

Challenges and opportunities of tele-speech therapy: Before and during the COVID-19 pandemic

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Elahe Farmani¹, Fatemeh Fekar Gharamaleki² and 
Mohammad Amin Nazari³ 

Abstract

In 2020, with the onset of the COVID-19 pandemic, the treatment and rehabilitation process faced problems and challenges. One of the most efficient therapy approaches in this period was telerehabilitation. Telepractice in speech therapy presents many challenges and opportunities. In this article, we review published articles up to June 2023 and summarize the challenges and opportunities of the COVID-19 pandemic for speech therapy. Researchers and clinicians have found that tele-speech therapy is an effective tool for improving access to high-quality services and a viable mechanism for delivering speech and language interventions. The results of teletherapy or telepractice during the COVID-19 pandemic were divided into opportunities and challenges. Speech therapy has moved toward telerehabilitation to improve treatment competence during the pandemic. Finally, teletherapy methods were more suitable for speech and language pathology.

Keywords

COVID-19 pandemic, challenges, opportunities, telerehabilitation, speech therapy

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Introduction

Speech and language pathologists identify, diagnose, and treat communication, swallowing, and voice disorders in all age groups.¹ The importance of assessment, screening, and early intervention in children at risk for speech, language, swallowing, and academic problems is quite obvious.² Time of intervention is one of the most important factors involved in speech and language acquisition and has a significant impact on speech therapy outcomes.^{2,3} In general, if children at risk for speech and language disorders do not receive early speech therapy, they will face many problems in academic, communication, and occupational functions in the future, resulting in additional costs to society and the families of these children.^{3–6} On the other hand, there are some disorders, such as stuttering, aphasia, and voice disorders, which, if untreated early, may become chronic, resistant to treatment, or require more treatment sessions over time.⁵ These conditions in patients with swallowing

disorders may be life-threatening and lead to death. Therefore, speech therapy sessions should be continuous and begin as soon as possible.^{2,5,7} This article addresses the effects of the COVID-19 pandemic on speech-language pathology and the implementation of telepractice during this period, as well as examines the opportunities and challenges of telepractice in speech therapy. The results of this study will be presented in two separate areas.

¹Department of Speech Therapy, Iran University of Medical Science, Tehran, Iran

²Department of Speech Therapy, Tabriz University of Medical Sciences, Tabriz, Iran

³Hamedan University of Medical Sciences, Hamedan, Iran

Corresponding author:

Fatemeh Fekar Gharamaleki, Department of Speech Therapy, Tabriz University of Medical Sciences, Tabriz 5178857775, Iran.

Email: Fekarf@tbzmed.ac.ir



Design and methods

This paper reviews the literature on the opportunities and challenges of telepractice in speech therapy. Keywords searched include opportunities, challenges, benefits, telepractice, teletherapy, telerehabilitation, intervention, management, speech and language pathology, and speech therapy. We searched English-reported and non-English-published articles in local and international journals from 1990 to 2023 using various databases, including ISI Web of Science, PubMed, SID, Scholar, Scopus, Magiran, and Science Direct. Articles were included in the study if the searched keywords were used in the title, abstract, or keywords section. Then, the related articles were reviewed and synthesized (Table 1). Thus, a list of relevant and eligible papers was extracted. To prevent bias, the articles were extracted by two independent researchers, and if the articles were not included, the reason was mentioned. In cases where there was disagreement between the two researchers, the article was reviewed by a third person. Figure 1 presents all steps of the study at a glance. In this study, we examined the opportunities and challenges associated with coronavirus disease and the role of speech and language pathologists in early evaluation and intervention. This review article and similar articles may be critical and helpful in the planning of future research.

