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The impact of the COVID-19 pandemic on the provision of speech therapy services in Bosnia and Herzegovina

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Introduction. A newly discovered SARS-CoV-2 virus that causes an infectious disease called Coronavirus Disease 2019 (COVID-19) has spread around the world. *Objectives.* The study aims to explore the impact of the COVID-19 pandemic on speech-language pathologists (SLPs) clinical service delivery. Accordingly, this study aims to determine which modifications were used in the provision of speech-language pathology (SLP) services and which procedures were used by SLPs in their clinical practice in Bosnia and Herzegovina (B&H) during the third pandemic wave. The second aim of the study was to analyze how many SLPs from B&H used telepractice and what are the barriers to performing this type of work. *Methods.* The study included 107 SLPs, who voluntarily joined the survey, after sending the questionnaire directly to the e-mail or placing the questionnaire in online SLPs groups. The survey comprised questions to assess participants' demographics, personal protective equipment, procedures, provision of telepractice, and barriers and limitations to telepractice implementation. *Results.* Results showed that 93.4% of SLPs reported they use measures to prevent and control the COVID-19 pandemic. Only 28% of SLPs used telepractice in their work, which is a very low rate. The majority of SLPs (59.2%) reported that they did not receive the appropriate education about using telepractice. *Conclusion.* The COVID-19 pandemic led to a change in service delivery by SLPs requiring them to modify their work or to provide services through telepractice.

Keywords: speech-language pathology, COVID-19 pandemic, telepractice, personal protective equipment

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Introduction

A newly discovered SARS-CoV-2 virus that causes an infectious disease called Coronavirus Disease 2019 (COVID-19) has spread around the world (Cui et al., 2019). The disease endangered human lives and caused mortality, and various problems such as quarantine, social exclusion (Bejaković et al., 2021), and the obligation to use protective tools (Chandra et al., 2020) negatively influenced different jobs and services, including rehabilitation services. The disease has also hampered the provision and services of speech-language pathologists (Tambyraja et al., 2021). Speech-language pathologists (also called SLPs) are experts who work with people of all ages and prevent, assess, diagnose, and treat many types of communication and swallowing problems such as problems with speech sounds, language, social communication, voice, fluency, feeding and swallowing (American Speech-Language-Hearing Association [ASHA], 2021a).

The proclamation of a pandemic due to the spread of COVID-19 affected a change in service delivery by health professionals who had to adapt to the changes and provide their services via telepractices and use other modifications during the pandemic. SLPs also had to adopt new approaches to their professional activities.

Employers sought to set recommendations to prevent COVID-19 transmission for the safety and well-being of their employees as well as their families. The Centers for Disease Control and Prevention (CDC, 2019) has adopted Guidelines for Wearing Masks. Three types of face masks meet the standard of medical protective equipment: 1. surgical mask, 2. N95 respirator, 3. elastic respirator that covers half of the face. N95 masks are recommended for wearing during aerosol generation procedures, which the CDC (2019) defines as medical procedures that are "more likely to generate higher concentrations of infectious respiratory aerosols compared to coughing, sneezing, speech, or breathing" and result in "uncontrolled respiratory secretion". Higher-level respirators, such as elastomeric respirators that cover half of the face, are also recommended (ASHA, 2020).

Several studies showed that SLPs effectively delivered therapy via telepractice for children with various communication disorders (Houston, 2014). It can be used as the only service delivery model or as a complement to work in person. Investigation of the usefulness of using communication technology in SLP practice has been conducted since the 1970s (Vaughn, 1976; Wertz et al., 1992). It is not a new field of research because the rapid growth of information technology has long influenced the emergence of a broad professional interest in this model of service delivery. Theodoros (2012) stated that a new era is coming in the SLP practice, leading us towards innovation and change as we move forward into the 21st century. Accordingly, different professional associations have been initiated and developed guidelines for the use of telepractice in SLP (Speech Pathology Australia, 2014).

American Speech-Language-Hearing Association (ASHA) is one of the associations that supports the use of telepractice in working with clients with speech, language, and hearing disorders. ASHA defines telepractice as " the delivery of services using telecommunication and Internet technology to remotely connect clinicians to clients, other health care providers, and/or educational professionals for screening, assessment, intervention, consultation, and/or education. It is an appropriate model of service delivery for audiologists and speech-language pathologists and may be the primary mode of service delivery or may supplement in-person services" (ASHA, 2021b, p.1).

Firstly, the intention was to use telepractice to overcome barriers such as distance from the place of residence to the place of treatment, problems with patient transport, the discrepancy in the work schedule of the patient or family member, and an insufficient number of experts in certain areas (ASHA, 2005b, as cited in Tucker, 2012), to be provided with continuity of treatment upon return from the hospital (Turolla et al., 2013) and the costs to be significantly lower (Mutingi & Mbohwa, 2015).

