

ONLINE KINESIOTHERAPY IN THE CONTEXT OF THE COVID-19 PANDEMIC

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Abstract. *The period marked by the COVID-19 pandemic forced schools to switch to digitalisation, and their adaptation to the new reality has led to the constant use of online technology in all instructive-educational and therapeutic activities. Numerous posts and articles on the Internet provided useful information and advice aimed to teach parents how to work with their children at home, how to team up with the therapist. Physical therapists, children and the parents of children included in the physiotherapy programme had to adapt to the situation, learn new things and get used to online technological means. Therapists had to analyse each case with the patient's family and identify the best remote therapeutic intervention for the child. Naturally, the sudden transition to online activity creates difficulties in performing the distance activities proposed during this period. The purpose of the current research was to find out to what extent online physical therapy was implemented and what communication channels were used during the suspension of classes in the context of the COVID-19 pandemic. The study was carried out in October 2020. This questionnaire-based quantitative research was conducted on a convenience sample (n = 45). The research included the parents whose children participated in the physiotherapy programme. Statistical data analysis was performed using the SPSS software. The conclusion drawn from this research is that the most used communication channel between parents and physiotherapist regarding the implementation of online physical therapy was video communication (Google Meet, Zoom, WebEx, Skype).*

Keywords: *online physical therapy, parents, communication, COVID-19 pandemic.*

Introduction

The closure of schools, the suspension of classes and the interruption of several types of extracurricular activities (such as the sporting and artistic ones) in the medium term have generated a major problem that society had to face and to which it had to find solutions to ensure the continuation of the learning process. The rapid spread of the COVID-19 pandemic has disrupted the education sector in many countries.

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Everything we knew about the world has changed. Social distancing and staying home have disconnected numerous children from traditional education and therapy and left little time for parents to prepare to support their children's education/therapy at home. We all faced an unusual situation, and the physiotherapy activity had to change as well. In times of pandemic, the online has also become a therapy channel.

The therapeutic activity performed in the physiotherapy rooms of special schools has moved online, in another space and at a different pace. In Bucharest, there are 14 special schools where children with disabilities are enrolled at primary and secondary levels. Each

special school enrolls children according to the type of disability (Șuță et al., 2017). There are special schools for students with mental disabilities, schools for students with hearing impairments and schools for students with visual impairments. Physical therapy in school contributes, along with other forms of therapy, to increasing the degree of adaptability and normality by correcting, reducing and/or compensating for the disorders of the musculoskeletal system (Gulap et al., 2018).

This period caught many teachers unprepared because they had not taught online before or did not know how to use an online platform. Infrastructure was also a major problem at the beginning of the COVID-19 pandemic. If most teachers had access to the Internet and had smartphones or laptops allowing them a basic level of interaction with students, not all students had Internet access. Online education has raised many issues, some related to poor infrastructure, others related to the way the online learning process is conducted.

Connectivity, apart from the issues related to class organisation, was a challenge for online activity (Petrescu, 2020). According to the study conducted by the Romanian Institute for Evaluation and Strategy (Institutul Român pentru Evaluare și Strategie, 2020), 12% of children in Romania do not have a strong enough Internet connection to be able to support online courses. 32% of children enrolled in pre-university education in Romania do not have individual access to a dedicated functional device (laptop, tablet) for online school. Also, more than a quarter of parents do not have a device for every child that they can use for online school. Thus, there were families with 2 or 3 children who could not offer them a supportive environment for online physical therapy.

During this pandemic period, physiotherapists have reconfigured their therapy methods so that students can continue their therapeutic activity outside the school's physiotherapy room. The therapeutic activity carried out through face-to-face meetings has turned into virtual meetings facilitated by different online therapy applications. Online therapy offers various teacher-led instructions that can be synchronous (communication where participants interact in the same time space, such as videoconferencing, Zoom, Google Meet, WebEx).

