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# The Status of Dysphagia Clinics During the COVID-19 Pandemic

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## Abstract

The study aimed to determine the status of dysphagia clinics and procedures applied in dysphagia clinics during the COVID-19 pandemic. Clinicians working in an outpatient dysphagia clinic were included. A 30-question survey inquiring about the descriptive information of the participants and their clinics, their clinical practice, and the tele-health applications during the COVID-19 pandemic. The survey was administered via Google forms. The participants were asked to fill out the survey on behalf of their clinics. One survey was completed per dysphagia clinic. Twenty-three clinicians responded on behalf of their clinics. The number of patients and dysphagia evaluations decreased during the COVID-19 pandemic ( $p < 0.05$ ). The COVID-19 screening procedures mostly performed before dysphagia evaluations were temperature check ( $n = 14$ , 60.9%), nasopharyngeal swab test ( $n = 9$ , 39.1%), anamnestic risk assessment ( $n = 6$ , 26.1%), and saturation test ( $n = 6$ , 26.1%). Protective equipments mostly used while dysphagia evaluations were surgical mask, FFP3 mask, standard gloves, glasses, and face shield. It was found that 69.6% ( $n = 16$ ) of the dysphagia clinics were reported to be suitable for working under pandemic conditions, and 30.4% ( $n = 7$ ) were reported to be unsuitable. The use of tele-health applications significantly increased from 13.0% ( $n = 3$ ) to 52.2% ( $n = 12$ ) ( $p = 0.003$ ). The present study provides a general overview of the status of dysphagia clinics and procedures applied in dysphagia clinics during the COVID-19 pandemic period. The study showed that working conditions, the number of patients, and the total number of evaluations have changed throughout the pandemic, and the use of tele-health applications increased.

**Keywords** Deglutition · Deglutition disorders · Dysphagia management · COVID-19 · Pandemic

## Introduction

Dysphagia is a term indicating difficulty in swallowing function [1]. It is caused by a wide range of factors and occurs with many different symptoms including choking and/or coughing during swallowing, hoarseness, unexplained weight loss, and sensation of food sticking in the throat [1]. Dysphagia can lead to further serious complications that threaten life, such as malnutrition, dehydration, and recurrent pneumonia. It also affects both patients and caregivers' quality of life [1–3]. Therefore, identifying and defining dysphagia enable patients to be included in the swallowing

rehabilitation program in the early period and to shorten the recovery process. It also helps prevent dysphagia-related complications, increases the quality of life of the patient and their caregivers, and contributes to the reduction of health-care expenses [4].

At the end of 2019, a disease called Coronavirus disease 2019 (COVID-19) has begun to spread all over world, and the World Health Organization (WHO) declared the outbreak a pandemic [5]. The disease causes acute respiratory problems, pneumonia, and even death; therefore, strict isolation measures were initiated. The pandemic also has an enormous effect on the healthcare services worldwide [6]. The workload of urgent medical services increased while the activity of non-urgent medical services slowed down.

Dysphagia clinics as in all health fields were also affected by the COVID-19 pandemic. Several guidelines and expert panel-based recommendations have been published in terms of service delivery during the pandemic period [7–14]. Besides recommendations, determining the current situation in dysphagia clinics at both national and international levels

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is also important to develop correct and effective practices, and create appropriate recommendations. Therefore, the aim of this study was to identify the status of dysphagia clinics and the procedures practiced in dysphagia clinics during the COVID-19 pandemic.

## Methods

The study was performed with the cooperation of Hacettepe University, Faculty of Physical Therapy and Rehabilitation and the University of California, Davis, Department of Otolaryngology Head and Neck Surgery. The study protocol was approved by the Hacettepe University Non-invasive Clinical Research Ethics Committee (Approval number = GO20/799).

### Design and Survey Distribution

This study was a cross-sectional study. The network of Dysphagia Research Society of Turkey was used to coordinate the survey distribution globally. The survey was conducted in outpatient dysphagia clinics. The survey was sent electronically to potential participants via Google forms. All participants provided the informed consent when by clicking the start button of the survey. Each participant was asked to discuss the survey questions with the entire swallowing team and answer questions on behalf of their clinic. Therefore, respondents were dysphagia clinics. One survey completed per dysphagia clinic.