Using telepractice is being analyzed for different speech and language disorders. It has been investigated through analysis of assessments or treatment services in an online and face-to-face environment. Positive results are obtained for a wide range of speech and language disorders: aphasia (Macoir et al., 2017; Theodoros et al., 2008); articulation disorders (Grogan-Johnson et al., 2013; Waite et al., 2006); language disorders (Waite et al., 2010a); motor speech disorders (Constantinescu et al., 2010; Hill et al., 2006, 2009); autism (Boisvert et al., 2010; Gibson et al., 2010; Iacono et al., 2016; Parmanto et al., 2013; Sutherland et al., 2018, 2019); specific learning disorder (Hodge et al., 2019a, 2019b; Waite et al., 2010b); fluency disorders (Carey et al., 2014; Kully, 2002; Lewis et al., 2008; O'Brian et al., 2008; Wilson et al., 2004); swallowing disorders (Cassel, 2016; Malandraki et al., 2011; Perlman & Witthawaskul, 2002; Ward et al., 2007), voice disorders (Halpern et al., 2012; Mashima et al., 2003; Theodoros et al., 2006; Tindall et al., 2008; Towey, 2012). The results of these studies had a positive effect on SLP service during the COVID-19 pandemic because it enabled SLPs to implement telepractice in their work in line with evidence-based practice.

Although studies on the success of telepractice have been conducted years before, the COVID-19 pandemic has impacted every aspect of human life and required completely new SLP service delivery. Telepractice was explored as a possibility, and now it has become an everyday practice. Therefore, the need for new studies on using telepractice among SLPs during the COVID-19 pandemic was recognized (in India: Aggarwal et al., 2020; in Hong Kong: Fong et al., 2021; Lam et al., 2021; in Croatia: Kuvač Kraljević et al., 2020; in the United States: Sylvan et al., 2020).

SLPs redirected their services to telepractice during the COVID-19 pandemic with a generally positive attitude towards its use (Aggarwal et al., 2020). Barriers to clients' refusal of therapy delivered via telepractice included the lack of equipment, insufficient independence, and doubts about its effectiveness (Kuvač Kraljević et al., 2020). Although there was a positive attitude toward telepractice, face-to-face service was preferred by parents and SLPs (Fong et al., 2021; Lam et al., 2021). The problem was that most SLPs had no previous experience (Sylvan et al., 2020) and training in it (Fong et al., 2021). It was concluded how important is was for SLPs to be trained to provide telepractice to increase the quality of these services (Tohidast et al., 2020) and reduce low self-esteem among SLPs about using this new model of work (Sylvan et al., 2020).

Given the virus has spread around the world, the need and importance of personal protective equipment (PPE) in the provision of services of healthcare workers, including SLPs, has been recognized. This study aims to determine which modifications were used in the provision of SLP services and which procedures were used by SLPs in their clinical practice in Bosnia and Herzegovina (B&H) in order to protect their health during the COVID-19 pandemic. Futhermore, as the COVID-19 pandemic indicated using telepractice as new SLP services delivery, the second aim of the study was to analyze how many SLPs from B&H used this model of work, what their experiences, competences, and future expectations about providing telepractice were, and also barriers to performing this type of work. Tucker (2012) noted that "telepractice is still in its infancy, and research into factors of benefits and barriers must be conducted", which became even more important because of the COVID-19 pandemic.

The following questions have been analyzed: What PPE SLPs used in providing SLP services face-to-face; Which procedures SLPs used in their clinical practice; How many SLPs started using telepractice as a model of work because of the COVID-19 pandemic; How was the telepractice organized; What were the barriers to using telepractice.

Methods

Participants

The research sample comprised 107 SLPs from B&H, who voluntarily joined the survey after sending the questionnaire directly to their e-mail addresses or placing the questionnaire in online groups. By completing the questionnaire, the respondents gave their consent to participate in the study. The SLPs belonged to different age groups, with the majority under 40 years of age (86.7%) and with working experience of more than 5 years (55.1%). They came from various geographic settings, usually from urban areas (75.7%), and worked within different systems of employment, both public and private. Most were working full-time (85.0%) and seeing more than 20 patients

per week (66.3%). Only 29.0% of SLPs used telepractice in their work. Less than half of SLPs had COVID-19 positive tests, and 55.1% of them had had a vaccination. Sociodemographic details of the participants are presented in Table 1.

