

## AUDITORY REHABILITATION DURING THE COVID-19 PANDEMIC – THE PARENTS' PERSPECTIVE

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### Abstract

The Covid-19 pandemic has affected numerous aspects of human existence, thus increasing psychological stress in the overall population worldwide. Healthcare and social support systems have suffered extreme challenges and pressures. The welfare, protection, and rights of socially vulnerable groups, such as children with loss of hearing and their families, were challenged. The system of auditory rehabilitation encountered numerous problems due to the Covid-19 pandemic, because of the compromised access to rehabilitation facilities and therapists. The objective of the study was to investigate the parents' perspective on the influence of the Covid-19 pandemic on auditory rehabilitation. A questionnaire was developed to gather the parents' answers to the research questions. The sample consisted of fifty-one parents of deaf children and children hard of hearing enrolled in the auditory rehabilitation process. The results showed a considerable impact of the pandemic on the accessibility of rehabilitation, with periods of two to three months of complete disruption for most children, due to lockdown. A vast number of parents experienced psychological stress due to those changes, accompanied by the fear of contracting Covid-19 when attending rehabilitation facilities. Most of the parents observed changes in their child's behaviour, and communication difficulties due to face masks during the pandemic. Numerous studies support these findings. The results of our research show that the improvement and an increase in the flexibility of the auditory rehabilitation system are necessary. Auditory rehabilitation should be supported by state-of-the-art technologies (e.g., telecommunication) in order to ensure the continuity of the rehabilitation process and support for hearing-impaired children and their parents, even in extreme circumstances.

**Key words:** deafness, hard of hearing, auditory rehabilitation, Covid-19.

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## АУДИТИВНА РЕХАБИЛИТАЦИЈА ТОКОМ ПАНДЕМИЈЕ КОВИД-19 – ПЕРСПЕКТИВА РОДИТЕЉА

### Апстракт

Пандемија коронавируса је у значајној мери утицала на многе аспекте живота људи и тиме довела до повећања укупног нивоа доживљеног психичког стреса. Системи здравствене и социјалне заштите широм света стављени су под огромни притисак. Посебан изазов био је сачувати права и благостање осетљивих група популације, као што су глуве и наглуве особе и њихове породице. Пандемија је утицала на промене у систему слушне рехабилитације и довела до периодично отежаног приступа рехабилитационим центрима и терапеутима. Циљ истраживања био је да испитамо ставове родитеља о утицају пандемије Ковид-19 на аудитивну рехабилитацију. Како би одговорили на постављена истраживачка питања, користили смо упитник посебно конструисан за потребе овог истраживања. Узорак истраживања чинио је 51 родитељ глуве и наглуве деце која су укључена у процес аудитивне рехабилитације. Резултати су показали да је пандемија у значајној мери утицала на могућност обављања аудитивне рехабилитације, које је била потпуно онемогућена у периоду од два до три месеца. Родитељи су у великом броју истакли да су овакве промене негативно утицале на њихово психичко стање, а значајан број родитеља осећао је страх од заразе приликом одласка на рехабилитацију. Промене у понашању своје деце током трајања ванредне ситуације, као и тешкоће у комуникацији због ношења маски, истакла је већина родитеља, а такве налазе потврђују и резултати других аутора. Резултати нашег истраживања упућују на потребу за већом флексибилношћу система аудитивне рехабилитације и укључивањем савремених технологија (нпр. телекомуникација), са циљем обезбеђивања континуитета слушне рехабилитације и подршке глувој и наглувој деци и њиховим родитељима, чак и у ванредним околностима.

