

The Impact of the COVID-19 Pandemic on the Rehabilitation of Children with Chronic Diseases and Disabilities

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ABSTRACT

Background: The impact of the pandemic on the daily lives of children with disabilities and their families has been significantly affected by the COVID-19 pandemic. Children face additional health risks, especially mental, behavioral, social and physical. Without regular physiotherapy, children's functional ability can deteriorate, and complications can occur.

Method: A literature review was conducted in the PubMed, PEDro, Google Scholar databases with articles during the period 2019-2020. The terms "pandemic- COVID", "disability", "chronic diseases", "physiotherapy" were searched.

Results: There are online patient support systems and digital platforms for retrieving medical data so that specialists can be informed in real time about the course of chronic diseases that children suffer from and there is an ongoing feedback base to evaluate their progress. In addition to regular clinical evaluation, children need constant access to their rehabilitation and treatment centers and the simultaneous use of telemedicine and telemedicine.

Conclusions: The challenges of online learning combined with the lack of recreational activities that can be done at home require further research and scientific analysis by experts to optimize the situation.

Keywords: pandemic- COVID-19, disability, chronic diseases, physiotherapy

INTRODUCTION

The impact of the pandemic on the daily lives of children with disabilities and their families has been significantly affected by the COVID-19 pandemic. Children face additional health risks, especially mental, behavioral, social, and physical. Without regular physiotherapy, children's functional ability can deteriorate, and complications can occur. We will mention articles that study the physiotherapy and psychological method followed for children with cerebral palsy, children with autism, mental disability, hyperactivity disorder, movement

disorders and disabilities during a pandemic. Most online platforms are not compatible with technology that supports and is used to teach visually impaired or hearing-impaired people ^[1]. The challenges of online learning combined with the lack of recreational activities that can be done at home require further research and scientific analysis by experts to optimize the situation.

METHOD

A search was conducted for randomized studies the impact of the pandemic on psychology and physiotherapy

rehabilitation of children with chronic diseases and disabilities and their families.

Searched Medline databases (via Pubmed), PEDro (Physiotherapy Evidence Datadase) and Google Scholar. The terms used were pandemic- covid", "disability", "chronic diseases", "physiotherapy", with articles during the period 2019-2020.

RESEARCH IN THE FIELD

Tandon correctly pointed out the relationship between COVID-19 and psychiatry, and vice versa ^[2]. Negative emotions, changes in mood, sleep, and diet in children put existing mental health issues at greater risk and can lead to recurrence of mental illness ^[3]. With priority given to medical care for those affected by the pandemic, the closure of mental health clinics is a source of anxiety and fear. In India, for example, about 8 million children aged 0-19 have a physical or mental disability and a quarter of them do not attend any educational institution ^[4]. With the lack of infrastructure and education, in lockdown situations, without assistive technologies, there is great concern for the treatment of these children in countries like India.

The United States, on the other hand, has seven million children between the ages of 3 and 21 taking special education classes at school (National Center for Statistical Education, 2020) ^[5].

The aim of the relevant studies is to identify health care problems related to the well-being of children with disabilities, continuing rehabilitation, medical care and parental concerns during the COVID-19 lockdown.

Initially, as we mentioned, for children attending special education programs, the sudden change in online courses leads to a lack of special education for children, as parents can not replace special education teachers at home and there is a lack of supportive technologies. This affects the development of children with Specific Learning Disabilities (SLD), Down Syndrome and thus the lives of children

with physical and mental disabilities are losing their priority worldwide.

In addition, the development of social skills and social interaction has been one of the most difficult issues for children with Autism Spectrum Disorder (ASD). The current state of social distance and lack of access to outdoor activities is exacerbating their development. Lack of routine and attached uncertainty can make children with Autism Spectrum Disorder (ASD) feel anxious, insecure and have unpleasant feelings.

Stress and anxiety levels have risen far beyond normal. The responsibility of parents, as they play multiple roles in the midst of a pandemic situation, has increased and they themselves are called upon to regulate educational and psychological issues while they are not experts. The stress that parents experience can negatively affect their children. One of the biggest responsibilities of parents with young children is the effective communication and explanation of the current situation, as indifference and lack of parent-child cooperation has long-term effects on the psychological well-being of the child ^[6].