Table 1

Socioemographic characteristics of survey participants

Variable	Groups	*N* (%)
Gender	Female	91 (85.1)
	Male	16 (15.0)
Age group	20-25	25 (23.4)
	26-30	31 (29.0)
	31-40	37 (34.6)
	41-50	12 (11.2)
	51-60	2 (1.9)
Years of working experience	0-5 yrs.	58 (54.2)
	6-10 yrs.	25 (23.4)
	11-20 yrs.	19 (17.8)
	21-30 yrs.	5 (4.7)
Geographic setting	Urban	81 (75.7)
	Suburban	16 (15.0)
	Rural	10 (9.3)
System of employment	Health care	36 (33.6)
	Education	46 (43.0)
	Private practice & NGO	24 (22.4)
	Social	1 (0.9)
Hour	Full-time	91 (85.0)
	Half-time	7 (6.5)
	Other	9 (8.4)
Number of patients per week	< 10	12 (11.2)
	11-20	24 (22.4)
	21-30	30 (28.0)
	> 30	41 (38.3)
Have you used telepractice in your work?	Yes	31 (29.0)
	No	76 (71.0)
Having the COVID-19 positive test	Yes	50 (46.7)
	No	57 (53.3)
Vaccinated	Yes	59 (55.1)
	No	48 (44.9)

Procedure

This study presents the results of a survey conducted in November-December 2021 in B&H, which aims to provide information on SLPs' experiences in clinical service delivery during two years of the COVID-19 pandemic. An online form/survey

was created in the Google Forms application included in the Google Docs office suite. The questionnaires were sent to the e-mail addresses of the respondents or placed in support groups for SLPs. The survey was anonymous and took about 10 minutes to be completed.

Instruments

Three questionnaires have been developed for the purposes of the present study.

The first questionnaire included demographic information, questions about PPE used by SLPs in providing SLP services face-to face, and information about procedures that SLPs use in their clinical practice and procedures established by the institution where they work. To gather both quantitative and qualitative information about the impact of COVID-19 on SLP's work, the survey included 10 demographic-related questions, 11 close-ended questions which provided respondents with predefined answer options to choose from (e.g. Does your institution have procedures in place due to the COVID-19 pandemic) and three open-ended questions (e.g. What would you add from PPE?). Among close-ended questions eight of them were simple yes/no questions, and three were multiple-choice questions about a specific piece of information. On multiple-choice questions, participants were able to select multiple answers and/or provide written responses.

The second questionnaire was prepared for those who used telepractice in their work, with the aim of getting more information about the type of services that SLPs provided via telepractice, their experiences, competencies, and future expectations about providing telepractice. Some questions have been used from the Telehealth Services: Pediatric Provider Survey constructed by Campbell and Goldstein (2021) for their study. The survey included 15 close-ended questions and seven open-ended questions. Among close-ended questions six of them were simple yes/no questions (e.g. Did you provide telepractice before the COVID-19 pandemic?), and nine of were questions about a specific piece of information (e.g. What is your level of expertise in providing telepractice before a pandemic: unprofessional; a little professional; professional; quite professional; very professional). The third questionnaire was developed for those who did not provide telepractice in their clinical work with the aim of detecting potential barriers and limitations to telepractice implementation and how SLPs perceived its benefits. Different questions have been developed, such as 10 close-ended questions, five of which were simple yes/no questions (e.g. Would you like to use telepractice?) and five were questions about a specific piece of information (e.g. Do you think that with the use of telepractice you would: Facilitate your work during a pandemic; Make your work difficult during a pandemic; Facilitate your work whether it is a pandemic or not; Allow clients from distant places to be involved in therapy; Enable cost reduction for those living in remote places; Increase access to speech therapy for more users). There was only one open-ended question (What are the reasons why you do not use telepractice).

Concerning the open-ended questions, the same procedure was used as in the study conducted by Sylvan et al. (2020). The research team analyzed all responses and gave them a code. Each open-ended question was put into its tab within Excel and read by each member of the research team who familiarized themselves with it to find the main categories to be used as the codes. A combination of open coding and codes derived from the study's conceptual framework (Maxwell, 1996; Strauss & Corbin, 1998, all cited in Sylvan et al., 2020) was used for developing codes. All members of the research team made a consensus about the identification of codes and the connection of responses to adequate codes. When the coding process was finished, the percentage of responses for open-ended questions, which included the appropriate codes, was analyzed.

Results

Procedure in SLPs work during the COVID-19 pandemic

Survey participants were asked about the procedure used in work during the COVID-19 pandemic, PPE, and modifications and changes in providing SLP services during the pandemic. The results showed that 93.4% of clinicians reported they had procedures in place due to the COVID-19 pandemic, with using measures for epidemic prevention and control as the most common. SLPs were asked to determine changes in their work due to the COVID-19 pandemic. The majority of them stated that they applied measures for epidemic prevention and control, and 29.0% of them started to use telepractice. Some of them noted that they did not conduct group work anymore, changed the way of work itself, they educated more parents, reduced the number of clients, or shortened the length of treatment. The mostly used PPE were a surgical mask, gloves, visor, and canvas mask. More than half of the participants thought the equipment they used protected them enough from the virus while working with clients, while 48.1% of respondents did not think that this equipment was enough, but mostly without any idea what they would add. The majority of respondents answered that those entering their institutions were being screened for COVID-19, some of them answered about temperature measurement, self-reporting of symptoms, and some of them about statement of contact with a person who had COVID-19. Antigen tests, PCR tests, evidence of vaccination and nasal swab have been rarely required. In almost all cases SLPs answered that their clients did not need to have testing or vaccine certificates to get their services. More than half of the respondents noted that the number of patients decreased due to the pandemic, mostly decreasing to less than five patients per week. Most SLPs answered they did not shorten working hours because of COVID-19 and did not have a forced annual leave, and 74.5% of them did not transfer to other jobs. More than half of the respondents answered that parents were involved more in working with their children than before the COVID-19 pandemic.