**Кључне речи:** глувоћа, наглувост, аудитивне рехабилитација, Ковид-19.

### INTRODUCTION

Hearing is one of the essential human senses, and it is extremely important for the development of an individual. Early auditory development in a child is the keystone of normal speech-language development (Van Den Abbeele et al., 2005; Author, 2015a, 2016). Severe sensorineural hearing loss (SNLH), present at birth or acquired in early childhood, presents a major burden for healthcare systems globally (Bush et al., 2017; World Health Organization, 2017). The early detection of hearing loss and early interventions implementing amplification and auditory rehabilitation are essential for the uneventful development of these children (Author, 2015b, 2016b). The parents of children with sensorineural hearing loss are confronted with numerous challenges on a daily basis (Sahoo et al., 2020). Cochlear implantation and hearing aids enable speech and language development in those children only if accompanied by continuous auditory rehabilitation (Author, 2015a, 2018a, 2018b).

The Covid-19 pandemic has caused global changes in different aspects of contemporary existence (Videnović et al., 2021), thus inducing a considerable amount of stress in the general population. The parents of deaf children and children hard of hearing were confronted with additional challenges. The Covid-19 pandemic has caused a number of changes in the system of auditory rehabilitation, both in terms of methodology and organisation, along with periodical problems in the accessibility of rehabilitation facilities and therapists (Sahoo et al., 2020). Methodology adjustments included modified rehabilitation access (Völter et al., 2021; Taddei et al., 2021), which was implemented by using online modes of communication or through the direct contact of a child and therapist with the use of protective masks or face shields. Adjustments in organisation regarding accessibility and the dynamics of rehabilitation were implemented in accordance with the epidemiological situation (Dham et al., 2020). A vast number of the publications regarding this topic in the Google Scholar database confirms the importance of the subject. With the use of keywords such as deafness, hard of hearing, auditory rehabilitation, Covid-19, we found more than eight hundred publications regarding this topic, of which six hundred and fifty refer to children. Some of those publications (317) refer to the parents' perspective, while the majority of them (519) refer to therapists' views.

A state of emergency due to the Covid-19 pandemic was declared in Republic of Serbia on the 15<sup>th</sup> of March, 2020 and lasted until the 6<sup>th</sup> of May, 2020 (Report on work of the commissioner for information of public importance and personal data protection in 2020, p.12, 2021). During that period, a complete lockdown was implemented, completely interrupting the on-site rehabilitation of hearing and speech for children with hearing loss. Even though the state of emergency was revoked in May 2020, strict epidemiological measures were implemented throughout the years 2020 and 2021. The accessibility of hearing and speech rehabilitation facilities for children with hearing loss was seriously compromised and limited by those measures. The goal of this study was to investigate the parents' perspective on the effect of the Covid-19 pandemic on the auditory rehabilitation of deaf children and children hard of hearing in rehabilitation centres and schools for children with loss of hearing.

### *METHODS*

The study was conducted within rehabilitation centres and schools for deaf children and children hard of hearing in several cities in the Republic of Serbia (Belgrade, Novi Sad, Jagodina and Niš) in 2021. The parents' consent was obtained in advance, and the survey was completely anonymous. The permission of the Ethical committee of the Faculty of

special education and rehabilitation of the University of Belgrade (no. 295/1, 09/05/2022) was obtained as well.

### *Instrument*

The authors designed a special questionnaire, adapted to the goals and objectives of this study. They used some hints from recent studies (Aschendorff et al, 2020; Ayas et al., 2020; Dham et al., 2020; Sahoo et al., 2020), as well as their personal long-standing experience in the field of speech and hearing rehabilitation of children with loss of hearing in Serbia. The questionnaire was designed for the parents of deaf children and children hard of hearing. The questionnaire, *Auditory rehabilitation during the Covid-19 pandemic* (Appendix), contains seventeen closed-ended questions for parents, with answers given on a 3-point Likert-type scale: *agree*, *partly agree*, and *do not agree*. If parents were not sure how to answer a particular question, they were told to skip that question.

