

Telerehabilitation in pediatric neurofunctional physical therapy during the COVID-19 pandemics: parent's perception, challenges and contributions

Telerreabilitação na fisioterapia neurofuncional pediátrica durante a pandemia de COVID-19: percepção dos pais, desafios e contribuições

Samara Maria Alves Rodrigues¹ 
Jéssica Soares Feliciano² 
Paula Fernanda Ferreira Coutinho³ 

Dianne Pereira Gonçalves Melo⁴ 
Rejane Vale Gonçalves⁵ 

¹⁻⁴Faculdade Ciências Médicas de Minas Gerais (Belo Horizonte). Minas Gerais, Brazil. samaramaria.fisio@gmail.com, jessicasoares.fisioterapia@gmail.com, pffcoutinho@gmail.com, diannemelo@hotmail.com

⁵Corresponding author. Universidade Federal de Minas Gerais (Belo Horizonte). Minas Gerais, Brazil. rejanevalegoncalves@gmail.com

ABSTRACT | INTRODUCTION: Telerehabilitation is a modality of care provided remotely that was considered a fundamental resource during the COVID-19 pandemic. However, it was a modality not yet experienced by many professionals and family members. **OBJECTIVE:** To describe the perception of parents or guardians of children undergoing physical therapy, about the challenges and contributions of the experience with telerehabilitation performed in an outpatient service during the COVID-19 pandemics. **MATERIAL AND METHODS:** An exploratory cross-sectional observational study carried out with parents or guardians of children, aged between 0 and 12 years old, with any neurological or musculoskeletal health condition in physiotherapeutic treatment by telerehabilitation, from June to August 2021. A questionnaire prepared by the authors with questions about the perception of those responsible, challenges and contributions of telerehabilitation was sent to those responsible through a Google Forms link, by email or mobile messaging app and was self-applied. Descriptive analysis of the data collected was carried out through the frequency of responses from parents or guardians on specific questions. Numerical variables were presented as mean \pm standard deviation and categorical variables as absolute and relative frequencies. **RESULTS:** Eighteen guardians received and answered the questionnaire completely. The mother was the most cited guardian, most children received care twice a week and the most prevalent diagnosis was cerebral palsy. Seventy-three percent of those responsible rated telerehabilitation as above the expected level and with a contribution beyond their expectations. According to them, the greatest contribution of telerehabilitation was the satisfactory motor development presented by the children during the period of social isolation. **CONCLUSION:** According to the parents' perception of the challenges and contributions of the experience with telerehabilitation performed in outpatient service, the benefits seem to outweigh the challenges.

KEYWORDS: Telehealth. Physical Therapy. Motor Skills Disorders. Social Isolation. COVID-19.

RESUMO | INTRODUÇÃO: A telerreabilitação é uma modalidade de atendimento realizado à distância que foi considerada um recurso fundamental durante a pandemia da COVID-19. Entretanto, era uma modalidade ainda não vivenciada por muitos profissionais e familiares. **OBJETIVO:** Descrever a percepção dos pais ou responsáveis por crianças em tratamento fisioterapêutico, sobre os desafios e as contribuições da experiência com a telerreabilitação realizada em serviço ambulatorial durante a pandemia de COVID-19. **MATERIAIS E MÉTODOS:** Estudo observacional transversal exploratório, realizado com pais ou responsáveis por crianças, com idade entre 0 a 12 anos, com qualquer condição de saúde neurológica ou musculoesquelética em acompanhamento fisioterapêutico por telerreabilitação, no período de junho a agosto de 2021. Um questionário elaborado pelas autoras com perguntas sobre a percepção dos responsáveis, desafios e contribuições da telerreabilitação foi encaminhado para os responsáveis por meio de um link do Google Forms, via e-mail ou aplicativo de mensagem no celular, e foi auto aplicado. Realizaram-se análises descritivas dos dados coletados por meio da frequência de respostas dos pais ou responsáveis nas questões específicas. As variáveis numéricas foram apresentadas como média \pm desvio-padrão e as variáveis categóricas, como frequências absolutas e relativas. **RESULTADOS:** Dezoito responsáveis receberam e responderam o questionário completamente. A mãe foi a responsável mais citada, a maioria das crianças recebeu atendimento duas vezes na semana e o diagnóstico mais prevalente foi paralisia cerebral. Setenta e três por cento dos responsáveis avaliaram a telerreabilitação como acima do nível esperado e com contribuição além de suas expectativas. **CONCLUSÃO:** De acordo com a percepção dos pais, sobre os desafios e as contribuições da experiência com a telerreabilitação realizada em serviço ambulatorial, os benefícios parecem superar os desafios.