Therapists had to analyse each case with the patient's family and identify the best remote therapeutic intervention for the child:

- Real-time (online) therapy – is performed using a dedicated platform where the therapist communicates directly with the child or parent, providing them with feedback-based audio and visual support (Talaș, 2015). Both the physical therapist and the child manipulate the materials and interact online in real time. In this approach, the therapist gets largely involved and guides the therapeutic process (Towey, 2012).
- Offline therapy – is performed by recording video sessions. The therapist provides the child with video models to follow, depending on their available time. In turn, the child can make a video recording of themselves and send it to the therapist to obtain feedback for their work. This therapy is also called asynchronous (time-separated communication such as e-mail, Google Forms, video content, posting lecture notes) (Simamora, 2020).

This major change in the education system has also changed the lives of parents. Thus, their responsibilities in the educational act have increased because children need support to connect to the Internet and participate in online activities. The parents' role is essential for

guidance and support especially in the case of preschool and primary school students. Some parents have stated that the phone is not a solution for online learning because the screen is too small and the child quickly loses interest in the lesson. It is quite difficult for a child to view a file or follow a physiotherapy lesson on the phone.

Several specialised articles addressing online teaching and learning show that the online approach is less efficient regardless of the device used compared to the traditional face-to-face method. A study coordinated by Jessica Heppen from the American Institutes for Research (Heppen et al., 2017) and another one conducted by June Ahn from the New York University and Andrew McEachin from the RAND Corp (Ahn & McEachin, 2017) confirm that pre-university and university students who took online lessons versus the classic face-to-face method had poorer results, and the subject seemed more difficult to them.

Online kinesiotherapy has its advantages and disadvantages. A disadvantage would be the decrease of human interaction between student and teacher as well as between students. Behind a screen, reduced to the size of a square on a monitor or phone, it is more difficult for participants to perceive body language, voice inflexions or the appreciation coming from a teacher or a colleague. These elements are essential in communication, in developing an open relationship based on learning. Many articles have revealed that the lack of these nonverbal elements in communication increases the feeling of fatigue, the so-called “zoom fatigue” (Fosslien & West Duffy, 2020). On a video call, the only way to see if students are paying attention is to look at the camera of the electronic device. Students’ attention is harder to maintain because they are distracted by other elements around them, but also because it is difficult for them to intervene when they do not understand something. The classic explanations that last more than 10 minutes in the online environment get students tired. If face-to-face discussions allow a physical therapist to “teach” for half an hour without losing students’ interest and attention, things are different in online, and students feel disconnected. The solution is to adapt the teaching style for online physiotherapy, although even the use of the latest methods does not rise to the level of the classic treatment that involves face-to-face interaction. Students cannot be supervised online as properly as they are in the physiotherapy room, and leaving the microphones open creates background noise and microphonic effects (Petrescu, 2020).

However, increasing transparency is an advantage of online physical therapy. Thus, parents can see how a class is conducted and can even take part in it, can see the means used by the teacher and how certain issues related to the child’s recovery are handled. They can see and assess how their children work in front of the teacher, can see if their children follow the instructions given by the teacher for their daily activity and, last but not least, can react and learn from the physiotherapist teacher. A physiotherapist who has worked with children for a long time knows how to handle various situations during the online class, how to be understood by children, how to explain them.

According to Bao (2020), five basic principles should be observed for the online activity performed with students, which would help the teacher to achieve higher efficiency in the virtual environment:

- The principle of appropriate relevance. The quantity, difficulty and length of the teaching/therapeutic content should match the academic readiness and the characteristics of students’ online learning behaviour.

- The principle of effective delivery. Considering the students’ characteristics of low concentration in online learning, it is crucial to adjust the teaching speed and methods in order to ensure the effective delivery of information transmitted by the teacher.
- The principle of sufficient support. Physiotherapist teachers should provide students with timely feedback, including online video tutoring and e-mail guidance after classes.
- The principle of high-quality participation. Some measures should be taken to improve the level of students’ active participation in the lesson: sufficient available space for them to perform therapy activity, communication devices, work materials, etc.
- The principle of contingency plan preparation. Given the particularly large scale of online education, contingency plans should be developed in advance to address possible problems such as the traffic overload issue of the online education platform. In online therapy, technical difficulties may occur, leading to the interruption and even suspension of the therapy session.