### *Statistical Analysis*

Statistical analysis was performed using the appropriate software (Excel for Microsoft 365, version 2205; SPSS, version 28). Descriptive statistics included frequencies, percentages, contingency quotients for categories, as well as central tendency measures and dispersion measures for numeric data. Inferential statistics such as the t-test for independent samples, the bivariate chi-square test and the Fischer exact test were used as well.

### *The Sample and Independent Variables*

The study sample consists of fifty-one parents – forty-nine mothers and two fathers of deaf children and children hard of hearing involved in auditory rehabilitation. The independent variables in this study included the characteristics of deaf children and children hard of hearing such as: gender, chronological age, age at diagnosis, age at the start of the rehabilitation process, model of amplification and rehabilitation facility. Of the total number of children, thirty-two are boys (62.7%), and nineteen are girls (37.3%).

Table 1 presents the age characteristics of deaf children and children hard of hearing involved in auditory rehabilitation: chronological age, age at diagnosis and age at the start of the rehabilitation process.

Children involved in auditory rehabilitation at rehabilitation centres were younger at diagnosis ( $M=17.21$ ,  $SD=11.13$ ,  $SE_m=2.97$ ) compared to the children in schools for the deaf and hard of hearing ( $M=29.27$ ,  $SD=25.22$ ,  $SE_m=4.15$ ), although the results of the t-test for independent samples did not show a statistical significance for the detected differences ( $t=-1.72$ ,  $df=49$ ,  $p=0.92$ ). The majority of the children were diagnosed with hearing loss at the age of two ( $n=8$ , 15.7%).

Isolated hearing loss was diagnosed in most of the children in this sample (n=39, 76.5%), whereas some of the children had additional disabilities as well (language disorder, cognitive deficit, ADHD, ASD, syndromes) (n=12, 23.5%).

*Table 1. Age characteristics of deaf children and children hard of hearing*

Age (in months)	Rehabilitation facility					
	M	Mdn	SD	SE <sub>m</sub>	Range	
					min.	max.
Chronological age	152.4	181.2	5.83	0.82	24	228
Age at diagnosis	25.96	24	22.79	3.19	1	120
Age at the start of rehabilitation	46.22	40	27.86	3.9	2	120

The average age at the start of rehabilitation was three years and nine months. The majority of the children in this study commenced rehabilitation at the age of six (Mod=72; 19.6%), and most of the children in this study had been enrolled in rehabilitation for more than six years at the time the survey was conducted (68.6%).

Table 2 shows the distribution of the amplification models used by children in this sample, who attend different rehabilitation facilities.

*Table 2. The distribution of amplification model and rehabilitation facility in the sample of children*

Amplification model	Rehabilitation facility			
	Rehabilitation centre		School for deaf children	
Cochlear implant	8	57.2%	10	27.1%
Hearing aids	1	7.1%	17	45.9%
Bimodal amplification	5	35.7%	1	2.7%
None	/	/	9	24.3%
Total	14	100.0%	37	100.0%

Regarding the type of amplification, most of the children are cochlear implant users (n=18, 35.3%) or hearing aid users (n=18, 35.3%), while only six children use bimodal amplification (11.8%). Nine children in this study do not use amplification at all (17.6%).

## RESULTS

### *The parents' perspective on the effect of the Covid-19 pandemic on the accessibility of surdology services*

The authors investigated the parents' perspective on the influence of Covid-19 on the accessibility of audiological services and the result of the survey are displayed in Figure 1.