PALAVRAS-CHAVE: Telessaúde. Fisioterapia. Transtornos das Habilidades Motoras. Isolamento Social. COVID-19.

Introduction

The disease caused by the new coronavirus, called COVID-19, has caused a global health crisis, such that on January 30, 2020, the World Health Organization (WHO) declared a global public health emergency.¹ To slow down the spread of COVID-19, social distancing measures were established that included operating only essential services.²

In order to maintain the provision of health care, the Conselho Federal de Fisioterapia e Terapia Ocupacional (COFFITO - Federal Council Physiotherapy and Occupational Therapy) regulated, through resolution n° 516, of March 20, 2020, the non-face to face service in the modalities teleconsultation, teleconsulting and telemonitoring.³ These modalities were considered fundamental resources during the Pandemic, given their ability to reduce the circulation of individuals, the risk of contamination and propagation of the disease.⁴

Telerehabilitation is a term used to refer to interventions administered at distance by physiotherapists and other rehabilitation professionals to continue providing essential therapeutic care safely.⁵ Although this form of intervention is not new, few professionals used it routinely, as it implies the need for computer and internet access, in addition to communication skills and strategies to assess and propose conducts that would be implemented by parents or caregivers of children with delayed neuropsychomotor development in the pandemic period.⁶⁻⁷

Neuropsychomotor development delay is associated with infancy conditions related to adverse factors in conception, pregnancy and/or childbirth.⁸ Malformations, neurological disorders, prematurity and genetic factors are important causes of delay and/or alterations in child development.⁹ The pandemic added factors that can aggravate or cause motor delay in children, due to the decrease in stimulation and social isolation. Additionally, the decline in motor learning may be related to the absence of physiotherapeutic follow-up during the period in which face-to-face assistance were suspended.¹⁰

Pediatric physical therapy encourages the learning of motor ability and should be directed towards

the promotion of the experience and practice of activities perceived as problematic by children and their parents or caregivers. The purpose is for these activities to be incorporated as early as possible into the motor repertoire of children with delayed neuropsychomotor development.^{8,11}

Therefore, early physiotherapeutic intervention plays a very important role in minimizing the difficulties presented by the child.¹²⁻¹³ Furthermore, family participation in the physical therapy treatment of children is fundamental and has been reinforced during times of isolation.¹⁴⁻¹⁵

Although recently regulated in Brazil, the process of rehabilitation of children with movement disorders, carried out virtually, has already shown positive effects as a possible treatment modality in an early intervention program and has been used worldwide, mainly by occupational therapists.^{16,17} However, little is known about the experiences and perceptions of parents or responsible of children who already underwent face-to-face physiotherapeutic treatment in an outpatient service, about the challenges and contributions of the modality of telerehabilitation care.

Given the above, as many professionals had not yet had the experience of assisting children remotely, little is known about this form of care, what are the challenges and issues to be considered. This knowledge can help to improve telerehabilitation care in order to deliver a service that is adequate to the needs of children and their families and to minimize the possible difficulties encountered. Therefore, the objective of this study was to describe the perception of parents or responsible of children undergoing physiotherapeutic treatment, about the challenges and contributions of the experience with telerehabilitation realized in outpatient service.

Material and methods

Study design

This is an exploratory cross-sectional observational study, carried out with parents or responsible of children in physiotherapeutic follow-up by telerehabilitation at the Physiotherapy outpatient

clinic of the Faculdade Ciências Médicas de Minas Gerais. Study approved by the Research Ethics Committee of the same institution, CAAE 43831320.9.0000.5134. All participants were informed about the research terms, received and digitally signed the Term of Free and Informed Consent, prior to participation in the study.

Sample

Parents and/or responsible of children in physiotherapeutic follow-up by telerehabilitation at the physiotherapy outpatient clinic were selected to participate in this study. Participants were recruited for convenience as long as they met the following criteria: being responsible for a child aged 0 to 12 years old, who had any neurological or musculoskeletal health condition that required physical therapy intervention and participating in telerehabilitation. Parents and/or responsible who attended two or less virtual consultations for telerehabilitation were excluded.

Procedures

Parents or responsible were invited to participate in the study at the end of a virtual session. After clarifying the research objectives and digitally signing the Term of Free and Informed Consent, a previously prepared questionnaire was sent to through a Google Forms *link* and was self-administered. The period for sending and answering the questionnaire was between June and August 2021.