Discussion

Impact of the COVID-19 pandemic on speech therapy sessions

Despite the need for regular speech therapy sessions, conditions such as pandemics may prevent continuous speech therapy sessions, especially face-to-face sessions.¹⁸ Recently, in January 2020, a new type of coronavirus was identified and rapidly spread throughout the world.²⁹ This new species was more contagious than its predecessors and led to upper respiratory tract infections.¹⁹ The World Health Organization sounded the alarm for a pandemic risk of COVID-19 as the disease spreads rapidly.^{19–21,29} As the incidence of COVID-19 increased, the researchers found that the patient's symptoms may remain hidden for several days while the person can carry the virus and easily transmit it to others, so instructions include keeping physical distance, personal hygiene, quarantine of infected people or people at risk of contracting the virus, as well as the prohibition of holding gatherings, were developed and implemented in the communities.²⁰ As a result, many healthcare centers were closed or allowed to continue operating by following physical distance instructions.^{22,23} After the COVID-19 pandemic, most speech and language pathologists' services were shut down or restricted. Speech therapy services commonly require face-to-face sessions of approximately 20–45 min with close contact between the therapist and the patient or his/her family.²² After the

outbreak of the COVID-19 pandemic, health concerns arose especially for therapists, patients, and their families during regular sessions.¹⁹ Most speech therapy clients are children who are young and do not have a high level of cognition to maintain personal hygiene or use protective equipment such as masks.¹⁸ They also have comorbidities and are physically weak, so getting these children infected with the coronavirus can pose serious risks to them.²⁹ Therefore, families may reduce treatment sessions for fear of contracting the coronavirus (either themselves or their children), which affects the outcome of treatment, prolongs the course of treatment, and leaves no definite prognosis.^{19,29} It may be possible to disinfect some common tools used in a speech therapy clinic, but not all equipment and surfaces can be disinfected, and it is possible to transmit the coronavirus through surfaces.³⁰ It is also not possible to hold group therapy sessions in this situation, which may interfere with the treatment of disorders such as aphasia or stuttering.²¹ However, it is impossible to interrupt sessions for many reasons. The families of these children are usually under stress and psychological worries about their child's condition, and this stress and anxiety are exacerbated by the interruption of treatment sessions.^{31,32} Many therapists may still prefer in-person sessions, however, in practice, they cannot use masks in therapy sessions for certain disorders, such as articulation, swallowing, or voice disorders.²³ In these cases, clients should see an articulation placement, or the therapist may need to apply oral sensory stimulation or massage the client's face, which contradicts the consideration of physical distance and the risk of coronavirus. Increases for both therapists and clients.³² Another group of clients is children with hearing impairments who will have some problems if they wear a mask during a treatment session.³¹ However, if the therapist also wears a mask, the child will no longer be able to see the therapist's lips, and as a result, will lose visual information about lip-reading.³³ Therefore, if we consider the condition of patients, it is necessary to maintain the health of therapists, clients, and their families, as well as to prevent the patient from becoming chronic and complicating the treatment process.⁷ Most importantly, given the golden time of speech development, it is necessary to provide a solution to continue treatment sessions during the COVID-19 pandemic condition, which is the same as speech therapy.

Tele-speech therapy: A solution for continuing treatment sessions in the COVID-19 pandemic

During the acute respiratory syndrome pandemic, it was necessary to provide an alternative solution for speech therapy sessions.⁶ One of the solutions for continuing treatment sessions during the coronavirus pandemic was providing online and remote medical services known as "Telerehabilitation" or "Telepractice."^{4,5} Telerehabilitation

Table 1. Studies details included in synthesis.