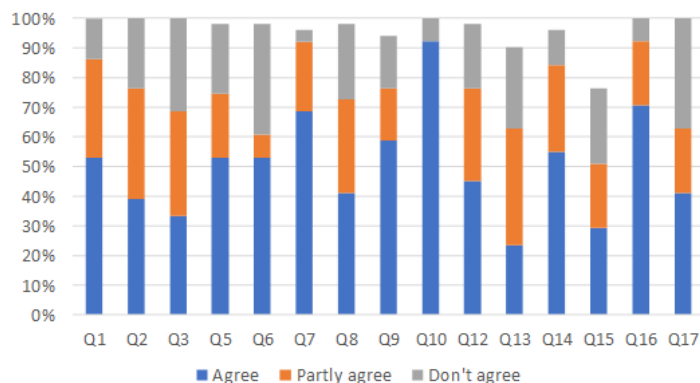


Figure 1. The parents' perspective on the influence of the Covid-19 pandemic on the accessibility of audiological services

The majority of the parents in this survey (53%,  $n=27$ ) agreed that the Covid-19 pandemic had a significant impact on the ability to access rehabilitation centres for auditory rehabilitation (Question 1). On the other hand, 33.3% ( $n=17$ ) partially agreed, while 13.7% ( $n=7$ ) of the parents believed that the pandemic did not affect access to auditory rehabilitation. At the same time, most of the parents completely ( $n=20$ , 39.2%) or partially agreed ( $n=19$ , 37.3%) that it was difficult to access rehabilitation centres for hearing check-ups or device fittings (cochlear implant or hearing aid) due to the Covid-19 pandemic (Question 2), and 23.5% ( $n=12$ ) of the parents stated that they had not experienced such difficulties. The parents' perspective on the availability of auditory rehabilitation for deaf children and children hard of hearing throughout the pandemic was quite diverse in this sample (Question 3). A group of seventeen parents (33.3%) agreed that rehabilitation was accessible all the time, eighteen (35.3%) partly agreed, and sixteen (31.4%) parents noted that rehabilitation could not always be accessed. The break in the rehabilitation process due to the pandemic (Question 4) usually lasted less than two months ( $n=10$ , 62.5%), while in the cases of some children, the break lasted between two and three months ( $n=2$ , 12.5%), or longer than three months ( $n=2$ , 12.5%). Two parents did not answer this question.

Most of the parents in this study ( $n=27$ , 54%) felt insecure and scared during the pandemic, and thought that they might get infected while going to rehabilitation with their child (Question 5). Some of them felt partly insecure ( $n=11$ , 22%), while twelve of them (24%) stated that they did not feel unsafe at all. One parent did not respond to the question.

More than half of the parents reported that their child had access to some type of online rehabilitation ( $n=27$ , 54%), four of them (8%) partially agreed, and nineteen parents (38%) did not have access to online rehabilitation at all during the pandemic (Question 6). One parent did not re-

spond to this question. When parents were asked if they think that the quality of online rehabilitation is the same as face-to-face rehabilitation, the majority of the parents did not agree (n=35, 71.4%), and twelve of them (24.5%) only partially agreed. Only two parents (4.1%) agreed that there was no difference in quality between online and on-site rehabilitation (Question 7).

During the state of emergency due to Covid-19, most of the parents noticed changes in their children's behaviour (n=22, 43.1%), sixteen of the parents (31.4%) partly agree with that, while thirteen (25.5%) parents declared that they did not observe any changes in their children's behaviour (Question 8). Regarding the use of amplification, most of the parents responded that their child used a hearing aid and/or cochlear implant as usual (n=30, 63.8%) during the pandemic. Eight parents (17%) partly agreed that the child used hearing aid and/or cochlear implant as usual, while 9 (19.2%) of the parents did not agree with this statement (Question 9). The majority of cochlear implant or hearing aid users did not experience equipment malfunctions during the pandemic (n=47, 92.2%), while four of the users (7.8%) had technical problems with hearing aids, which they have solved easily. Only one of them had problems with hearing aid repair due to the lockdown for the Covid-19 pandemic (Questions 10 and 11).

