FOIS levels, higher EAT-10 scores, and more severe dysphagia classifications than those with no swallowing complaints, as shown in Table 3.

Table 3. Comparison of the Quality of Life in Swallowing Disorders Protocol, the Eating Assessment Tool, the Functional Oral Intake Scale, and dysphagia classification regarding swallowing complaints in COVID-19 inpatients

Variable	Swallowing complaints	Mean	SD	p-value
SWAL-QOL Burden	No	88.75	13.76	0.102
	Yes	70.17	31.23	
SWAL-QOL Eating desire	No	75.83	31.04	0.825
	Yes	76.14	26.69	
SWAL-QOL Eating duration	No	76.25	35.08	0.150
	Yes	58.52	39.14	
SWAL-QOL Symptom frequency	No	90.89	11.89	0.308
	Yes	90.58	7.41	
SWAL-QOL Food selection	No	81.25	27.16	0.981
	Yes	85.23	19.49	
SWAL-QOL Communication	No	93.75	13.50	0.721
	Yes	90.34	21.88	
SWAL-QOL Fear	No	81.88	25.76	0.297
	Yes	77.27	23.12	
SWAL-QOL Mental health	No	98.00	3.50	0.004*
	Yes	74.77	30.93	
SWAL-QOL Social	No	100.00	0.00	0.400
	Yes	95.34	21.06	
SWAL-QOL Sleep	No	62.50	30.62	0.693
	Yes	55.97	35.81	
SWAL-QOL Fatigue	No	67.50	34.12	0.991
	Yes	70.64	25.51	
EAT-10	No	1.90	3.41	0.015*
	Yes	4.77	3.88	
FOIS	No	6.40	0.84	<0.001*
	Yes	5.02	1.27	
Dysphagia classification	No	0.20	0.42	<0.001*
	Yes	1.16	0.57	

Mann-Whitney test
* $p < 0.05$
Captions: SD = standard deviation; SWAL-QOL = Quality of Life in Swallowing Disorders Protocol; EAT-10 = Eating Assessment Tool; FOIS = Functional Oral Intake Scale

In EAT-10 classification, COVID-19 inpatients' results were more frequently above the 3-point cutoff score. Hence, almost two thirds of assessed patients were at risk for dysphagia, with no differences in EAT-10 regarding age.

As shown in Table 4, swallowing complaints were correlated with EAT-10 classification based on the 3-point cutoff – COVID-19 inpatients with swallowing complaints scored higher.

Table 4. Association of sex, current respiratory condition, and swallowing complaint with the Eating Assessment Tool classification in COVID-19 inpatients

			EAT-10		Total	p-value
			< 3 points	≥ 3 points		
Sex	Females	n	5	15	20	0.108
		%	0.25	0.75	1	
	Males	n	16	18	34	
		%	0.47	0.53	1	
Total		n	21	33	54	
			0.39	0.61	1	
Current respiratory condition	Room air	n	4	5	9	0.418
		%	0.44	0.56	1	
	Oxygen catheter	n	10	11	21	
		%	0.48	0.52	1	
	Non-rebreather mask	n	7	17	24	
		%	0.29	0.71	1	
Total		n	21	33	54	
			0.39	0.61	1	
Swallowing complaint	No	n	7	3	10	0.025*
		%	0.70	0.30	1	
	Yes	n	14	30	44	
		%	0.32	0.68	1	
Total		n	21	33	54	
		%	0.39	0.61	1	

Pearson's chi-square test
* $p < 0.05$
Captions: n = absolute frequency; % = relative frequency; EAT-10 = Eating Assessment Tool

COVID-19 inpatients whose EAT-10 scores were above the 3-point cutoff had lower scores in the following five out of the 11 SWAL-QOL domains: Burden, Symptom frequency, Mental health, Sleep, and Fatigue. They also had lower FOIS levels and higher dysphagia classification levels, as shown in Table 5.

Table 5. Comparison of the Quality of Life in Swallowing Disorders Protocol, the Functional Oral Intake Scale, and dysphagia classification regarding the Eating Assessment Tool classification in COVID-19 inpatients