Study detail	Participant	Study design	Study outcome/conclusion	Reference
1 Mashima PA, et al (2008)	-	Systematic review	Population growth, aging, and medical advances that preserve and prolong life have increased demands for health and rehabilitation services. Recent predictions indicate a shortage of speech-language pathologists and other rehabilitation specialists to provide care for individuals with disabilities. The application of telemedicine and telehealth technologies offers effective solutions to this challenge.	Mashima and Doarn ⁸
2 Theodoros DG (2008)	-	Systematic review	Telerehabilitation has the potential to deliver services in the home or local community via videoconferencing and through interactive computer-based therapy activities. This form of service delivery can optimize functional outcomes by facilitating the generalization of treatment effects within the person's everyday environment and enabling the monitoring of communication and swallowing behaviors on a long-term basis.	Theodoros ⁹
3 Reynolds AL, et al (2009)	-	Systematic review	According to the result of the study, the service delivery results from telehealth were equivalent to traditional face-to-face results. However, telehealth is not a complete replacement for face-to-face service delivery, and further research is required.	Reynolds et al. ¹⁰
4 Mc Cue (2010)	-	Systematic review	Telerehabilitation is a method of delivering rehabilitation services that uses technology to serve clients, clinicians, and systems by minimizing the barriers of distance, time, and cost.	McCue et al. ¹¹
5 Morland, et al (2013)	-	Systematic review	The results of this study provide evidence that clinical video teleconferencing is a cost-reducing mode of service delivery to Veterans with PTSD relative to in-person delivery.	Morland et al. ¹²
6 Grogan-Johnson, et al (2013)	15 children aged 6–10 years	Experimental study	Telepractice has the potential to provide greater access to speech-language intervention services for children with communication impairments. The results of this study supported the use of telepractice in the intervention of children's speech sound disorders.	Grogan-Johnson et al. ¹³
7 Keck M, et al (2014)	-	Systematic review	Advanced technology has limitations in the application of telehealth. Technological adversities were not reported as the cause of the discontinuation of telehealth services by the practitioner or the individual. Audio and visual disturbances were primarily associated with videoconferencing. Supplemental asynchronous technology was widely reported as a solution to real-time instabilities.	Keck and Doarn ¹⁴
8 Jafni TI, et al (2017)	-	Systematic literature review	This review explores the processes involved in telerehabilitation implementation, research themes, and the factors that influence the implementation of telerehabilitation at the pre-implementation stage.	Jafni et al. ¹⁵
9 Burns, et al (2017)	82 referrals (39 standard care and 43 telepractice care)	Randomized Controlled Trial	An equivalent positive increase in quality of life was reported for both groups of standard care and telepractice care.	Burns et al. ¹⁶
10 Wales, et al (2017)	-	Systematic review	Results revealed both telehealth and in-person participants made significant and similar improvements when treatment effects were measured in outcome measures.	Wales et al. ⁴
11 Ebbels, et al (2019)	-	Systematic review	In this study, remote therapy was determined as an efficient and low-cost treatment method for speech and language disorders.	Ebbels et al. ¹⁷
12 Pamplona MC, et al (2020)	53 CCP were treated with TP intervention	Descriptive study	The results of the study suggested that TP can be a safe and reliable tool for improving CA. Considering that the COVID-19 pandemic will radically modify the delivery of healthcare services in the long term, alternate modes of service delivery should be studied and implemented.	Pamplona and Ysunza ¹⁸

(Continued)

Table 1. (Continued)

Study detail	Participant	Study design	Study outcome/conclusion	Reference
13 Khan S, et al (2020)	-	Narrative review	In this study, attention has been paid to the details of COVID-19 and online treatment has been discussed as a treatment option.	Khan et al. ¹⁹
14 Imai N, et al (2020)	-	Opinion paper	Coronavirus can result in a clear and ongoing global health threat and preventive measures and restrictions should be taken.	Imai et al. ²⁰
15 Qu Y-M, et al. (2020)	-	Letter to the editor	The problems caused by the infection of COVID-19 continue after discharge from the hospital and they should be monitored.	Qu et al. ²¹
16 Zulkifli NA, et al (2020)	A 29-year-old Caucasian female	Case report	This paper discusses the neuropsychiatric presentations of coronavirus infections.	Zulkifli et al. ²²
17 Ornell F, et al (2020)	-	Qualitative study	According to this study, it is extremely necessary to implement public mental health policies in conjunction with epidemic and pandemic response strategies before, during, and after the event.	Ornell et al. ²³
18 Lam, et al (2021)	41 Hong Kong Chinese students and 85 parents who received telepractice services	Survey study	Although telepractice is an acceptable alternative service delivery option for providing speech and language therapy services to school-aged individuals, speech-language therapists, and parents must play a more proactive role in telepractice services to facilitate effective communication between clinicians and parents.	Lam et al. ²⁴
19 Walters, et al (2021)	-	Systematic review	In this study, the benefits of telepractice are described, including the accessibility, efficiency, and preference of telepractice in delivering effective speech-language services. In addition, the implementation of telepractice services is outlined, strategies for troubleshooting are described, and two implementation checklists are provided.	Walters et al. ²⁵
20 Serena Micheletti, et al (2021)	9 preschool children	Experimental study	An intensive, parent-oriented, telepractice-based intervention has the potential to increase scores of lexical and syntactic tasks in children with neuromotor and intellectual disorders.	Micheletti et al. ²⁶
21 Kelchner, et al (2021)	-	Narrative review	The article summarizes relevant literature about the use of telepractice in speech-language pathology over the past decade and provides a case-based discussion of how it was and is currently being used to deliver pediatric voice care.	Kelchner et al. ²⁷
22 Kohnen, et al. (2021)	18 children, aged 7–12 years	Experimental study	This study demonstrates that videoconferencing as a telepractice is a promising delivery mode for literacy intervention.	Kohnen et al. ²⁸