The questionnaire on the perception of parents or responsible, challenges and contributions of telerehabilitation was prepared by the researchers based on a previous opinion survey carried out with trainee academics who had the experience of telerehabilitation during the supervised internship of pediatric physical therapy. The questionnaire included information to characterize the sample, such as, who was responsible for accompanying the child in telerehabilitation, the child's age, sex, and clinical diagnosis. There were also specific questions about telerehabilitation and the contribution of the physiotherapist, which had to be answered on a scale of 1 to 5, where 5 referred to: well above the expected level and contribution beyond expectations and 1 referred

to: well below the expected level and little contribution. The objective questions of the questionnaire are presented together with the results. In addition, the questionnaire was also composed of questions with subjective answers in order to cover the individualities and opinions of parents or responsible. The answers to these questions were analyzed by the researchers and grouped as they were similar. The open questions were: Why did you decide to continue physiotherapy via telerehabilitation during the pandemic period? What was the greatest contribution of this experience of physiotherapeutic care through telerehabilitation? What was the biggest difficulty/challenge with telerehabilitation? What do you think should be improved in telerehabilitation?

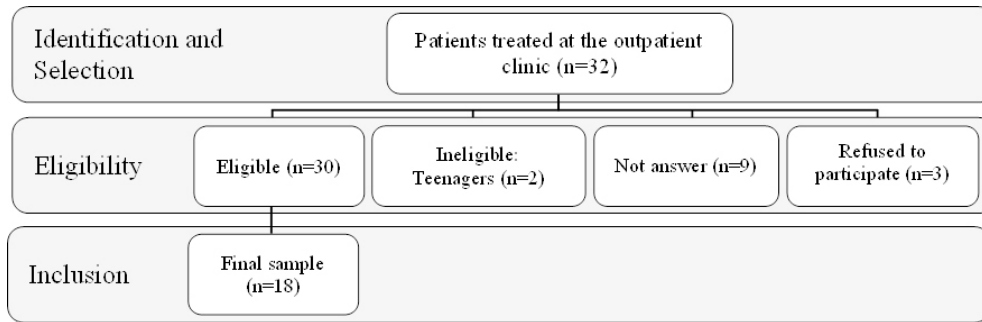
Statistical analysis

Descriptive analyzes were carried out on the data collected through the frequency of answers given by parents or responsible to specific questions. Numerical variables were presented as mean \pm standard deviation and categorical variables as absolute and relative frequencies. The answers to the subjective questions were transcribed in order to include the individualities and opinions of parents or responsible.

Results

Eighteen parents or responsible who accompanied the children during telerehabilitation participated in this study. Flowchart 1 presents the capture and inclusion of participants. The mother was the most cited as being responsible for leading the child in the proposed activities and the weekly frequency of physiotherapeutic care was once a week for five children, twice for nine children and three times for two children. The average age of the children followed up was 4.2 years and 55% were male. The most common clinical diagnoses were cerebral palsy (44.4%) with a predominance of children classified at level IV of the Gross Motor Function Classification System (GMFCS)¹⁸ and epileptic encephalopathy (23%), which included diagnoses such as West syndrome and Lennox-Gastaut syndrome. The sample characteristics are described in Table 1.

Flowchart 1. Identification, selection and inclusion of participants



Source: The authors (2023).

Table 1. Characterization of the sample and the respective children assisted by telerehabilitation

	N (18)
Responsible for conducting the proposed activities	
Mother	11(65%)
Father	2 (12%)
Other (grandmother or aunt)	4 (23%)
Children's characteristics	
Age (1 to 10 years old)	± 4.2
Sex	
Female	8 (45%)
Male	10 (55%)
Clinical diagnosis	
Cerebral palsy	8 (44.4%)
Epileptic syndrome	3 (16.6%)
Myelomeningocele	2 (11.1%)
Genetic syndrome	2 (11.1%)
Perinatal brachial injury	1 (5.5%)
Arthrogryposis multiplex congenita	1 (5.5%)
Delay in motor development	1 (5.5%)

Source: The authors (2023).

The questionnaire on parents' perception, challenges and contributions of telerehabilitation was self-administered and the answers to the objective questions that assessed several ambits of telerehabilitation were analyzed based on the frequency of responses. The questionnaire also subjectively evaluated the opinion of parents, so that it had questions that allowed parents or responsible to discuss the subject.