Table 2

Personal protective equipment and procedures used by SLPs in their clinical practice

Questions	Answers	*N* (%)
Does your institution have procedures in place due to the COVID-19 pandemic?	yes	99 (93.4)
	no	7 (6.6)
What do the procedures require?	measures for epidemic prevention and control (use of PPE, constant disinfection of materials, washing hands frequently, distance, temperature measurement)	88 (83.0)
	online therapy	6 (5.7)
	other	5 (4.7)
	there are currently no procedures	7 (6.6)
What have you changed in your work due to the COVID-19 pandemic?	applying measures for epidemic prevention and control	40 (37.4)
	more education of parents	7 (6.5)
	the way of work itself	9 (8.4)
	reduced number of clients	6 (5.6)
	shorten the length of treatment	4 (3.7)
	do not conduct group work	10 (9.4)
	using of telepractice	31 (29.0)
Protective equipment	surgical mask	84 (32.9)
	canvas mask	36 (14.1)
	FFP masks	10 (3.9)
	gloves	50 (19.6)
	gown	8 (3.1)
	visor	46 (18.0)
	glasses	2 (0.8)
	n95 respirator	-
	elastomic respirator	-
	transparent face masks	-
	plexiglass	6 (2.4)
	other	13 (5.1)
Do you think the equipment you use protects you enough from viruse while working with clients?	yes	55 (51.9)
	no	51 (48.1)

Questions	Answers	*N* (%)
If you think it's not enough, what would you add?	online therapy	5 (4.7)
	plexiglas/visors/partitions	11 (10.4)
	nothing	8 (7.5)
	mandatory vaccination	4 (3.8)
	distance	2 (1.9)
	other	10 (9.4)
	missing answers	66 (62.3)
Are those entering institution where you work being screened for COVID-19?	yes	89 (84.0)
	no	17 (16.0)
On what way?	temperature measurement	87 (47.0)
	nasal swab	1 (0.5)
	self-reporting of symptoms	40 (21.6)
	statement of contact with a person who has had COVID-19	23 (12.4)
	antigen test	2 (1.1)
	PCR test	2 (1.1)
	evidence of vaccination	7 (3.8)
	other	23 (12.4)
Is the testing or vaccine certificate required for your clients?	yes	1 (0.9)
	no	105 (99.1)
Has the number of patients decreased due to the pandemic?	yes	55 (51.9)
	no	51 (48.1)
On average, how much less patients do you have per week than before the COVID-19 pandemic?	less than 5	88 (83.0)
	5-10	15 (14.2)
	more than 10	3 (2.8)
Did you shorten working hours because of COVID-19, did you have a forced annual leave?	yes	37 (34.9)
	no	69 (65.1)
Have you worked more with parents and involved them more in work with their children than before the COVID-19 pandemic?	yes	66 (62.3)
	no	40 (37.7)
Have you been transferred to other jobs?	yes	27 (25.5)
	no	79 (74.5)

SLPs' Provision of Telepractice

SLPs who used telepractice were asked to express their experiences and future expectations about providing SLP services through telepractice. Participants were asked how many months or years of experience they had in providing SLP services through telepractice. The majority of SLPs had less than

six months of experience in using telepractice. Only 16.1% of SLPs provided telepractice before the COVID-19 pandemic. Most of the respondents did not receive any training on the provision of such services. Before the pandemic, most of the respondents indicated their knowledge in using telepractice as unprofessional, and some of them as a little professional, while from March 2020 to June 2020, only 9.7% indicated to be unprofessional. Before the pandemic, only 16.1% of the respondents provided 20.0% of services through telepractice. In contrast, from March 2020 to June 2020, 45.2% of SLPs reported serving 100% of their clients via telepractice. For those who did not use telepractice in that period, 19.4% of institutions were allowed to provide SLP services by alternative methods (e.g. paper materials given to clients, consultation with parents). Mostly, telepractice was implemented in the house and office. Only 32.3% SLPs answered that during the period from March 2020 to June 2020, clients had the opportunity to choose whether to be included in direct therapy or teletherapy, and more than half of clients were open to both telepractice and direct therapy. Participants used different platforms to conduct telepractice, mostly Zoom, Viber and Skype. Hybrid was the most common type of telepractice. Telepractice was mostly used for speech sound disorders, fluency disorders, literacy disorders, speech and language delay. The most common materials used for telepractice were worksheets and pictures and cards.