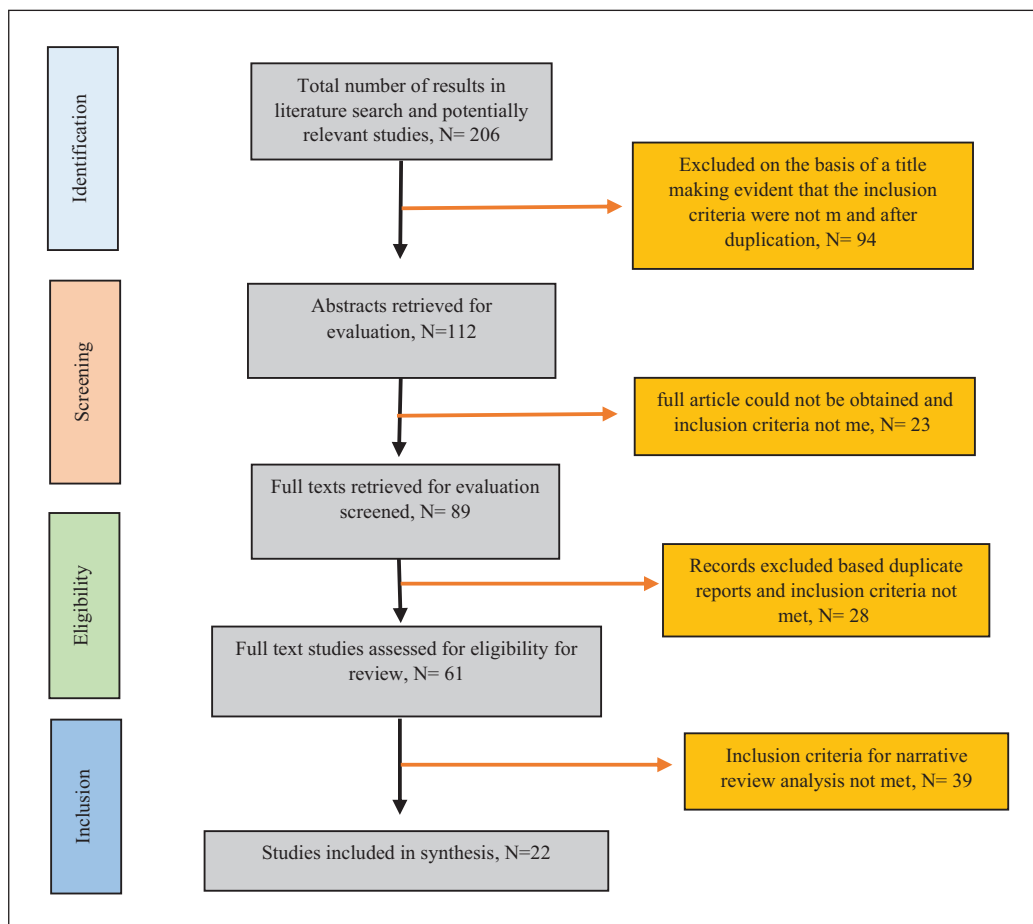


Figure 1. The study steps at a glance.