Most of the parents fully (n=23, 46%) or partly (n=16, 32%) agreed that they had support from their child therapist during the pandemic, either through telephone consultations or online contact. However, eleven parents (22%) declared that they did not have such an opportunity, and one parent did not respond to this question (Question 12). Most of the parents fully (n=12, 26.1%) or partly agreed (n=20, 43.5%) that contact with a therapist was useful for them and their child, while fourteen (30.4%) did not agree with that statement. Five parents did not respond to this question (Question 13). More than half of the parents found rehabilitation at home quite challenging (agree n=28, 57.1% and partly agree n=15, 30.6%), while 6 (12.3%) of them did not consider that a problem, and three did not answer (Question 14).

The majority of the parents (n=39, 76.5%) said that their child attended online school during the Covid-19 pandemic and found that quite a challenging experience for the child (n=15, 38.5%). While eleven parents (28.2%) supported that opinion partly, another thirteen parents (33.3%) considered online school satisfactory and not much different than school under normal circumstances (Question 15). Most of the parents (n=36, 70.6%) found that the use of face masks heavily affected communication in children with hearing loss, whereas eleven (21.6%) considered it a moderate obstacle. Only four parents (7.8%) did not observe any difficulty in their children's communication (Question 16).

Some parents noted that the changes in rehabilitation practices due to the Covid-19 pandemic influenced their psychological wellbeing

(n=21, 41,2%) and 21.6% of them (n=11) partly agree with that. On the other hand, nineteen parents (37.3%) claimed that those circumstances did not affect their psychological state at all.

#### *The Influence of the Child's Characteristics on the Parents' Perspective*

The authors studied the characteristics of deaf children and children hard of hearing such as gender, chronological age, age at diagnosis, age at the start of rehabilitation, amplification model, and type of rehabilitation facility, and their impact on the parents' perspective. The investigated characteristics can have (direct or indirect) influence on the frequency and scope of the auditory rehabilitation that the child needs, so they can indirectly influence the parents' perception of the scope of the difficulties they encountered during the pandemic. Various inferential statistical methods (the t-test, the bivariate chi-square test and/or the Fischer exact test) were implemented according to the data type and sample size, in order to find a statistical significance of the difference between the groups. The gender of the child, their chronological age, their age at diagnosis and their age at the start of rehabilitation did not affect the parents' perspective on the influence of the Covid-19 pandemic on auditory rehabilitation. However, the amplification model and rehabilitation facility strongly affected the parents' perspective on this subject.

**The amplification model – the parents' perspective.** Fischer's exact test was used to find out how different amplification models affected the parents' perspective on auditory rehabilitation during the Covid-19 pandemic. The results showed a statistically significant difference in the attitude of the parents of cochlear implanted children, who mostly considered that the Covid-19 pandemic affected the accessibility of the rehabilitation centre (agree - 55.6%), and the parents of children with hearing aids, who only partly agreed with this statement (partly agreed - 61.1%). Half of the parents of children who use bimodal stimulation fully agreed that the pandemic affected the accessibility of rehabilitation centres/schools, while the other half of the parents partly agreed. Fischer's test revealed statistically significant differences between the attitudes of parents of children with different amplification models ( $p=0.002$ ). Statistically significant difference were found in the attitude towards accessing rehabilitation centres for hearing check-ups or device fittings as well ( $p=0.014$ ). The parents of children with cochlear implants children mostly declared that they did not have problems with accessing rehabilitation facilities for hearing check-ups or device fittings (do not agree - 58.8%), while the parents of children with hearing aids encountered such problems (agree - 27.7%; partly agree - 50%), as did the parents of children with bimodal fittings (agree - 16.7%; partly agree - 73.3%).



It is interesting that the parents of children fitted with hearing aids felt insecure about potential contagion when visiting rehabilitation facilities (agree - 72%; partly agree - 22.2%) much more than the parents of children with cochlear implants (agree - 33.3%; partly agree - 22.2%) and the parents of children with bimodal fittings (agree or partly agree - 50%). The Fischer's test showed a statistically significant difference ( $p=0.009$ ).

The parents of children fitted with hearing aids mostly claimed that they had access to online rehabilitation (66.7%), unlike the parents of children with cochlear implants (33.3%) and parents of children with bimodal fittings (16.7%). The differences were statistically significant ( $p=0.022$ ).