In general, 45% of parents or responsible rated telerehabilitation with a score of 4 and 28% with the maximum score on a scale of 5 to 1. All participants in the present study agreed that the service carried out virtually contributed to the improvement in child's health, to understand which exercises and/or postures are important and how stimulation should be included in the family's daily routine. Tables 2 and 3 show the frequency of responses by parents or responsible to the questions in the questionnaire.

Table 2. Frequency count of answers to questions in the questionnaire about the perception of those responsible for the teleservice

Questions	Well above the expected level	Above expected level	at the expected level	Slightly below expected level	Well below the expected level
How do you evaluate the treatment realized virtually?	5 (28%)	8 (45%)	3 (17%)	2 (10%)	0 (0%)
How do you evaluate your involvement during the virtual treatment?	5 (28%)	7 (39%)	4 (23%)	1 (5%)	1 (5%)
How do you evaluate the contribution of the physiotherapist regarding the orientation of the exercises to be performed?	12 (67%)	4 (23%)	2 (10%)	0 (0%)	0 (0%)
How do you rate the guidance given to you?	9 (50%)	6 (33%)	3 (17%)	0 (0%)	0 (0%)
How do you evaluate the time spent on telerehabilitation compared to face-to-face care?	3 (17%)	8 (45%)	5 (28%)	2 (10%)	0 (0%)

Source: The authors (2023).

Table 3. Frequency count of answers to objective questions in the questionnaire about the perception of those responsible for the teleservice

Questions	Yes	No
Did the virtual treatment contribute to your understanding of which exercises and/or postures are important and how your child's stimulation should be included in your family's daily routine?	18 (100%)	0 (0%)
Do you think that telerehabilitation had the same quality as compared to face-to-face care?	3 (17%)	15 (83%)
Did you need to change something in your routine to comply with physiotherapy?	13 (72%)	5 (28%)
Did you have difficulties accessing and/or connecting to the internet during the teleservice?	10 (56%)	8 (44%)

Source: The authors (2023).

When discuss about the telerehabilitation process in the context of greater difficulty and challenges, the parents or responsible answered that *"The most difficult thing was being able to conciliate it with routine day-to-day activities"; "Internet connection"; "Divert the attention of the other children"; "Lead the child according to the guidelines"; "Doing the exercises with my daughter alone"; "Being able to perform the exercises concomitantly with the positioning of the cell phone"*.

Regarding what they thought should be improved in telerehabilitation, the parents or responsible answered: *"The audio"; "It was very good, but it does not compare with face-to-face care"; "Use a doll when showing how we should do it in the child" and "Nothing, it was great"*.

Regarding the greater contribution of the experience of physiotherapeutic care through telerehabilitation, they answered that *"It was good because my daughter was not left without care"; "It encourages us to try"; "Orientation of the necessary stimulations"; "Avoid regression of the rehabilitation process"; "The satisfactory development of my son and our learning as parents in this process" and "Valuing professionals, because it is not easy"*.

Finally, when asked about the reason for deciding to continue physiotherapy via telerehabilitation during the pandemic period, parents or responsible replied that " *So that my daughter does not lose everything she had gained in face-to-face care*"; " *To continue the treatment and not cause more damage*"; " *For the stimulation to continue with adequate guidelines*"; " *It's a way to alleviate the lack of service*" " *For everyone's safety*" and " *To clarify doubts about the guidelines that I already had before the pandemic and also to report difficulties that appeared*".

Discussion

In order to maintain the provision of in health care, telerehabilitation was widely used during the COVID-19 pandemic, given its ability to reduce the circulation of individuals, the risk of contamination and the spread of the disease.¹⁹ This study aimed to describe the perception of parents or responsible of children undergoing physiotherapeutic treatment, regarding the challenges and contributions of the experience of continuing the rehabilitation process remotely. In general, a positive perception was observed, with an increase in the understanding of those responsible for how to stimulate the child's development and insert important exercises or postures into the family's daily routine. However, some challenges were also faced, such as internet access or quality and the time spent on telerehabilitation.

The literature points out how the physical health of children with some motor dysfunction can be negatively impacted by social isolation.²⁰ Interruption of rehabilitation activities can contribute to the development of contractures, decline in motor function and also loss of optimal time for intervention in younger children. Telerehabilitation brings the possibility of mitigating these problems and benefiting the health of patients.^{17,21,22} Murphy et al.²³ investigated the impact of the COVID-19 pandemic on the access and satisfaction of parents of children with disabilities to health services. The authors documented that access to telehealth was a predictive factor of overall parental satisfaction, that is, most families who had access to telehealth reported satisfaction with health services. In the present study, the caregivers' perception of telerehabilitation corroborates the literature, since most of them evaluated telerehabilitation as above the appropriate

or expected level. In addition, for parents, the greatest contribution of telerehabilitation was the satisfactory motor development presented by children in the period of social isolation, which represents an important health benefit.