The therapeutic process and the child-therapist intimacy during the pandemic underwent many changes. The parents of children included in the physiotherapy programme suddenly became active and responsible for their children’s therapeutic activity. Numerous posts and articles on the Internet provided useful information and advice aimed to teach parents how to work with their children at home, how to team up with the therapist. The focus of our attention was on the main beneficiary, the child, who should not lose the gains acquired and stagnate in the recovery process, but also on the parent, who was an important pillar in the therapist-child-parent partnership in this new therapeutic scenario.

Children had to understand that they would no longer go to the physiotherapy room and would work in the home environment with their parents. Parents had to reorganise their means of communication with the therapist, stop their daily routine and become partners in the at-home recovery of their children.

Physical therapists, children and the parents of children included in the physiotherapy programme had to adapt to the situation, learn new things and get used to online technological means.

Methodology

Participants

The research was conducted on 45 parents whose children were enrolled and included in the physiotherapy programme.

Table 1. *Gender of the parents who responded to the questionnaire*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	42	93.3	93.3	93.3
	Male	3	6.7	6.7	100.0
	Total	45	100.0	100.0	

Table 2. *Background of the parents who responded to the questionnaire*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Urban	34	75.6	75.6	75.6
	Rural	11	24.4	24.4	100.0
	Total	45	100.0	100.0	

The participants in this research are mostly women ($n = 42$) from urban areas (75.6%), while 24.4% are from rural areas. The respondents are aged between 29 and 53 years, and over half of them have higher education degrees (53.3%). Their children are enrolled in preschool education (55.6%) and lower secondary schools (44.5%).

Instruments

The questionnaire on parents' perceptions of online physical therapy activities during the suspension of classes in the context of the COVID-19 pandemic included a series of 10 closed-ended questions. Completing the questionnaire took no more than 5 minutes. The questions analysed in our paper were the following: "Which of the following Internet connection tools are available to your family?", "On what channels did you communicate with the physiotherapist during the COVID-19 pandemic?" and "What information sources did you use in online physiotherapy?"

To measure the levels of children's participation in online physiotherapy activities, the opinions whether online physiotherapy could replace face-to-face activity in the physiotherapy room and whether online physiotherapy should remain possible after the pandemic, we used a five-step Likert scale with the values: to a very small extent; to a small extent; to some extent; to a moderate extent; to a large extent. Parents' age was measured with an open-ended question. The responses were assigned four values: 1 = age between 25-35 years; 2 = age between 36-39 years; 3 = age between 40 and 45 years; 4 = age between 46 and 53 years. The educational levels of parents had five values: 1 = no more than eight grades; 2 = vocational school or high school; 3 = high school; 4 = post-secondary education; 5 = higher education. The educational levels of children were assigned three values: 1 = kindergarden; 2 = primary and secondary school; 3 = high school.

Procedure

This questionnaire-based research was conducted in October 2020. The physiotherapy programme (with children) was carried out at the Special Middle School no. 3 in Bucharest. The questionnaire was administered to parents online, respecting anonymity. Statistical data analysis was performed using SPSS software, and the figures were performed in Excel.

Results

During the COVID-19 pandemic, parents ticked the existing electronic devices in the family. The percentage of people who use different electronic devices out of the total number of respondents is identified in Figure 1.