The previously shown results could be explained by the difference in the type of rehabilitation facility, wherein most children use the same type of amplification. In schools for deaf children and children hard of hearing, most children use hearing aids (or have no amplification), while in rehabilitation centres, most children are users of cochlear implants or bimodal amplification.

The parents of children with cochlear implants stated that their children had been using their implant the same amount of time as before the pandemic (agree - 72.2%), while the parents of children with bimodal fittings or with hearing aids supported that statement to a slightly lesser degree (agree - 66.7%). However, the difference was statistically significant ( $p=0.002$ ). Most of the parents of children fitted with hearing aids considered that their child had opportunities for online support and consultations with a therapist during the pandemic (agree - 66.7%; partly agree - 27.8%), but the parents of children with cochlear implants (agree - 11.1%; partly agree - 44.4%) and the parents of children with bimodal fittings (agree - 16.7%; partly agree - 33.3%) were not that supportive of that claim. Fischer's exact test showed a statistically significant difference ( $p=0.002$ ).

All of the parents of children fitted with hearing aids stated that protective masks presented a considerable obstacle for their child's communication (agree - 88.9%; partly agree - 11.1%), as did the parents of children with bimodal fittings (agree - 50%; partly agree - 50%). Some of the parents of children with cochlear implants did not find masks to be a problem during communication (don't agree - 22.2%). The difference between all groups was statistically significant ( $p=0.025$ ).

**The rehabilitation facility – the parents' perspective.** Fischer's exact test was used to evaluate the influence of the type of rehabilitation facility for children with hearing loss on the parents' insecurity regarding the potential infection with Covid-19. The test showed that the parents of children attending schools for the deaf were more afraid of a potential infection in comparison to the parents of children in rehabilitation centres. The test showed a statistically significant difference ( $p<0.001$ ). However, the parents of children enrolled in the special school for the deaf and hard

of hearing mostly ( $n=27$ , 73%) pointed out that their children had the opportunity to attend online rehabilitation and classes, while most of the children in rehabilitation centres did not have such an opportunity ( $n=12$ , 85.7%). Fisher's exact test showed a statistically highly significant difference ( $p<0.001$ ).

The majority of the parents of children enrolled in rehabilitation in special schools pointed out that they had full or partial online support from therapists during the pandemic (agree or partly agree - 61.7%), while most of the parents of children from clinical rehabilitation facilities lacked such support (don't agree - 64.3%). The difference between those two groups of parents was statistically significant ( $p<0.001$ ).

According to the parents' observations, there was a statistically significant difference (Fischer's test  $p=0.019$ ,  $p<0.05$ ) in daily hearing aid use during the Covid-19 pandemic in favour of the children from clinical rehabilitation centres, as compared to children from special schools for the deaf. The majority of the parents (92.9%) of children enrolled in rehabilitation centres pointed out that their children used their hearing aids daily, in the same manner they did before the pandemic, while only 7.1% of the parents observed that their child did not use hearing aids as much as they had before the Covid-19 outbreak. The parents of children from special schools noted that hearing aid use did not change (45.9%), 21.6% of the parents partly agreed, and 21.6% of the parents noted that their child used hearing aids less than they did before pandemic.

The majority of the parents of children from special schools found rehabilitation at home difficult and challenging (67.6%), or partly agreed with that statement (21.6%), unlike the parents of children from rehabilitation centres, who supported that opinion fully (21.4%), or partly (50%). The difference between those groups was statistically significant (Fischer's exact test  $p=0.026$ ,  $p<0.005$ ).

The parents of children from special schools for the deaf agreed that their children had considerable difficulties in communication due to protective masks (agree - 91.9%, partly agree - 5.4%), unlike the parents of children from audiology rehabilitation centres (agree 14.3%, partly agree 64.3%). The difference between those two groups of parents was statistically significant ( $p<0.001$ ), and could be related to the percentage of children in special schools for the deaf who use hearing aids or bimodal amplification.