Motor physiotherapy in children with developmental delay, when performed in the child's real environment and with the participation of the family, implies parental involvement during the intervention.²⁴⁻²⁵ In the present study, it was observed that, for parents, the opportunity to receive guidance and carry out rehabilitation in the home environment seems to have been a positive contribution of telerehabilitation. When asked about the contribution of telerehabilitation some parents answered: " *My son's satisfactory development and our learning as parents in this process*" and also " *It was very good for my son's physical and motor development and also contributed to an excellent growth and development in relation to the care he needs*". Thus, the environment in which the child lives influences their motor learning, with home and family being a potential learning and development agent.^{14,25}

The results of this study indicate that telerehabilitation in pediatrics is acceptable for families, as demonstrated by other studies.^{16,17,22} This modality of care allowed for the continuity of service provision in a satisfactory manner, although it brought with it many challenges. In our study, most parents or responsible reported having needed to change something in their daily routine so that telerehabilitation could occur. In addition, more than half confirmed difficulty accessing and/or connecting to the internet during the service. A recent study described a similar result in relation to the internet connection as a challenge during telerehabilitation, being considered by the authors a limiting factor for interfering with the quality of care.¹⁶

With regard to aspects that could be improved in telerehabilitation, most parents showed a certain preference for face-to-face care, as mentioned in the following sentence: " *It was very good, but it does not compare with face-to-face service*". Although dealing with new technologies is an indisputable necessity, it is important to argue that access to technologies is still not a common reality for the entire Brazilian population. In one review, telerehabilitation was considered viable in the treatment of frequent respiratory diseases in children and adolescents.²⁶

However, in the countries where the studies were carried out, access to technology is a reality for a large part of the population, facilitating the implementation of telerehabilitation programs mediated by the internet and other technological resources.²⁶ Thus, there are few studies available regarding the use of telerehabilitation for the specific population of our study, indicating the need for further research on this topic.²⁷ It is worth mentioning that telerehabilitation is not intended to replace traditional rehabilitation practices, and should be considered as an alternative in cases of accessibility difficulties, lack of specialized services in the interior of the state, among others.

With the advancement of vaccination and control of the pandemic, social distancing measures were gradually eased. Although the preference of parents or responsible is for face-to-face care, telerehabilitation seems to have been a modality that met their needs for continuity of stimulation of their children's development. Therefore, taking into account the perception of parents, the challenges mentioned and the contributions that telerehabilitation provided, future studies should evaluate the effectiveness of this modality, the ways of dealing with the challenges inherent to it, as well as ways of implementing rehabilitation in a hybrid, in order to avoid costs with displacement and, mainly, to include the real environment of the child and his family in the rehabilitation process.

This exploratory study has some limitations. The convenience sample including all the families that participated in the physiotherapeutic follow-up by telerehabilitation, did not allow for the inclusion of a control group, which reduces the ability to extrapolate the results found. The questionnaire used had not been previously validated, but was constructed based on questions already experienced by professionals who were assisting children during the isolation period. Other sociodemographic variables such as the education of parents or responsible, support network and changes in routine could have been included in the questionnaire to enrich the discussion of this study.

Conclusion

Telerehabilitation is a modality of care that made essential therapeutic care possible, in a safe way, for children undergoing physiotherapeutic treatment during the period of the COVID-19 pandemic. According to the parents' perception of the challenges and contributions of the experience with telerehabilitation performed in an outpatient service, this modality was considered above the adequate level and the benefits seem to outweigh the challenges.

Author contributions

Rodrigues SMA and Feliciano JS participated in the design of the research question, methodological design, interpretation of results and writing of the scientific article. Coutinho PFF and Melo DPG participated in data collection and interpretation. Gonçalves RV participated in the design of the research question, methodological design, statistical analysis of the research data and interpretation of the results of the scientific article. All authors reviewed and approved the final version and are in agreement with its publication.

Conflicts of interest

No financial, legal or political conflicts involving third parties (government, companies and private foundations, etc.) were declared for any aspect of the submitted work (including, but not limited to grants and funding, participation in advisory board, study design, manuscript preparation, statistical analysis, etc.).

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