The majority of respondents reported they preferred to work in person. Only 3.2% SLPs reported being very successful in conducting telepractice. Most of them were noted to be slightly successful, successful or quite successful. Less than half of SLPs continued to use telepractice after August 2020, but 74.2% of the respondents reported planning to use telepractice in the future. Those who answered that they would not use telepractice in the future said that the reasons for that included the opinion that working in person was more effective and poor cooperation with parents due to insufficient technological resources.

Table 3

Using of telepractice

Questions	Answers	*N* (%)
How many months / years of experience do you have in providing speech therapy services through telepractice?	up to 6 months	13 (41.9)
	1 year	7 (22.6)
	1.5 years	2 (6.5)
	2 years	9 (29.0)
Did you provide telepractice before the COVID-19 pandemic?	yes	5 (16.1)
	no	26 (83.9)
Have you received training on the provision of services through telepractice?	yes	1 (3.2)
	no	30 (96.8)

Questions	Answers	*N* (%)
What is your level of expertise in providing telepractice before a pandemic?	unprofessional	26 (83.9)
	a little professional	5 (16.1)
	professional	-
	quite professional	-
	very professional	-
Taking into account the services you provided before March 2020 (Covid 19), please indicate the approximate percentage of services you provided through telepractice	20%	5 (16.1)
	40%	-
	60%	-
	80%	-
	100%	-
	none	26 (83.9)
From March 2020 to June 2020, did you provide telepractice (at the time of the total closure due to the pandemic)	yes	29 (93.5)
	no	2 (6.5)
The approximate percentage of direct therapy services provided through telepractice from March 2020 to June 2020:	20%	-
	40%	-
	60%	-
	80%	-
	100%	17 (54.8)
	none	14 (45.2)
In the period from March 2020 to June 2020, my employer was:	temporarily closed	6 (19.3)
	fired SLPs	2 (6.5)
	allowed SLPs to go on home visits to provide services	-
	allowed SLPs to work in their workplaces to provide direct therapeutic services	-
	allowed SLPs to provide telepractice	17 (54.8)
	allowed SLPs to provide therapeutic services by alternative methods (e.g. paper materials given to clients, consultation with parents)	6 (19.4)
Indicate your level of expertise in providing telepractice from March 2020 to June 2020.	unprofessional	3 (9.7)
	a little professional	5 (16.1)
	professional	13 (41.9)
	quite professional	10 (32.3)
	very professional	-

Questions	Answers	*N* (%)
During the therapy you provided through teletherapy from March 2020 to June 2020, please indicate where you were:	house	9 (52.9)
	office	7 (41.2)
	school	1 (5.9)
	car	-
	other	-
During the period from March 2020 to June 2020, clients had the opportunity to choose whether to be included in direct therapy or teletherapy	yes	10 (32.3)
	no	21 (67.7)
What was the readiness of your clients to participate in telepractice during the period from March 2020 to June 2020?	clients wanted to participate only in telepractice	10 (32.3)
	clients only wanted direct therapy	1 (3.2)
	clients were open to both telepractice and direct therapy	18 (58.1)
	clients have chosen not to receive any type of services during this period (services have been suspended)	2 (6.5)
	other	-
Which platforms did you use to perform telepractice?	mesinger	3 (5.1)
	viber	12 (20.3)
	skype	8 (13.6)
	times office 365	1 (1.7)
	meet	2 (3.4)
	google classroom	3 (5.1)
	zoom	16 (27.1)
	boom cards	1 (1.7)
	google docks	1 (1.7)
	moodle	1 (1.7)
	whats up	3 (5.1)
	teams	3 (5.1)
	gmail	2 (3.4)
	other	3 (5.1)
What type of telepractice have you used?	synchronous (client interactive – direct work with the client)	9 (29.0)
	asynchronous (forward the material to the client)	4 (12.9)
	hybrid (combination of synchronized and asynchronous)	18 (58.1)

Questions	Answers	*N* (%)
What speech and language disorders have you worked with through teletherapy?	speech sound disorders	28 (32.9)
	speech and language delay	11 (12.9)
	developmental dysphasia	5 (5.9)
	fluency disorders	15 (17.6)
	literacy disorders	15 (17.6)
	language disorders	7 (8.2)
	social communication disorder	2 (2.4)
	motor speech disorders	2 (2.4)
What materials did you use during the telepractice?	worksheets	20 (37.0)
	video	3 (5.6)
	tips for parents	3 (5.6)
	pictures and cards	8 (14.8)
	games	1 (1.9)
	quizzes	4 (7.4)
	picture books	3 (5.6)
	pdf	1 (1.9)
	ppt	3 (5.6)
	boom	1 (1.9)
	youtube	1 (1.9)
	rasturam.com, online school – artrea	6 (11.1)
What form of work do you prefer:	in person	25 (80.6)
	telepractice	-
	combination of telepractice and work in person	6 (19.4)
In your opinion, the results in working with clients are better:	in person	29 (93.5)
	by using telepractice	-
	telepractice and direct work with clients are equally successful	2 (6.5)
How successful was the telepractice you used in working with clients:	was not successful at all	1 (3.2)
	slightly successful	8 (25.8)
	successful	11 (35.5)
	quite successful	10 (32.3)
	very successful	1 (3.2)
Have you provided telepractice since August 2020?	yes	13 (41.9)
	no	18 (58.1)
Will you be providing telepractice in the future?	yes	23 (74.2)
	no	8 (25.8)
If you have indicated that you will no longer provide telepractice: state the reasons why you will not, what made it difficult / impossible for you to provide telepractice:	work in person is more effective	5 (16.1)
	poor cooperation with parents	3 (9.7)
	due to insufficient technological resources	
	I will continue to use telepractice	23 (74.2)