Variable	EAT-10	Mean	SD	p-value
SWAL-QOL Burden	< 3 points	85.71	21.39	0.017*
	≥ 3 points	65.91	31.76	
SWAL-QOL Eating desire	< 3 points	73.41	27.46	0.505
	≥ 3 points	77.78	27.38	
SWAL-QOL Eating duration	< 3 points	61.31	37.27	0.913
	≥ 3 points	62.12	40.20	
SWAL-QOL Symptom frequency	< 3 points	94.47	5.87	0.003*
	≥ 3 points	88.20	8.74	
SWAL-QOL Food selection	< 3 points	89.29	20.27	0.117
	≥ 3 points	81.44	20.99	
SWAL-QOL Communication	< 3 points	92.86	22.21	0.456
	≥ 3 points	89.77	19.63	
SWAL-QOL Fear	< 3 points	85.42	19.20	0.091
	≥ 3 points	73.48	24.95	
SWAL-QOL Mental health	< 3 points	93.57	8.82	0.013*
	≥ 3 points	69.85	33.95	
SWAL-QOL Social	< 3 points	100.00	0.00	0.159
	≥ 3 points	93.79	24.21	
SWAL-QOL Sleep	< 3 points	74.40	26.95	0.004*
	≥ 3 points	46.21	35.01	
SWAL-QOL Fatigue	< 3 points	80.56	26.00	0.010*
	≥ 3 points	63.38	25.76	
FOIS	< 3 points	5.86	0.65	0.001*
	≥ 3 points	4.91	1.49	
Dysphagia classification	< 3 points	0.71	0.46	0.015*
	≥ 3 points	1.15	0.71	

Mann-Whitney test
* $p < 0.05$
Captions: SD = standard deviation; SWAL-QOL = Quality of Life in Swallowing Disorders Protocol; EAT-10 = Eating Assessment Tool; FOIS = Functional Oral Intake Scale

DISCUSSION

Critically ill COVID-19 patients had a high incidence of dysphagia, aggravated by respiratory discomfort, neurological complications, and respiratory impairments, which hinder breathing-swallowing-coughing coordination[24].

Most inpatients in this study were males (62.96%), which corroborates the findings in other pieces of research on the epidemiological and clinical profile of COVID-19 patients[4,25].

Their QOL is mainly affected in terms of sleep, eating duration, and fatigue. This may be related to respiratory changes caused by COVID-19[26] regarding the possibility of oral food intake and dysphagia severity. Studies on COVID-19 patients pointed out that dysphagia is prevalent in this population[15], and their QOL and mental health are impaired[27].

More than 80% of patients in this study were receiving supplemental oxygen through either non-rebreather masks (44.44%) or oxygen catheters (38.89%). Patients with acute respiratory insufficiency due to COVID-19 usually have increased respiratory frequency (higher than 24/minute) and hypoxemia (SpO_2 < 90% in room air). Hence, patients in this clinical condition need oxygen therapy and ventilation support as supplemental care[26].

Sleep, Eating duration, and Fatigue were the SWAL-QOL domains with the worst scores. These aspects are closely related to respiratory issues affected by COVID-19 – two of them are importantly related to swallowing safety, the need for food preparations or restrictions, and the greater risk of dysphagia. These data corroborate the findings of studies that show that the QOL and mental health of infected and/or treated COVID-19 patients may be impaired[27,28].

The respiratory condition was a determinant of SWAL-QOL Fatigue, FOIS classification, and dysphagia degree classification. This corroborates the findings of a study that demonstrate that respiratory impairments hinder breathing-swallowing-coughing coordination[24].

Moreover, swallowing complaints were decisive in SWAL-QOL Mental health, EAT-10, FOIS, and dysphagia classification. The literature also demonstrates that dysphagia is prevalent in inpatients with respiratory problems due to COVID-19[15].

EAT-10 has proved to be an important and useful instrument to screen the risk of dysphagia in inpatients[9], including those with COVID-19[28]. Hence, it predicts the need to clinically and/or instrumentally assess those who failed the 3-point cutoff in the screening, as already published in the Brazilian literature[21]. FOIS, in its turn, is an important scale to manage food intake[29].

In this study, swallowing complaints were determinant in mean EAT-10 score differences between < 3 points and ≥ 3 points, as demonstrated in the cutoff scores for the risk of dysphagia published in the national literature[21].

COVID-19 inpatients at risk of dysphagia had lower scores in five out of the 11 SWAL-QOL domains (Burden, Symptom frequency, Mental health, Sleep, and Fatigue), lower FOIS levels, and higher dysphagia classification levels. These findings corroborate a study that shows that swallowing disorders impair the QOL of individuals with diseases of various etiologies, including COVID-19[30].

A limitation of this study is its small sample, due to the severity of the cases and difficulties to collect data; since the study was based on self-assessment questionnaires, participating patients could not be intubated and had to be awake and aware during collection. As for future perspectives, further studies can address late COVID-19 sequelae in patients after hospital discharge, which was not the objective of this study.

CONCLUSION

Most COVID-19 inpatients had swallowing complaints and were at risk of dysphagia, with worse self-assessment eating scores. Swallowing complaints negatively interfered with the Mental health domain in QOL self-assessment, eating self-assessment, oral food intake classification, and dysphagia classification. These patients' QOL was mainly affected in terms of Sleep, Eating duration, and Fatigue.

The respiratory condition was determinant for worse results in the Fatigue domain in QOL self-assessment, oral food intake classification, and dysphagia classification. Females had worse QOL self-assessments regarding Burden and Food selection.

COVID-19 inpatients at risk of dysphagia had worse QOL self-assessment, lower oral food intake classification, and worse dysphagia severity classification.

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