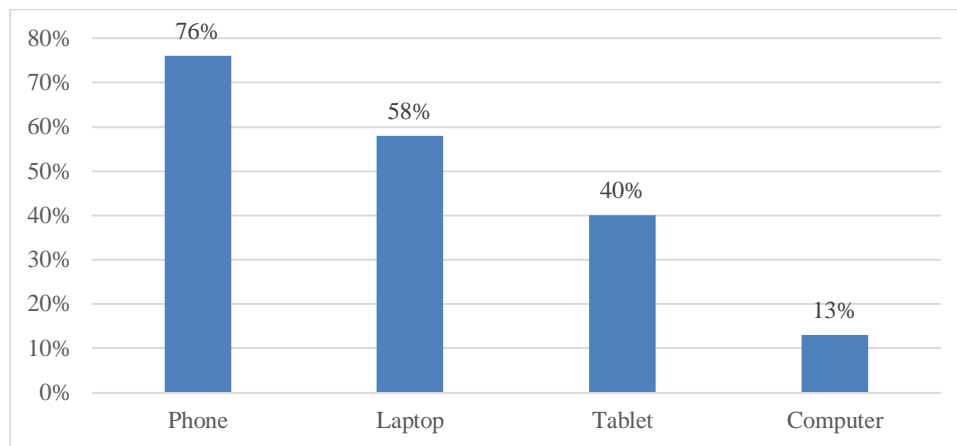


Figure 1. Which of the following Internet connection tools are available to your family?

Note: The sum of the percentages is higher than 100% because the participants were allowed to have several response options.

To find out what communication tools were used by parents in their relationship with the physiotherapist, participants were asked to mention the tools used to connect to the Internet. As expected, most respondents have access to the Internet via their mobile phones (Figure 1). The less used Internet connection tool was the computer.

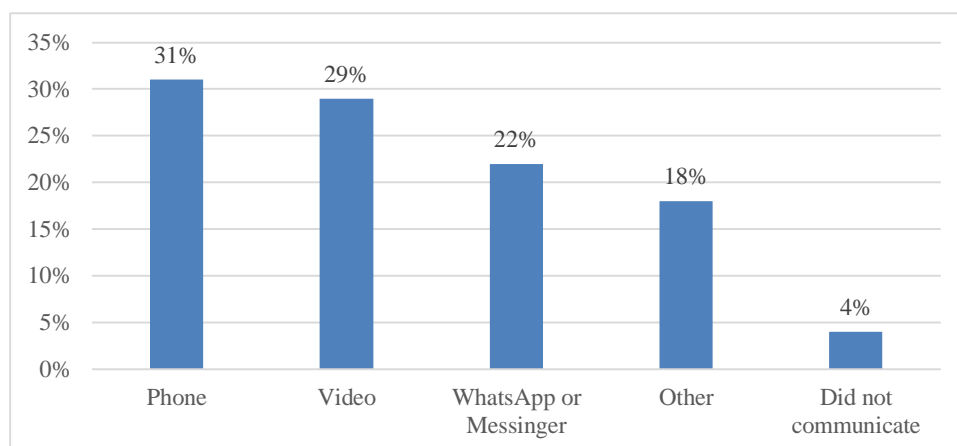


Figure 2. On what channels did you communicate with the physiotherapist during the COVID-19 pandemic?

The most used communication channel between parents and physiotherapist regarding the implementation of online physical therapy was the mobile phone (31%) and video communication through dedicated platforms such Google Meet, Zoom, WebEx or Skype (29%) (Figure 2). Therefore, one in three respondents communicated with the physiotherapist by phone, which shows the teachers' readiness to overcome the obstacles of online education. Given that WhatsApp groups are also established via mobile phones, we could see how much this device was used in online physiotherapy.

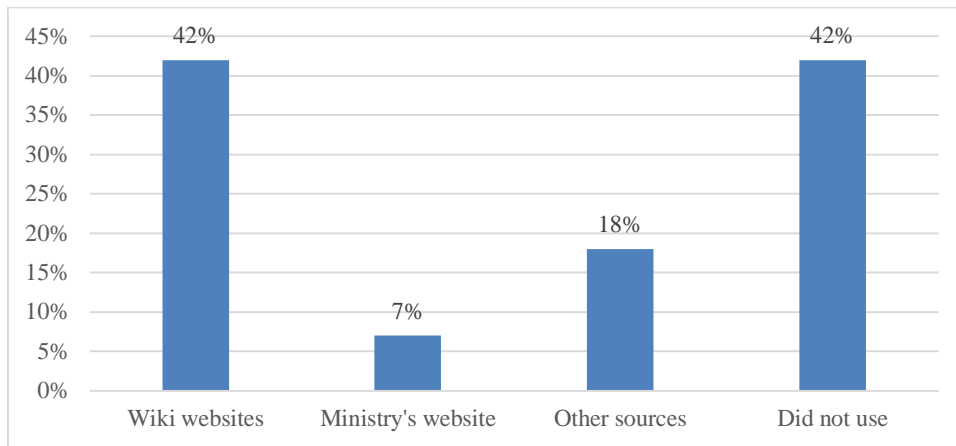


Figure 3. What information sources did you use in online physiotherapy?