Barriers in using telepractice

For those who did not use telepractice in their work, we wanted to analyze what were the barriers in using telepractice. More than half, 53.9% of the participants would not like to use telepractice at all, although 57.9% of them answered to be familiar with the benefits of telepractice. They think that telepractice allows clients from distant places to be involved in therapy (26.1%), enables cost reduction for those living in remote places (20.5%), increases access to SLP services for more users (20.5%), facilitates their work during a pandemic (14.8%), and facilitates their work whether it is a pandemic or not (7.4%). For 45% of SLPs, the lack of physical contact makes it impossible to conduct adequate therapy, which is the reason why they do not want to use telepractice. The other reasons are: telepractice is too static (16.5%), clients do not want to be involved in telepractice (13.8%), the client cannot be focused on working online as in direct therapy (10.1%), lack of time, due to too many clients, to get acquainted with the technologies and possibilities of telepractice (9.2%). More than half of SLPs (52.6%) think that telepractice would prevent them from being infected with coronavirus and 73.7% of them are not familiar with research that has shown the effectiveness of telepractice. The additional reasons why they do not use telepractice are the following: not receiving proper education on telepractice (21.1%), the employer did not adopt clear procedures for conducting telepractice (16.2%), the employer does not recognize or allow this type of therapy (10.5%), lack of technical support (10.5%), inadequate internet access (10.1%), inadequate computer (9.2%), technical problems that appear for no apparent reason (6.1%), don't have a microphone (5.7%), don't have speakers (5.3%), frequent freezing of video connections (5.3%). The other reasons were problems with the clients' technology: the client does not know how to install the appropriate teletherapy programs (21.9%), the client does not know how to use teletherapy programs (20.6%), inadequate computer (19.4%), and inadequate internet connection (17.4%). The majority of SLPs, 59.2% of them, reported that they did not receive the appropriate education on telepractice and 64.5% of them are not familiar with the programs through which telepractice can be conducted.

Table 4

Barriers in using telepractice

Questions	Answers	*N* (%)
Would you like to use telepractice?	yes	35 (46.1)
	no	41 (53.9)
Are you familiar with the benefits of telepractice:	yes	44 (57.9)
	no	30 (39.5)
	I am not at all aware that telepractice can be used in speech therapy	2 (2.6)
Do you think that with the use of telepractice you would:	facilitate your work during a pandemic	26 (14.8)
	make your work difficult during a pandemic	19 (10.8)
	facilitate your work whether it is a pandemic or not	13 (7.4)
	allow clients from distant places to be involved in therapy	46 (26.1)
	enable cost reduction for those living in remote places	36 (20.5)
	increase access to speech therapy for more users	36 (20.5)
Is the reason why you don't want to use telepractice the following:	the client cannot be focused on working online as in direct therapy	11 (10.1)
	clients do not want to be involved in telepractice	15 (13.8)
	telepractice is too static	18 (16.5)
	lack of physical contact makes it impossible to conduct adequate therapy	49 (45.0)
	lack of time, due to too many clients, to get acquainted with the technologies and possibilities of telepractice	10 (9.2)
	other	6 (5.5)
Do you think that telepractice would prevent you from being infected with coronavirus?	yes	40 (52.6)
	no	36 (47.4)
Are you familiar with researches that have shown the effectiveness of telepractice in working with clients with different speech and language disorders?	yes	20 (26.3)
	no	56 (73.7)

Questions	Answers	*N* (%)
Reasons why I do not use telepractice:	the employer does not recognize or allow this type of therapy	24 (10.5)
	the employer did not adopt clear procedures for conducting telepractice	37 (16.2)
	inadequate internet access	23 (10.1)
	inadequate computer	21 (9.2)
	I don't have speakers	12 (5.3)
	I don't have a microphone	13 (5.7)
	frequent freezing of video connections	12 (5.3)
	technical problems that appear for no apparent reason	14 (6.1)
	lack of technical support	24 (10.5)
	we have not received proper education on telepractice	48 (21.1)
Clients do not have the appropriate technology:	computer	30 (19.4)
	internet connection	27 (17.4)
	they do not know how to install the appropriate teletherapy programs	34 (21.9)
	they don't know how to use teletherapy programs	32 (20.6)
	other	32 (20.6)
Have you received the appropriate education on telepractice:	yes	1 (1.3)
	we had no education on telepractice	45 (59.2)
	the education we had was not enough	29 (38.2)
	the education we had was not adequate	1 (1.3)
Are you familiar with the programs through which telepractice can be conducted?	yes	
	no	27 (35.5)
		49 (64.5)