## *DISCUSSION*

The Covid-19 pandemic has heavily affected auditory rehabilitation practices and reduced access to audiological services. This study represents the parents' perspective on the impact of the Covid-19 pandemic on the rehabilitation of deaf children and children hard of hearing, the

subsequent challenges the pandemic posed, and the additional psychological burden caused by the effort to provide continuous rehabilitation during the state of emergency.

Our research has shown that the process of auditory rehabilitation in rehabilitation centres and schools for the deaf and hard of hearing was completely disrupted due to the Covid-19 pandemic lockdown for at least two to three months. The parents pointed out the temporary obstruction in the access to cochlear implant and hearing aids fitting and technical support. Numerous studies have produced results congruent with our findings (Kumari et al., 2020; Taddei et al., 2021). Most of the parents of children enrolled in special schools for the deaf and hard of hearing confirmed that online rehabilitation and support from therapists was available (92.1%) but noted that the quality of online rehabilitation was inferior to the quality of on-site rehabilitation. Most of the parents find at-home rehabilitation quite challenging, which has been confirmed by other authors as well (Sahoo et al., 2020; Ayas et al., 2020). Numerous studies have shown that in countries with well-established tele-audiology and tele-therapy systems of support for children and parents, this type of rehabilitation through group video calls (therapist-child-parent) became dominant throughout the pandemic and was an important source of support for children with hearing loss, as well as their parents (Sahoo et al., 2020; Meli et al., 2021; Telmesani et al., 2022). Most of the parents in this study claim that the changes in rehabilitation practices due to the pandemic had a negative impact on their psychological status. A considerable number of parents (73.5%) pointed out the fear of being infected while going to rehabilitation facilities, especially schools for the deaf.

The changes in children's behaviour during the Covid-19 pandemic were observed by the parents in our study, as well as by numerous authors worldwide (Sahoo et al., 2020; Meli et al., 2021; Telmesani et al., 2022; Saxena et al., 2021). The time of use of the hearing aids did not change in most of the children, according to their parents. The findings of our study are incongruent with some other authors, who have claimed that the daily use of hearing aids in children worldwide decreased during the pandemic (Sahoo et al., 2020). The use of face masks caused troubles in communication for deaf children and children hard of hearing, according to their parents (92.2%). Communication was especially problematic for those fitted with hearing aids, while children with cochlear implants or bimodal fittings had less communication issues. Studies have shown that face masks function as a low-pass acoustic filter which interferes with speech, so that their impact on low frequency tones below 1000Hz is negligible, but that the decrease in intensity could be up to 12dB, depending on the type of mask, in the frequency range of 2000-7000 Hz (Saxena et al., 2021; Goldin et al., 2020; Vos et al., 2021). The better speech intelligibility in cochlear implant users in our study could be explained by the

better amplification in the high frequency range provided by cochlear implants, which helps in overcoming the mask effect. On the other hand, troubles in communication of children fitted with hearing aids are caused not only by acoustic attenuation but also by the lack of visual support, which is much more important for children with hearing aids than for those with cochlear implants. Numerous studies confirm our findings (Brown et al., 2021; Cohn et al., 2021; Corey et al., 2020; Goldin et al., 2020; Vos et al., 2021). The authors of those studies point out that face masks and shields impede communication not only in children with hearing loss but also in individuals with normal hearing (Goldin et al., 2020; Vos et al., 2021).