### Survey

A draft questionnaire was generated by a physical therapist with 10 years of professional dysphagia practice based on the current literature regarding dysphagia service delivery during pandemic conditions [7–14], and the author's professional experience to assess the status of dysphagia clinics and the procedures applied in dysphagia clinics during the COVID-19 pandemic period. Four participants including two physical therapists, one otolaryngologist, and one speech language pathologist, all of whom were university-affiliated experts with a minimum of 10-year dysphagia experiences were included for investigating the face and content validity of the draft survey [15]. Face validity was scored on a 5-point Likert scale ranging from 0 to 4, of which '0' indicates 'I have no idea about this item,' and '4' indicates 'Absolutely understandable, clear, and grammatically correct.' Content validity was also scored on a 5-point Likert scale ranging from 0 to 4, of which '0' indicates 'I have no idea about this item,' and '4' indicates 'Absolutely related to the scale's ultimate purpose and completely necessary' [15]. Then, the average rating of each question related

to face and content validity was examined in an expert meeting. The final survey included 30 questions about the clinics' practices during the COVID-19 pandemic. The survey takes approximately 20 min to complete. The survey was distributed between November 2020 and March 2021 via Google forms. The reasons to set a firm deadline for the survey within five months were (i) to ensure that the time period questioned would be current and relevant, (ii) to reveal the then-current memory, and (iii) for the answers to be least affected by changes as the processes were very variable.

The survey included 7 questions related to descriptive information about the participants and their clinic, 10 questions regarding their clinical practice, and 13 questions related to tele-health applications during the COVID-19 pandemic (Appendix 1). The descriptive information included the country where the clinic is located, the participant's profession and professional tenure, the type of the hospital, the number of clinicians, the type of professions in the swallowing team, and the types of the patients. The questions related to the status of the dysphagia clinics during the COVID-19 pandemic included the feelings of the participants, working conditions of their clinics, the number of patients, the number of evaluations, COVID-19 screening procedures before dysphagia evaluation, precautions taken before dysphagia evaluation during the pandemic period/normalization period, and the suitability of the clinic to work under pandemic conditions. The questions regarding tele-health applications were as follows: whether they used tele-health applications before and during pandemic period, how swallowing assessments and rehabilitations were performed, which treatment options were recommended, the duration of a tele-health session, follow-up intervals, shared materials, and the difficulties and benefits of tele-health applications. The participants were asked to rate on a 10-point Likert scale trust level for dysphagia evaluation, treatment recommendations via tele-health, and whether they recommended tele-health application in the dysphagia management.

The WHO declared COVID-19 a pandemic in March 2020 and a normalization period started in June 2020. Therefore, the questions related to the 'pandemic period' refer the first 3 months after the COVID-19 pandemic started (March 2020 to June 2020), and 'normalization period' refers that the time restrictions are gradually loosened (from June 2020 to September 2020).

### Statistical Analysis

Statistical analysis was performed using the IBM-SPSS for Windows version 20 software, version 20. Descriptive statistics were calculated as number/percentage for qualitative data, and mean, standard deviation, minimum and maximum values for quantitative data. The Friedman test was conducted to test whether there is a significant change in

**Table 1** The descriptive characteristics of the participants and the dysphagia clinics ( $n=23$ )

	Mean (SD)	Min–max
Professional tenure (years)	16.50 (12.51)	2.5–31
Number of clinicians in the swallowing team	6.68 (4.47)	1–15
Hospital	Number	%
Academic/ Government Institution	19	82.6
Nursing home acute care	3	13.0
Nursing home long term care	1	4.3
Professions in the swallowing team		
Speech language pathologist	21	91.3
Medical doctor	19	82.6
Nutritionist	11	47.8
Nurse	10	43.5
Physical therapist	6	26.1
Physician assistant	6	26.1
Occupational therapist	3	13.0
Dentist	2	8.7
Psychologist	1	4.3
The types of patients		
Pediatrics	1	4.3
Adults	15	65.2
Both	7	30.4

the clinical practice of dysphagia clinics before and during the COVID-19 pandemic. The Wilcoxon test was used to compare the change in using tele-health applications in dysphagia clinics between before and during the pandemic period. Any  $p$  value less than 0.05 was considered to be statistically significant.

## Results

Three out of 30 questions were scored as 2 for face validity, which indicates ‘Approximately understandable, clear, and grammatically correct’; therefore, they were revised in the expert meeting. All questions received 4 for content validity which shows ‘Absolutely related to the scale ultimate purpose and completely necessary.’