Holmes et al. talk about a system of online clinical and psychological volunteer interventions to control the effects of the 2020 pandemic on children with mental health problems ^[7]. This is an extensive research into the development of mental health interventions, based on positive mechanisms such as altruism, social behavior and enhanced stress resilience due to COVID-19. It refers to the socio-economic elements of policies pursued during the pandemic, to the clinical studies of COVID-19 and how it affects the Central Nervous System and the general respiratory system and to universal human health (MRI, PET, cytological and laboratory studies) and suggests retrieve data from existing databases for patients' electronic health records to provide them with immediate hospital care and real-time ongoing mental health care. It also proposes digital assistance through monitoring platforms for

young people with mental and cognitive problems.

Solutions to the dangerous health consequences of children with physical and mental disabilities have also preoccupied UNICEF, providing resources for these children during the pandemic to keep their physical and psychological well-being safe, such as the Module on Child Functioning, which reflects current thinking about disability and allows the production of internationally comparable data for children aged 2 to 17 with functional difficulties in communication, vision, hearing, learning, mobility, motor skills and emotions ^[9].

METHODS AND RESEARCH APPROACHES

The national research *Enfant Confinement Handicap besOins (ECHO [disability needs for children])* was developed by an interdisciplinary team and has been disseminated in France since April 2020 via email and social media. This online survey was aimed at parents of children with physical disabilities aged 0 to 18 and explored the experiences of children and their families during the lockdown. Social distance for children with developmental and mental disabilities puts them at greater risk for the clinical issues they face. In pre-existing vulnerabilities, COVID-19 disproportionately disrupts their daily lives. Information on child welfare, rehabilitation and family organization was collected and the first 1000 eligible surveys were analyzed.

Children (mean age 9.5 years) had mainly cerebral palsy (42%) or neuromuscular diseases (11%). Lockdown had negative effects on mood (44% of children), behavior (55% of children) and social interactions (55% without contact with other children). Overall, 44% of children stopped physical activity. 76% were educated at home, while 22% continued medical supervision and 48% and 27% continued physiotherapy and occupational therapy respectively ^[10]. The study also reports the significant effects on

the health of children with physical disabilities due to the interruption of medical monitoring and rehabilitation during the lockdown.

Regular health assessments are necessary to support families and ensure continuity of care during a pandemic. Depending on the needs of the individual, physical rehabilitation can range from a simple phone call to family to a home visit when needed. The supply level must be re-evaluated regularly during the lockdown ^[11]. For example, tele-rehabilitation provides a means of treatment sessions that are fully compatible with pandemic mitigation measures. Studies are being conducted on the indirect effects of the pandemic on children with disabilities, as well as the development of innovative patient-centered healthcare management approaches to provide ongoing care and support for these children and their families. Children with developmental disabilities receive treatment and support in special centers, while during the pandemic they continued on a home-based basis, with video and telemedicine sessions. The average waiting time for a family to see a Developmental Behavioral Pediatrician (DBP) is between 6 months and 1 year in most countries ^[12]. These barriers are likely to increase in the midst of a pandemic due to limited medical care to maintain the capacity of the health system for patients with COVID-19 and to reduce the risk of exposure to the virus.

Diagnostic evaluation in children with developmental disabilities often requires close interaction and relationship building with the child. This is more difficult to achieve through telemedicine. The time of diagnosis is very sensitive to the nature of these medical problems and consistent prediction is required because delays in health care, given the lifelong morbidity of these children, will be critical ^[13].

The solutions proposed are to maintain access to diagnostic centers that care for children with developmental disabilities (DBP clinics, child psychiatric

clinics, community intervention services), with safe physical visits of priority children.

At the same time, telemedicine needs constant care during the pandemic, in addition to physical visits, as well as the development of technology infrastructure and education through digital media. Funding care to support these goals should be prompt and established if these children have systemic needs especially in cases where physical therapy and mobility assistance are needed.

Children may not be able to express their anxiety, and their mental health is supported by maintaining routine, including play and recreational activities that are vital. Caregivers can create space for exercise and physical activity both indoors and outdoors where possible^[14].