Disscusion

The goal of this study was to analyze the impact of the COVID-19 pandemic on SLPs service in B&H. The results showed that in B&H, SLPs established a procedure in their work during the COVID-19 pandemic. Changes made in their work included the absence of group work, more education given to parents, reduced number of clients, or shortened length of treatment. The mostly used PPE were surgical masks, gloves, visors, and canvas masks, which was in line with other studies that found more than one type of protection during clinical encounters, with most often mask and gloves used in combination (Kearney et al., 2021).

Kearney et al. (2021) noted that SLPs reported that due to a pandemic, their treatments were more limited in frequency or carried out indirectly by

telephone or teleconference, and potentially, some treatments could be cancelled. In this study, SLPs also noted that the number of patients decreased due to the pandemic, shortened working hours, with more involvement of parents. Chadd et al. (2021) also found that fewer patients have been involved in SLP services since the beginning of the pandemic, which is in line with the results of this study. They also identified several changes, including the adoption of more flexible approaches to service delivery (such as teletherapy) and the inability to provide services to some patients.

The majority of SLPs in B&H had less than six months of experience in using telepractice. Sylvan et al. (2020) also found that the majority of SLPs reported they had never provided telepractice before the COVID-19 pandemic, which is consistent with the ASHA (2020) survey.

The most SLPs in B&H did not receive any training on telepractice, although SLPs need to be trained on how to implement telepractice to increase the quality of these services (Tohidast et al., 2020) and reduce low self-confidence in using this type of work (Sylvan et al., 2020).

During the pandemic, SLPs in B&H reported an increase in using telepractice. It was mostly implemented in the house and office. Participants used different platforms to conduct telepractice, mostly Zoom, Viber, and Skype, while Aggarwal et al. (2020) noted WhatsApp as the most commonly used platform by SLPs.

Hybrid was the most common type of telepractice used by SLPs in B&H. Adams et al. (2021) also reported that patients were redirected due to the COVID-19 pandemic to receive therapies using a hybrid model, which was the most reported type of telepractice in SLP in most publications (Keck & Doarn, 2014). However, SLPs in the USA mostly used synchronous rather than hybrid telepractice, which showed that they were aware that real-time interaction was key to telepractice, but also stated that storage and forwarding technology could also be considered to provide telepractice (Mashima & Doarn, 2008).

Telepractice was mostly used for speech sound disorders, fluency disorders, literacy disorders, and speech and language delay. The same results were reported by Speech Pathology Australia (2014) and Fong et al. (2021). Developmental language disorders and speech sound disorders are most common in the population receiving teletherapy.

The most common materials used for telepractice were worksheets and pictures and cards. The majority of respondents reported they preferred working in person, and the results of working with clients are better in person. In other studies, this way of service has also been preferred by both SLPs and parents (Fong et al., 2021; Lam et al., 2021).

SLPs from B&H, 74.2% of them, reported to plan using telepractice in the future, which is similar to the results obtained by Campbell and Goldstein (2021). Aggarwal et al. (2020) in India also determined the acceptance

of this type of therapy by SLPs and predicted its use in the future. Those who answered that they would not use telepractice in the future said that the reasons for that included the opinion that working in person was more effective, and poor cooperation with parents due to insufficient technological resources. Tenforde et al. (2020) also noted limitations in technology for using telepractice, and Aggarwal et al. (2020) found that the biggest challenges in applying telepractice were network problems and a child's lack of cooperation.

A very small percentage of SLPs in B&H, only 28.0%, used telepractice in their work regardless of the pandemic. In other studies, the increse in using teleparactice was noted in the months after the pandemic began (Aggarwal et al., 2020; Campbell & Goldstein, 2021). SLPs in B&H did not use telepractice before the pandemic, and a very small percentage of them included this type of service in their work during the pandemic.

Given that a very small percentage of SLPs used telepractice in their work, we tried to determine the reason for this, and what barriers disabled them to use this type of therapy, given the fact that during the state of emergency due to the COVID-19 pandemic in B&H many institutions were closed, and the number of services were reduced in health facilities. It is known that COVID-19 can be easily transmitted in case of close contact between people in case PPE, including medical masks, gloves, face shields, and other protective tools, are not used (Sheeren et al., 2020). Therefore, it is very important to keep a distance between SLPs and the client and to use PPE to avoid infection with the coronavirus. Face-to-face communication, observation of speech articulators, establishing eye contact, touching the child, or using special toys to communicate with children increase the risk of disease transmission, making SLP's direct work during the COVID-19 pandemic very risky (Tohidast et al., 2020). In such conditions, telepractice was of great importance for SLPs, and its application would enable the continuation of providing services to clients in these extraordinary circumstances and would reduce the risk of infection and SLPs and clients themselves.