The survey was sent to 48 dysphagia clinics, of which 23 responded. The centers were located at the following countries: United States of America ( $n=12$ , 52.2%), Turkey ( $n=4$ , 17.4%), Belgium ( $n=2$ , 8.7%), Germany ( $n=2$ , 8.7%), Spain ( $n=1$ , 4.3%), Qatar ( $n=1$ , 4.3%), and India ( $n=1$ , 4.3%). It was found that 65.2% ( $n=15$ ) of the participants were speech language pathologists, 26.1% ( $n=6$ ) were medical doctors, and 8.7% ( $n=2$ ) were physical therapists. The descriptive characteristics of the participants and their dysphagia clinic are presented in Table 1.

The feelings of the participants during the pandemic period are as follows: Worried about their families ( $n=18$ , 78.3%), scared to be a carrier ( $n=13$ , 56.5%), afraid of being sick ( $n=12$ , 52.2%), and worried about social unrest ( $n=8$ , 34.8%). COVID-19 screening procedures mostly used in their clinics before performing evaluations during the pandemic/normalization period were temperature check ( $n=14$ , 60.9%), nasopharyngeal swab test ( $n=9$ , 39.1%), anamnestic risk assessment ( $n=6$ , 26.1%), and saturation test ( $n=6$ , 26.1%). It was found that 17.4% ( $n=4$ ) of the clinics used no COVID-19 screening procedures before performing evaluations during the pandemic/normalization period. Clinical practices of dysphagia clinics before and during the COVID-19 pandemic are represented in Table 2. After the COVID-19 pandemic, working conditions significantly changed compared to the pre-COVID-19 pandemic period ( $p<0.01$ ). The clinicians worked in shifts ( $n=15$ , 65.2%) or remotely ( $n=5$ , 21.7%), or the clinics were closed ( $n=3$ , 13.1%). On the other hand, all clinicians worked in shifts ( $n=23$ , 100%) during the normalization period. The number of patients ( $p=0.005$ ) and the total evaluation number ( $p=0.01$ ) significantly decreased during the pandemic compared to the pre-COVID-19 pandemic period. In evaluation types, oral examination and instrumental swallowing evaluations, including videofluoroscopic and fiberoptic endoscopic swallowing evaluation and pharyngoesophageal manometry, significantly decreased ( $p<0.05$ ). The protective equipment

**Table 2** The clinical practice of dysphagia clinics before and during the COVID-19 pandemic ( $n = 23$ )

Working conditions	Before COVID-19		Pandemic period		Normalization period		p
	Number	%	Number	%	Number	%	
Normal	23	100	0	0	0	0	<0.01
In shifts	0	0	15	65.2	23	100	
Remotely	0	0	5	21.7	0	0	
Closed	0	0	3	13.1	0	0	
Number of patients							
0–10 patients	3	13.0	11	47.8	3	13.0	0.005
11–20 patients	7	30.4	5	21.7	12	52.2	
21–30 patients	6	26.1	3	13.0	3	13.0	
31–40 patients	1	4.3	1	4.3	1	4.3	
Above 40 patients	6	26.1	3	13.0	4	17.4	
Evaluation types							
Oral examination	22	95.7	15	65.2	15	65.2	0.017
Non-standardized clinical swallowing evaluation	19	82.6	17	73.9	14	60.9	0.178
Water swallowing test	14	60.9	10	43.5	10	43.5	0.135
Volume viscosity test	9	39.1	6	26.1	8	34.8	0.247
Screening tests (EAT-10)	17	73.9	14	60.9	14	60.9	0.165
Videofluoroscopic swallowing evaluation	18	78.3	9	39.1	13	56.5	0.004
Fiberoptic endoscopic swallowing evaluation	18	78.3	9	39.1	14	60.9	0.013
Pharyngoesophageal manometry	6	26.1	1	4.3	5	21.7	<0.01
	Mean (SD)	Min-max	Mean (SD)	Min-max	Mean (SD)	Min-max	
Total evaluation number	5.34 (1.49)	3–8	3.52 (2.01)	0–7	4.04 (2.83)	0–8	0.01

used mostly while performing dysphagia evaluations was surgical mask, FFP3 mask, standard gloves, glasses, and face shield (Table 3). It was observed that 69.6% ( $n = 16$ ) of the dysphagia clinics were reported to be suitable for working

under pandemic conditions, and 30.4% ( $n = 7$ ) were reported to be unsuitable.

