



Research Article

ONLINE REHABILITATION OF CHILDREN WITH DISABILITIES DURING THE FIRST CORONAVIRUS PANDEMIC WAVE IN VARNA, BULGARIA

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The coronavirus pandemic imposed restrictive public health measures to reduce the spread of the infection in all European countries, including Bulgaria. Among the most affected by the restrictions were children with disabilities as this led to a disruption of their regular service provision. The study aimed to understand if online rehabilitation services in Varna, Bulgaria met the needs of children with neurological disorders during the Covid-19 lockdown.

*Between July and August of 2020, a cross-sectional survey was conducted among parents of children with disabilities who were handled at the Karin Dom Foundation. They were asked to complete a questionnaire regarding the impact of the coronavirus service disruption on the overall rehabilitation strategy and assistance, the influence of online services on the development of their child, and the family's quality of life during the period of May-June, 2020. In a sample of 62 parents and caregivers of children with neurological impairments, the study finds that the cognitive abilities of children are positively impacted by online rehabilitation services as compared to motor-skill and self-care abilities. Due to secondary pressures on all family members, children with neurological impairments may be at "high-risk" for coronavirus impacts and consequences. Our study found that internet rehabilitation programmes may benefit neurologically impaired children. Public health initiatives may promote family-centered treatment for children with neurological diseases by boosting family well-being. This study calls for greater online crisis services for neurologically challenged children. **Biomed Rev 2022; 33: 61-65***

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INTRODUCTION

Globally, the coronavirus pandemic imposed restrictive measures to reduce the spread and the burden of the infection. Yet, such protective measures had both positive and negative consequences for many people as they caused stress, deteriorated mental health, and social insecurity (1). Among the most affected were children with disabilities as the pandemic led to a disruption of the regular dynamics in the provision of social and medical services (2-5). Depending on the extent of disability, children with disabilities may require regular health care interventions and rehabilitation services compared to normally developing children (6). Additionally, due to the COVID-19 lockdown measures, public transport availability, income of caregivers, access to health and rehabilitation facilities, and mental health status were equally challenged (3, 4, 6). For example, during the lockdown in France, 77% of children's medical appointments were canceled or postponed (7); in India caregivers of children with special needs experienced a high incidence of depressive symptoms (8). In the United States as a result of the pandemic, 78.5% of parents of children and adolescents with autism spectrum disorder reported moderate to severe service disruptions (9). Yet, low- and middle-income countries faced greater difficulties in the care of children with disabilities during the pandemic (10).

The coronavirus health crisis affected the parent-child relationship dynamic. Parents had to come across multiple interventions while caring for their children and trying to balance their economic effectiveness and feasibility (10). It is argued the importance of having healthy family interaction to reduce any risks to children with disabilities (9). However, health crises such as COVID-19, and other circumstances such as poor family conditions and socioeconomic environment, lack of public support, and service availability may negatively influence the parent-child relationship and deteriorate children's well-being (11-13). An example is Bulgaria, the lowest resource country in the European Union, which public policies and governmental decisions fail to provide adequate services for children with disabilities (14). Similar to other low-to-middle income countries, Bulgaria did not provide a comprehensive and focused response to the coronavirus crisis, leaving families with children with disabilities and local service providers to look for solutions themselves (14). Thus, the aim of the study is to understand the extent to which online rehabilitation services were an adequate response to the treatment needs of children with disability in Bulgaria

through the perspectives of their parents and caregivers. In particular, the study tests if there were any associations between the frequency and intensity of online consultations and their overall cognitive, motor, and self-dependence status.

METHODS

The Karin Dom Foundation rehabilitation facility treated 90 small children, 65 of whom were on long-term therapy. Only two families, who have children with complicated and extensive support requirements, rejected and persisted with phone communication since they preferred email and phone communication. This was due to worries about personal data leakage related to social networks and other applications. The remaining 63 respondents were qualified to participate in the survey. Three families were receiving online counselling but did not wish to participate in the poll, yielding a 93% response rate. The remaining 25 children had a one-week intensive therapy, a one-time consultation or evaluation, and were not included in this study, because of their short-term therapeutic process. Phone and email invitations were sent to parents. Everyone was aware of the study. Googleforms Surveys was used to conduct the research. Everyone has filled out a participation declaration. Every family had access to the Internet. The system of data collection did not permit re-filling from the same email address.

ONLINE REHABILITATION

The majority of parents and their children were assisted by a multidisciplinary team of professionals that included speech therapists, psychologists, physical therapists, and special educators. The therapy methods, approaches, and implementation strategies used were the same as what children would have received in person. During online therapy sessions, parents were extensively instructed, and demonstrations and training given on how to behave as therapists for their own children. Parents were assisted by all speech therapists, psychologists, physical therapists, and Montessori educators who monitored the implementation of the therapeutic approaches used.

ONLINE SURVEY

All parents filled out a survey on the impact of the coronavirus service disruption on the overall rehabilitation strategy and support, development of their child, and quality of life of the family for the period May-June, 2020.

The survey included six different areas of evaluation. A -

Demographic profile of the family; B - Demographic, health profile of the child and attended rehabilitation services in the community; C - Type of visited consultations and specialists in Karin dom foundation; D- Parent evaluation of child fine, gross motors skills, and self-dependence status; E - Quality of life assessment of the family during the coronavirus pandemic; F - Parent satisfaction and attitude to online rehabilitation therapy

STATISTICAL ANALYSIS

Data was analyzed using Jamovi statistical software v. 2.2.5. Chi-square analyses were used to provide results on the frequency distribution of demographic data. Spearman correlation analyses were used to test the association between frequencies of online rehabilitation sessions and developmental outcomes in areas such as self-care, cognitive and motor-skill development.