refers to the application of communication tools and technologies to provide medical services in situations where the therapist and patient are in two separate locations. The history of the use of telepractice dates back to 1997, and since then, it has been used in many fields of medical sciences, such as speech therapy.¹⁹ These services may include training, counseling, evaluation, treatment, and even follow-up after treatment.³³ To conduct telepractice sessions, we need equipment such as a computer, tablet, or smartphone, as well as access to the Internet. According to a published article in 2014, only 9% of speech therapists used telepractice, while 47% stated that they have not used telepractice yet, but would like to use this method in the future.⁵ Telepractice has attracted the attention of therapists in the last decade, especially since the beginning of the COVID-19 pandemic, and we can point to the successful results of telepractice for the treatment of speech and language disorders in published articles.^{10,11,17} In addition, the American Speech-Language-Hearing Association has published guidelines on how to perform telepractice in speech therapy.⁹ According to this guideline, the therapist has to observe ethical principles when conducting teletherapy sessions.¹⁵ In addition, the therapist should consider

the proposed ethical frameworks, observe the principle of safe treatment for the patient, the independence of clients in choosing the treatment method, and be aware of cultural and linguistic variables.^{11,17,34} In the coronavirus pandemic that changed lifestyles and led to telecommuting in most jobs, the only way to continue speech therapy sessions and to maintain the health of therapists, clients, and their families was through tele-speech therapy. However, these changes had advantages and disadvantages. In this study, we explored the opportunities and challenges posed by the coronavirus outbreak in speech therapy.

Opportunities for tele-speech therapy

The coronavirus pandemic created opportunities for telepractice in speech therapy. The most important advantage or opportunity of telepractice sessions was maintaining the health of the therapists, clients, and their families.⁹ Teletherapy was performed in the child's living environment, and the stimuli used in this type of treatment were more natural and tangible than those used during in-person therapy sessions in the clinic.^{4,24,34,35} The family plays a connecting role between the therapist and the child in the

treatment sessions and takes most of the responsibility for the treatment.²⁴ The family explains the therapist's instructions to the child and provides an appropriate learning environment that does not cause the child to be distracted.¹⁰ It was an opportunity for the family to be involved in the treatment process and improve their self-confidence.^{4,24,35-37} Telerehabilitation avoids wasting time and extra costs.^{12,36-38} In addition to financial costs and energy waste, it also avoids time commuting to the clinic as well as waiting in line for in-person sessions leads to client fatigue and, as a result, reduces the client's efficiency in the session. As mentioned, family expenses are ultimately reduced.³⁶ Therefore, reducing costs makes it possible to continue speech therapy sessions, especially for low-income patients. In addition, in-person sessions may be challenging for some parents due to their busy schedules, having a child, or high-risk patients in the family.⁸ Therefore, in this situation, they may prefer to reduce the number of treatment sessions for their child. This problem can also be solved using telepractice.³⁸ Treatment sessions can be held without spending much time. During this period, the risks of road accidents for the families of the clients are also reduced. Another opportunity created following telepractice is the use of professional therapists in any geographical location.^{16,17,25,26,38} In some cities, it was not possible to provide some interventions because of the lack of a professional therapist and the distance of the place of residence from the speech therapy clinic.³⁷ Therefore, telepractice can overcome these problems and provide access to professional therapists for all clients. Another advantage of telepractice is the treatment of articulation disorders without using a mask, thus, the opportunity to treat articulation disorders without the risk of coronavirus is provided for speech therapists.¹⁶