Although there were physiotherapists who provided parents with the necessary exercises for therapy, the most used information sources for online physical therapy performed at home were Wiki websites (from articles to records of interest related to child recovery) (42%). Also, a large number of respondents did not use the Internet to find out such information.

Even if 4% of participants said that they had not communicated with the physical therapist, most respondents stated that they had been involved to a very small extent and a small extent in online physiotherapy activities with their children. Only 31% claimed that their children had participated to a large and very large extent in online physiotherapy activities during exclusively online education. This also explains the lower degree of agreement that online physical therapy can replace face-to-face activity in the physiotherapy room and should be continued after the end of the COVID-19 pandemic. However, it is worth noting that more than one in three respondents want to continue online physiotherapy for their children after the end of the restrictions caused by the Sars-CoV-2 virus.

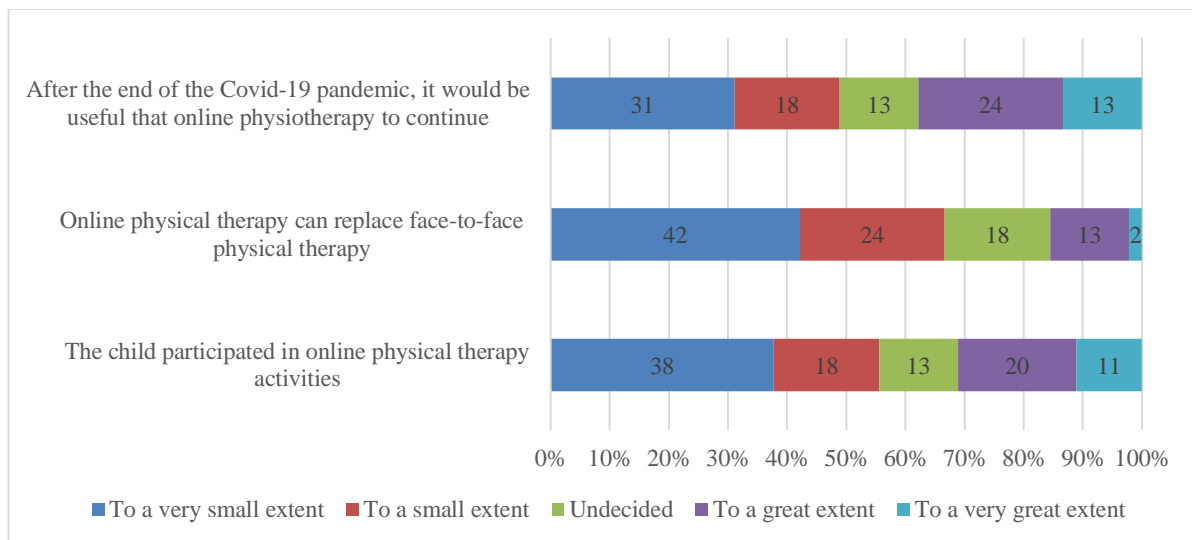


Figure 4. The extent to which parents used online physiotherapy and want to use it after the pandemic as well

Research participants whose children have benefited most from online physiotherapy believe to a greater extent that it can replace sessions in the physical therapy room and that online physical therapy should also be used after the end of the COVID-19 pandemic (Table 3). As expected, because there is an opinion that online physiotherapy can replace physiotherapy conducted in the school environment in pandemic conditions, respondents think that it should also be continued when education will be done face-to-face, without medical restrictions. Taking into account the results of the Kendall's tau correlation matrix, it should be highlighted that there is no significant correlation between sociodemographic variables and the use of online physical therapy.