RESULTS

Our sample included a total of 62 children and their respective parents or legal guardians. Children's age ranged between 0 to 7 years with the majority of boys (n=24) and girls (n=10) being 3-7 years old. Children in the sample were diagnosed with autism, cerebral palsy, language, or developmental delay, yet the majority were undiagnosed (n=24). The primary caregivers were biological mothers who mostly reported being unemployed before the Covid-19 crisis as well as during the first coronavirus lockdown in the country (Table 1). Families reported having had between 2 and 8 therapy sessions per month (64%); whereas about 34% of them reported having on average 4 therapies per month.

Table 1. Family characteristics

Characteristics	Gender				Total (n)	%	p-value
	Boys (n)	%	Girls (n)	%			
Age range							
0-3y	16	40.0%	12	64.5%	28	45.2%	0.369
3-7y	24	60.0%	10	45.5%	34	54.8%	
Diagnosis							
With diagnosis*	27	67.5%	9	50.0%	38	61.3%	0.151
No diagnosis	13	32.5%	11	50.0%	24	38.7%	

* Diagnoses such as autism, hydrocephaly, cerebral palsy, language and developmental delays

Partial correlation analyses controlling for age and diagnoses revealed positive relations between the number

of monthly treatment sessions in which children took part and different cognitive abilities as assessed and reported as such by their parents (Table 2). In particular, children showed improvement in recognizing colours ($\rho=0.398$, $p=0.002$), following lines ($\rho=0.266$, $p=0.040$), counting to ten ($\rho=0.342$, $p=0.008$), and arranging pictures in order ($\rho=0.276$, $p=0.033$) (see table 2).

Table 2. Association between number of monthly online sessions and improvement in children skills

Cognitive development	Spearman's Correlatoon	Frequency of online consultations/month
Reacts to sound, light, touch	Rho	-0.070
	p-value	0.596
Activates a mechanical toy	Rho	-0.128
	p-value	0.329
Simple activities (song, dance)	Rho	0.194
	p-value	0.138
Groups objects	Rho	0.159
	p-value	0.226
Follows a line with a finger, pen	Rho	0.266
	p-value	0.040*
Recognizes colours	Rho	0.398
	p-value	0.002**
Counts to ten	Rho	0.342
	p-value	0.008**
Takes part in virtual games	Rho	0.189
	p-value	0.149
Arranges pictures in order	Rho	0.276
	p-value	0.033*

Note. controlling for 'Age range' and 'Diagnosis of child'

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Other areas of neuropsychological development, such as gross and fine motor skills, and self-care did not show a significant correlation with the intensity of online consultations apart from a single fine motor skill, such as the ability to draw ($\rho=0.26$, $p=0.048$).

Discussion

The primary aim of this study was to understand how

online rehabilitation services work during coronavirus lockdown periods and what impact they have on children with neurological impairments. The results indicated that the applied online rehabilitation program improved significantly different skills in the cognitive development of children. Similarly, McComas and colleagues found non-traditional service delivery through virtual means to improve treatment, training, and quality of life of children with disabilities (15). Likewise our study, McComas research reports that remote services using virtual reality and the Internet improves children's attention, memory, and spatial skills by creating an interactive audio-video environment and thus providing the child with the opportunity to practice skills and transfer knowledge to the real world.

The results of this study shed light on the need for additional research on the factors that affect the psycho-social well-being of children with neurological impairments. Earlier research conducted by Chen and colleagues on the mental health of parents of children with disabilities indicates that parents' stress isn't directly related to the impairment of the child, but instead to a variety of personal and social factors that come with parenting a child with disabilities (16). Therefore future programs need to recognize parental well-being as an important outcome of early child intervention initiatives. Moreover, programs and practices that focus on the empowerment of families will have to consider using participatory practices that strengthen existing skills and abilities and promote the acquisition of new family competencies (17, 18).

The present study can be considered as a pilot intervention to address the difficulties of children with neurological impairments in Bulgaria during coronavirus lockdowns. Despite its limited scope and sample size, the study highlights the areas of success of online rehabilitation of children with neurological disorders and shows to be a promising alternative to traditional service delivery. More to that, collaborating with parents in developing effective activities and training them to implement evidence-based strategies were essential components of the applied online therapy. Finally, the shifting role of parents into therapists opened a horizon for practitioners to better understand the child-family needs (7) and helped parents and caregivers to learn more about different types of therapy methods and services.

Limitations

The study is cross-sectional and generalizations about the findings cannot be done. Another disadvantage is the lack of

representativeness of the sample because of its homogeneity (i.e. mainly boys, aged 3 to 7 years, from Varna) and selection convenience.

CONCLUSIONS

Children with neurological disorders may fall into a "high-risk" category when it comes to coronavirus effects and consequences due to the additional secondary stressors burdening all family members. Our study showed that online rehabilitation programs could be beneficial for children with neurological impairments. By promoting family well-being public health measures might further increase their support in family-centered care for children with neurological disorders.

The coronavirus pandemic imposed restrictive public health measures to reduce the spread of the infection in all European countries, including Bulgaria. Among the most affected by the restrictions were children with disabilities as this led to a disruption of their regular service provision. Many countries, including Bulgaria, did not provide any focused response to the coronavirus crisis, leaving families with their children together with local service providers to look for solutions themselves. The study aimed to understand how rehabilitation centers, like Karin Dom Foundation in Varna, faced these problems and if online rehabilitation services in such a challenging situation met the needs of children with neurological disorders during the COVID-19 lockdown. In a sample of 62 parents and caregivers of children with neurological impairments, the study finds that the cognitive abilities of children are positively impacted by online rehabilitation services as compared to motor-skill and self-care abilities. This is a subject worth investigating given the possible distance outreach to remote places of such services.

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