### *CONCLUSION*

The Covid-19 pandemic has had a negative impact on deaf children and children hard of hearing, and their parents in many ways. It is of the utmost importance to identify the negative effects of the pandemic on this population, and to find adequate solutions for those challenges. The results of this study have revealed the need for an increase in the flexibility of the auditory rehabilitation system for deaf children and children hard of hearing, and the need to implement state of the art technologies to increase support for children with hearing loss and their parents. The main limitation of this study is the fact that we did not go into details regarding the access to and the methods used in online rehabilitation provided for deaf children and children hard of hearing from special schools. That would enable us to have better insight into the current situation and opportunities for future actions. Future research should investigate the possibilities and outcomes of various modalities of online rehabilitation for deaf children and children hard of hearing, which are already implemented in some countries. In the future, this should lead to better support for the users and their families, and make rehabilitation accessible even under exceptional circumstances.

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## АУДИТИВНА РЕХАБИЛИТАЦИЈА ТОКОМ ПАНДЕМИЈЕ КОВИД-19 – ПЕРСПЕКТИВА РОДИТЕЉА

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### Резиме

Пандемија коронавируса (Ковид-19) је у значајној мери утицала на многе аспекте живота људи, што је последично утицало и на повећање нивоа доживљеног психичког стреса, који је очигледан у укупној популацији. Истраживања показују да је услед промена изазваних пандемијом Ковид-19 дошло до методолошких и организационих промена у систему аудитивне рехабилитације, као и до периодично отежаног приступа рехабилитационим центрима и терапеутима. Циљ нашег истраживања био је да испитамо ставове родитеља о утицају пандемије Ковид-19 на аудитивну рехабилитацију глуве и наглуве деце у оквиру рехабилитационих центара и школа за глуву и наглуву децу у Србији. За потребе постављеног циља је конструисан посебан упитник који се састоји од 17 питања/изјава, а родитељима су понуђени одговори на тростепеној скали – „слажем се“, „донекле се слажем/не слажем“, „не слажем се“. Узорак истраживања чинио је 51 родитељ глуве и наглуве деце која су укључена у процес аудитивне рехабилитације. Истраживање је показало да је пандемија у значајној мери утицала на могућност обављања аудитивне рехабилитације у оквиру рехабилитационих центара/школа, те да је потпуни прекид у рехабилитацији код највећег броја деце трајао између два и три месеца. Приступ установама ради контроле/подешавања слушног помагала је повремено био отежан, истакли су родитељи. Постојање могућности онлајн рехабилитације/подршке од стране терапеута у већем проценту су истакли родитељи деце из специјалних школа, али су навели и да квалитет такве рехабилитације није био исти као квалитет рехабилитације уживо (92,1% родитеља). Највећи број родитеља сматра да је рехабилитација у кућним условима представљала значајан изазов. Родитељи су у великом броју истакли да су промене које су се десиле у рехабилитационој пракси негативно утицале на њихово психичко стање, а значајан број (73,5%) осећао је и страх од заразе приликом одласка на рехабилитацију, што су посебно истакли родитељи деце која похађају школе за глуву и наглуву децу. Већина родитеља приметила је промене у понашању код своје деце као последицу трајања ванредног стања. Ипак, већина родитеља истиче да су њихова деца временски једнако користила своја слушна помагала. Спроведено истраживање показало је и да су глува и наглува деца искусила тешкоће у комуникацији због ношења маски на лицу (укупно 92,2%) при чему су, према оцени родитеља, веће потешкоће искусила деца са слушним апаратима у односу на кохлеарно имплантирану и бимодално амплификовану децу. Резултати истраживања упућују на потребу за већом флексибилношћу система аудитивне рехабилитације глуве и наглуве деце и укључивањем савремених технологија у циљу пружања веће подршке и деци и њиховим родитељима. Будућа истраживања требало би усмерити ка тестирању ефеката различитих приступа у аудитивној рехабилитацији, који већ годинама уназад представљају саставни део рехабилитационе праксе неких земаља, не би ли се систем рехабилитације глуве и наглуве деце (особа) и подршка њиховим родитељима у још већој мери прилагодили потребама корисника и учинили систем доступним чак и у ванредним околностима.