The effects of COVID-19 extend beyond the pandemic and are expected to modify healthcare in a number of ways. With social distances, telemedicine can become a good channel of communication between carers and patients. Children with cerebral palsy (CP) or chronic lung disease are known to be at higher risk for COVID-19. Staying at home for children with CP is a challenge as limited mobility reduces joint movement. Telemedicine is the primary way of providing services for chronic diseases during the pandemic and is expected to extend beyond the use of the corona virus era^[15]. The benefits of telemedicine vary, with applications beyond the pandemic, depending on the severity, limitations, and telemedicine tools available. The combination of treatments is more accessible with telemedicine, combining different approaches and specialists with the child being in his natural environment. Continuous care is expected to reduce the chances of comorbidity, as has been shown for other chronic conditions. Improved follow-up is vital for young people as children can develop catastrophic complications, such as hip dysplasia.

Digital healthcare along with medicines, including patient-family networks, as responsible drivers for their

health, are a comprehensive care for children with chronic disabilities.

The use of Virtual Reality and Video Games is also a treatment for children with physical disabilities during the pandemic^[16]. People with physical disabilities, such as children with cerebral palsy, can no longer benefit from physical rehabilitation during this indefinite period of COVID. Using state-of-the-art technology in collaboration with a therapist through tele-rehabilitation, we suggest that active role-playing video games and low-cost virtual reality are a promising home-recovery operation in a global pandemic. This treatment, integrated into a home treatment program, provides a means of recovery. A team of experienced physicians, researchers and leaders in the outpatient health program have proposed tele-rehabilitation as a promising strategy for maintaining rehabilitation services during the pandemic^[17]. Tele-rehabilitation is defined as the provision of rehabilitation services through telemedicine methods and techniques^[18]. This is a health strategy for low- and middle-income countries and remote areas with limited access to rehabilitation services^[19]^[20]. This will not only benefit children with physical disabilities to maintain social contact with their therapist and maintain the improvements that have already been made, but could also reduce the burden on parents. These technologies are highly accepted by pediatricians for the dynamic features offered by integrating children into tele-rehabilitation. Benefits include a rich, multimodal training environment in which high numbers of repetitions can be achieved and provide the opportunity to promote practices beyond homework.

Video games have a high penetration rate in the general population, with over 70% of US households where at least one child plays video games. Virtual reality and active role-playing video games have been adopted in rehabilitation practices to reduce sensory motor impairment especially for children with CP^[21-25]. Virtual reality technology used for recovery includes

commercially available video games in custom virtual reality applications specifically designed for recovery applications with varying degrees of engagement. We focus on systems and applications that easily adapt to the home environment, and commercial video games (active video games) and low-cost virtual reality (AVG / VR) applications that are accessible to a large population of families with children with physical disabilities.

Tele-rehabilitation guidelines are valuable resources that help address common barriers to tele-rehabilitation and facilitate the provision of remote rehabilitation services^{[26][27]}.

RESULTS

We have online patient support systems and digital platforms for retrieving their medical data so that specialists are informed in real time about the course of chronic diseases from which children suffer and there is an ongoing feedback base for the evaluation of the course.

In addition to regular clinical evaluation, children need constant access to their rehabilitation and treatment centers and the simultaneous use of telemedicine and telemedicine.

Telemedicine is defined as the use of technologies in remote communication situations to provide medical care services and information. Since 1997, telepractice has focused on the use of technology to provide health-related services leading to a link between doctor and patient, so that education, counseling, evaluation, and even intervention and support are provided from distance.

Patients and nurses in the intensive care unit use Alternative and Auxiliary Communication - ACC, Alternative and Augmentative Communication, and therefore promote patient treatment outcomes while equipping health care providers for effective patient interaction^[28].

Advances in AVG / VR technology are rapid and advancing faster in clinical

practice. Two frameworks that could help clinical decision-making using video games for therapeutic use are: the Virtual Reality Classification Framework for Pediatric Systems and the Systematic Framework^[29]. Clinicians can use this framework to perform 3D motion, to interact with the virtual environment, and for continuous practice. As a second step, clinicians can use the seven categories of the Framework, such as the ability to handle and measure treatment variables and the required mobility, to quickly determine which system meets the needs of the child with whom they are working.

CONCLUSIONS

The purpose of this literature review was to investigate the impact of the pandemic on the path of rehabilitation and the psychology of children with disabilities and chronic diseases. There are alternative approaches to chronic patients that can be approached but not replace the living approach. In the event of an extension of the pandemic period, it is deemed appropriate to further investigate the organization of specific intervention protocols in each case for the best possible maintenance of these patients.

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