Before the pandemic period, 13.0% ( $n = 3$ ) of dysphagia clinics used tele-health applications, and 52.2% ( $n = 12$ )

**Table 3** The protective equipment used while performing dysphagia evaluations during the COVID-19 pandemic

	Oral examination ( $n = 15$ )	Non-standardized clinical swallowing evaluation ( $n = 17$ )	Water swallow- ing test ( $n = 10$ )	Volume viscosity swal- lowing test ( $n = 6$ )	Screening test (EAT-10) ( $n = 14$ )	Vide- ofluoroscopic swallowing evaluation ( $n = 9$ )	Fiberoptic endoscopic swallowing evaluation ( $n = 9$ )	Pharyngoe- sophageal manometry ( $n = 1$ )
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Surgical mask	15 (100)	15 (88.23)	10 (100)	6 (100)	12 (85.71)	9 (100)	8 (88.88)	1 (100)
FFP3 mask	11 (73.33)	9 (52.94)	8 (80)	6 (100)	5 (35.71)	7 (77.77)	9 (100)	1 (100)
Glasses	11 (73.33)	10 (58.82)	8 (80)	6 (100)	4 (28.57)	8 (88.88)	9 (100)	1 (100)
Face shield	13 (86.66)	11 (64.70)	10 (100)	6 (100)	7 (50)	9 (100)	9 (100)	1 (100)
Standard gloves	15 (100)	17 (100)	10 (100)	6 (100)	8 (57.14)	9 (100)	9 (100)	1 (100)
Long sleeved gloves	1 (6.66)	1 (5.88)	2 (20)	1 (16.66)	1 (7.14)	1 (11.11)	1 (11.11)	1 (100)
Standard gown	7 (46.66)	7 (41.17)	4 (40)	1 (16.66)	2 (14.28)	4 (44.44)	7 (77.77)	1 (100)
Water-resistant gown	5 (33.33)	5 (29.41)	5 (50)	5 (83.33)	4 (28.57)	4 (44.44)	4 (44.44)	1 (100)
Overshoe covers	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	1 (11.11)	2 (22.22)	0 (0)

**Table 4** The information regarding tele-health applications during the COVID-19 pandemic ( $n = 12$ )

	Number	%
Tele-assessment method		
By phone	1	8.3
Online	8	66.7
Both	3	25.0
Tele-rehabilitation method		
By phone	1	8.3
Online	7	58.3
Both	4	33.3
Recommendations		
Diet change	7	58.3
Food modification	10	83.3
Posture/maneuvers	7	58.3
Exercises	8	66.7
Duration of tele-health session		
0–10 min	0	0
10–20 min	2	16.7
20–30 min	4	33.3
Above 30 min	6	50
Frequency of follow ups		
1–3 days	2	16.7
3–5 days	2	16.7
5–7 days	2	16.7
7 days and above	6	50
Shared material types		
None	2	16.7
Written material	4	33.3
Video	3	25.0
Link	1	8.3
All above	2	16.6
	Mean (SD)	Min–max
Trust for tele-assessment (0–10)	6.41 (2.35)	1–10
Trust for tele-rehabilitation (0–10)	7.16 (2.36)	1–10
Recommendation of tele-health application in the dysphagia management (0–10)	6.16 (2.51)	1–10

used tele-health applications during the pandemic period ( $p = 0.003$ ). The rates of the use of tele-health applications are shown in Table 4. The reported difficulties regarding tele-health applications are internet connection ( $n = 8$ , 66.7%), problems regarding the access to/use of technological devices ( $n = 7$ , 58.3%), communication problems ( $n = 5$ , 41.7%), and language barriers ( $n = 3$ , 25.0%). The reported benefits of tele-health applications are helping more patients ( $n = 8$ , 66.7%), patient safety ( $n = 7$ , 58.3%), safety of the healthcare provider ( $n = 7$ , 58.3%), using a standardized protocol ( $n = 4$ , 33.3%), and psychological support ( $n = 4$ , 33.3%).

## Discussion

The COVID-19 pandemic has caused major worldwide differences in healthcare systems [16, 17]. The system has focused on COVID-19 patients and other urgent cases. Some areas such as dysphagia care and rehabilitation services have been negatively affected by this change. However, dysphagia and its complications have an enormous effect on both patients and caregivers, and early intervention is very important for the dysphagia management process [18, 19]. There are several guidelines in terms of patient selection, when to perform dysphagia evaluation and protection recommendations [7–14]; however, it is also important to portray the current situation of dysphagia clinics both at national and

international levels. The study showed that working conditions, the number of patients, and the total number of evaluations changed throughout the pandemic, and the use of tele-health applications increased.