Challenges of tele-speech therapy

Telepractice, despite the advantages and opportunities it provides, also creates disadvantages and challenges in the process of conducting speech therapy sessions. Telepractice, especially in speech therapy, is a relatively novel phenomenon and may still not be sufficiently accepted by clients.⁸ Some families are skeptical about the consequences of this treatment and refuse to use it.²⁴ Telepractice requires an appropriate internet connection and security software to protect patient's personal information and minimize the possibility of disclosing patient information. Families need training on the use of telecommunications technology, and there should be a support team to fix hardware or software problems during sessions.^{13,25,26,39} Some disorders requiring oral and laryngeal massages, such as swallowing disorders in premature infants or voice disorders, cannot be treated in this manner.¹² Therefore, telepractice in this type of disorder has limitations. In the assessment of stuttering, its core behaviors are important, and in assessing voice disorder, the

therapist needs to assess the auditory-perceptual characteristics of the voice, such as quality, pitch, and hoarseness.³⁶ These vocal characteristics may change in voice or video calls and may even be affected by an improper Internet connection or software malfunction, resulting in misjudgment and subsequent misdiagnosis.¹⁴ Implementing telepractice requires the child's constant attention and cooperation in front of the screen, which can be challenging for the therapist.¹³ Children who need speech therapy interventions often have attention deficit hyperactivity disorder, and these children do not have enough attention and concentration to sit and receive the content of the sessions through telecommunications.^{27,28,40,41} This challenge also applies to children with cognitive impairments, who may not be proficient in using telecommunications tools, become tired quickly, and may leave speech therapy sessions unfinished.²⁷ During the COVID-19 pandemic, speech and language pathologists in some countries of the world were able to overcome the telepractice problems, and they could perform many therapeutic, and achieve good results with telepractice.²⁸ This important finding came about for two reasons. First, the necessity of virtual platforms was revealed and facilitated for everyone. Second, with face-to-face treatment abandoned because of COVID-19, virtual treatment became available as a substitute for face-to-face treatment under suitable conditions.^{28,40}

Conclusion

Given the effect of the COVID-19 pandemic on all aspects of human health and quality of life, especially treatment and rehabilitation, speech and language pathologists have moved toward teletherapy to compensate for the interruption in traditional methods of treatment by replacing traditional rehabilitation with telepractice. These rapid, extensive changes in speech therapy processes have had consequences for rehabilitation clinics. Consistent with previous studies, the present study found evidence that teletherapy can offer opportunities and achievements to many patients. These changes were accompanied by challenges and weaknesses. The point that is crucial to mention is that tele-speech therapy cannot be a complete substitute for in-person treatment, however, its presence is very helpful. Also, studies indicate a shortage of speech and language pathologists and other rehabilitation specialists to provide interventions for patients.

It should be noted that with careful treatment, and financial and research planning, most challenges of telepractice in speech therapy can be turned into effective treatment opportunities. We hope that with the right government and health policies, the necessary substructure will be provided so that we can take better action in the event of similar pandemics in the world.

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Availability of data and materials

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author. The datasets used and/or analyzed during the current study are available.

Contributions

F.F. designed the research. F.F, E.F. gathers the data and summarizes it. M.N and F.F performed the statistical analysis and E.F, M.N, and F.F reviewed the quality of the manuscript and revised it and all the authors read and approved the manuscript.

Declaration of conflicting interests

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Ethics approval and consent to participate

The ethics of the present study (IR.BUMS.REC.1400.054) are evaluated by the Research Council, School of Rehabilitation, and were approved by the Ethics Committee of Birjand University of Medical Sciences (BUMS).

ORCID iDs

Fatemeh Fekar Gharamaleki  <https://orcid.org/0000-0001-8327-9497>

Mohammad Amin Nazari  <https://orcid.org/0000-0002-7730-223X>

Significance for public health

This paper is a narrative review that summarizes available information, articles, and recommendations on the effects of the COVID-19 pandemic on speech-language pathology and the implementation of telepractice in this period and it also examines the opportunities and challenges of telepractice during speech therapy. The results of this study will be presented in two separate areas. Most of the previous studies only focused on the benefits of telepractice, but in this article, we tried to collect and present various aspects of opportunities and challenges. We have tried to focus on the COVID-19 pandemic and provide appropriate assessment and treatment options for speech and language pathologist's interventions.

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