More than half of SLPs in B&H would not like to use telepractice at all. Some of SLPs have been aware of the potential of telepractice to provide access to SLP services to clients in a larger geographical area (Manning et al., 2020; Sutherland et al., 2016), increase access to speech therapy for more users, facilitate their work, facilitate their work during a pandemic, facilitate their work whether there is a pandemic or not (Brady, 2007), but 10.8% of them think that telepractice would make their work difficult during a pandemic.

A study conducted by Kuvač Kraljević et al. (2020) in Croatia showed that the main reasons for the client's refusal of telepractice include lack of equipment or independence and doubts about its effectiveness, which is consistent with the results of this study. The majority of SLPs reported that they did not receive the appropriate education, and they were not familiar with

the programs for telepractice and with research studies that have shown the effectiveness of telepractice in working with clients with different speech and language disorders.

Conclusion

The pandemic due to the spread of COVID-19 led to a change in service delivery by SLPs who had to incorporate changes in their work or provide their services via telepractices. This study showed how lifelong learning is an important and necessary process that every person must undergo in order to more easily adapt to new and unexpected situations in a changing environment (Dragčević Kozjak, 2018). Although Brady (2007) noted that telepractice can alleviate the shortage of SLPs, reduce costs, allow wider connectivity, the least restrictive environment, and may also be a suitable means of SLP service during pandemics and social exclusion conditions, telepractice was something new for SLPs from B&H and most of them could not take advantage of the benefits of technology during the COVID-19 pandemic and protect their health. Another reason for not using telepractice in a big percentage by SLPs from B&H are already noted barriers such as cost, technology issues, lack of professional standards, and lack of data on its effectiveness and cost-effectiveness (Mashima & Doarn, 2008).

This study can serve as a warning to SLPs around the world about the need for constant acquaintance with the evidence-based results in SLPs' work and the need for continuous lifelong learning so they can be best organized to serve clients effectively. It is important to constantly act on promoting various models of SLP services, especially those for which effectiveness has been confirmed (Law et al., 2019), such as telepractice and its positive results obtained for different speech and language disorders in many studies.

This study also provides information about measures for epidemic prevention and control for SLPs in direct work with clients. Often disinfection, hand washing, mask, gloves, temperature measurement, not conducting group work, greater education of parents, reducing the number of clients, and shorter duration of treatment were modifications used by SLPs in B&H. If we consider that more than half of SLPs were not tested positive for COVID-19 although they conducted face-to-face therapy, we can conclude that these measures can be good protective tools for SLPs during the COVID-19 pandemic.

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Uticaj pandemije COVID-19 na pružanje logopedskih usluga u Bosni i Hercegovini

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Uvod: Novootkriveni virus koji uzrokuje zaraznu bolest pod nazivom koronavirus 2019 (COVID-19) proširio se svijetom. *Ciljevi:* Studija ima za cilj istražiti uticaj pandemije COVID-19 na pružanje kliničkih logopedskih usluga. U skladu s tim, ova studija ima za cilj utvrditi koje su modifikacije korištene u pružanju logopedskih usluga i koje su procedure koristili logopedi u svojoj kliničkoj praksi u Bosni i Hercegovini (BiH) tokom trećeg talasa pandemije. Drugi cilj studije bio je analizirati koliko je logopeda iz BiH koristilo telepraksu kao vrstu usluga, ali i barijere u pružanju ove vrste terapije. *Metode:* U studiju je uključeno 107 logopeda, koji su se dobrovoljno uključili u anketu nakon slanja upitnika direktno na e-adresu ili postavljanja upitnika u onlajn grupe logopeda. Anketa se sastojala od pitanja za procjenu demografskih karakteristika učesnika, osobne zaštitne opreme, procedura, pružanja teleprakse, te barijera i ograničenja za implementaciju teleprakse. *Rezultati:* Rezultati su pokazali da je 93.4% kliničara izjavilo da ima procedure za korištenje mjera za prevenciju i kontrolu epidemije. Samo 28% logopeda u BiH koristio je telepraksu u svom radu, što je vrlo niska stopa. Većina logopeda (59.2%) izjavila je da nisu dobili odgovarajuću edukaciju o korištenju teleprakse. *Zaključak:* Pandemija COVID-19 dovela je do promjene u pružanju usluga logopeda koji su morali da modifikuju način rada ili da pružaju usluge putem teleprakse.

Ključne riječi: logopedija, pandemija COVID-19, telepraksa, lična zaštitna oprema

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