Table 3. Kendall's tau correlation between sociodemographic variables and the use of online physiotherapy

	1	2	3	4	5	6
1. The child participated in online physiotherapy activities	1.000					
2. Online physiotherapy can replace face-to-face activity in the physiotherapy room	0.279*	1.000				
3. Online physiotherapy should remain possible after the pandemic	0.270*	0.456**	1.000			
4. Parent's age	0.046	-0.017	-0.204	1.000		
5. Parent's level of education	-0.055	0.165	-0.085	-0.108	1.000	
6. The child's level of education	0.131	-0.213	0.063	0.256	-0.239	1.000

*The correlation is significant for $p < 0.05$.

Discussion

Children had to understand that they would no longer go to the physiotherapy room and would work in the home environment with their parents. Parents had to reorganise their means of communication with the therapist, stop their daily routine and become partners in the at-home recovery of their children during the suspension of classes in the context of the COVID-19 pandemic.

Teachers had to adapt in a short period of time to the new way of conducting the instructive-educational and implicitly the recovery process. The rapidity and expansion of online learning put pressure on schools. It is particularly important that education colleges provide their pre- and in-service teachers with skilled online instructors so that they can experience quality online training as students (Borup & Evmenova, 2019) and quality distance education in a well-organized and structured way (Panakaj, 2019).

The pandemic period has produced major changes in the educational and therapeutic systems, and parents' responsibilities in the educational act have increased because children need support to connect to the Internet and participate in online activities. The parents' role is essential for guidance and support especially in the case of preschool and primary school students.

The literature seems to agree that online activity is different from face-to-face activity and therefore requires the development of its own teaching-learning pedagogies (Baran et al., 2011). Future research should focus on physical therapy, occupational therapy, social work

and dietetics and determine the implementation factors and models that are likely to create successful telehealth services especially for the rural population (Campbell et al., 2020).

During the pandemic, physiotherapists continued to assess disorders requiring physical therapy, but patients were submitted to a remote telerehabilitation assessment instead of a traditional face-to-face one, which consisted in active movements and functional tasks. Remote assessment is feasible and reliable. Remote therapy is well accepted by both families and beneficiaries of medical recovery care and leads to the same outcomes as in the case of ordinary healthcare (Richardson et al., 2017).

Implementing remote medical recovery after the end of the pandemic would be an option with positive outcomes for the health of patients who cannot go themselves to the physical therapy room. According to Palacín-Marín et al. (2013), this method can be useful in the assessment of people with spinal disorders, providing initial support for its implementation in primary care.

With patience and support, the time spent at home and the concept of online therapy can be an opportunity to strengthen the family-school relationship, which is so much needed for the children's future. A videoconferencing programme as an adjunctive instrument to face-to-face counselling and recovery within a therapy programme would be suitable (Coles et al., 2020).

Conclusion

The most used communication tool used by families during the COVID-19 pandemic for online physical therapy was the mobile phone. The most used communication channel between parents and physiotherapist regarding the implementation of online physical therapy was video communication (Google Meet, Zoom, WebEx, Skype). 13.3% of parents believe that online physical therapy can replace face-to-face activity in the school's physiotherapy room. Over 30% of participants claimed that their children had participated to a large and very large extent in online physiotherapy activities during exclusively online education. More than one third of respondents said that online physical therapy should also be used after the end of the COVID-19 pandemic. In fact, those who currently benefit from physiotherapy believe that it should also be used in the future. There is no significant connection between the parents' educational levels and age and the use of online physiotherapy.

Web-based technology generates customised and engaging activities, which is why the physiotherapist-beneficiary interactions often continue beyond therapy sessions.

In conclusion, online physiotherapy still has problems, some of them being related to poor infrastructure and others to the way of conducting the online therapeutic process. There are also age-specific problems related to students' ability to focus, which differ from one age to another, and therapeutic means should take into account this issue as well.

The positive side of online education would be that students from disadvantaged backgrounds can also have access to detailed information and explanations (Petrescu, 2020).

The parents' level of involvement in online activity will considerably increase, which requires future actions to build their specific skills that complement those of the teacher (by redefining the "parents' school" through the realistic role sharing) (Botnariuc et al., 2020).

The most used information sources for online physical therapy performed at home were Wiki websites, and the least used was the website of the Ministry of Education.

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