The response rate of the present study was 47.91%. We planned to reach higher response rates; however, probably the potential participants may have been overwhelmed by the pandemic, and thus, they could not participate in such a study. The findings related to the feelings of the participants may be considered as supportive because clinicians were reported that they were worried about themselves, their families, and the people around them. Therefore, this period of time negatively affected not only clinical practices but also the clinicians' mental and emotional well-being. Studies also confirm our finding and the inference that the pandemic has negative effects on the mental health and well-being of healthcare employees, and individuals in contact with COVID-19 patients have greater stress [20–23].

One of the most remarkable findings in our study was the significant change in working conditions, the number of patients, and the number of dysphagia evaluation methods used. During the peak phase of the pandemic, they worked either in shifts or remotely, or the clinics were closed. Then, all clinicians worked in shifts during the normalization period. The number of patients and the number of dysphagia evaluation methods decreased compared to the pre-pandemic period in relation with the working conditions. As recommended, some COVID-19 screening procedures were followed before performing dysphagia evaluations, and temperature check was the method used most with 60.9%. However, 17.4% of the clinics reported that they used no screening procedures before performing dysphagia evaluations, which is a high rate considering the impact of COVID-19. In addition, 30.4% of the dysphagia clinics were reported to be unsuitable for working under pandemic conditions. Therefore, we recommend COVID-19 screening procedures be used before admitting patients to dysphagia clinics, and working conditions should be improved for both patient and staff safety. The precautions taken while performing dysphagia evaluations seem sufficient, and surgical mask, FFP3 mask, standard gloves, glasses, and face shield were the equipments mostly used, which are also the recommendations of the European Society for Swallowing Disorders [13].

Tele-health is the remote provision of healthcare services and information by electronic technologies, which is an effective and alternative option to provide healthcare services during the COVID-19 pandemic [24, 25]. In the current study, we found that tele-health applications were not a frequently used method in dysphagia clinics; however, its use increased during the pandemic period as expected. The majority of the clinicians used online communication tools (e.g., Zoom, Skype, and Facetime) for both tele-assessment

and tele-rehabilitation. The majority of recommendations was about food modification, and even clinicians recommended diet change (58.3%) via online connection. The majority of the clinicians reported that a tele-health session took about 30 min, they performed follow-up after 7 days, and the material shared most was written material. Besides difficulties in performing tele-health applications in dysphagia management, helping more patients, and patient and healthcare provider safety were the benefits mentioned most. In addition, the trust for tele-assessment and tele-rehabilitation, and recommendation of tele-health application in the dysphagia management were above average. Therefore, tele-health applications may be encouraged under such conditions [10, 13]; however, the opinions of the clinicians who did not highly recommend it should also be noticed. In the literature, the efficacy of tele-rehabilitation in dysphagia has not been shown [26]; therefore, further studies related to tele-health applications in the field of dysphagia management should be warranted.

This study had some limitations. The distribution of the survey and attaining a high response rate during the COVID-19 pandemic were rather difficult despite the use of an online methodology. Because the pandemic has brought extreme challenges on clinicians, reading e-mail messages and responding may have been impossible for the clinicians. Therefore, multi-center studies for wider participation may be designed in collaboration with other dysphagia societies including the Dysphagia Research Society, the European Society for Swallowing Disorders, and the Japanese Society of Dysphagia Rehabilitation. Another limitation was that similar numbers of clinics from different countries could not be included. Multi-center studies with collaboration of other dysphagia societies may also increase the probability of involving similar numbers of clinics from different countries. Therefore, in light of the results of this study, (i) a more comprehensive survey can be created by taking more expert opinions for multi-center studies and (ii) the opportunity to evaluate the difference between countries in terms of dysphagia practices during the pandemic period may be obtained in future studies.

## Conclusion

The present study provides an overview of the status of dysphagia clinics and procedures practiced at these clinics during the COVID-19 pandemic period. Due to the need for early intervention in dysphagia, the status of dysphagia clinics is very important. In the current study, it was found that working conditions, the number of patients and the number of dysphagia evaluations have decreased throughout pandemic, and the use of tele-health applications increased. Based on the findings of the present study, we recommend

the common use of COVID-19 screening procedures before admitting patients to dysphagia clinics and improving working conditions in dysphagia clinics for both patient and staff safety.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s00455-021-10386-1>.

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## Declarations

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical Approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Informed consent was obtained from the participants who participated in this study.

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