

Impact of the COVID-19 pandemic on physical activity practice of people with disabilities

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Abstract

The global pandemic caused by the COVID-19 has profoundly changed the daily life of most of the world population. People with disabilities have been particularly affected by these changes, which often have accentuated their isolation and marginalization also due to greater difficulties in accessing healthcare services. People with disabilities have also been impacted in relation to their ability to participate in physical activity with even more adverse consequences for their quality of life and health. The aim of this study was to explore the impact of the COVID-19 pandemic on physical activity practice of people with disabilities and to understand the changes that caregivers have perceived for the participation in physical activity of this specific population. It emerged that, regardless of the type of disability, people with this condition experienced drastic reductions in their physical activity levels during the pandemic and in most cases did not have access to any type of remote guidance. Furthermore, a higher prevalence of sedentary behavior and negative changes in eating habits have been reported by the caregivers, highlighting the need for specific strategies and initiatives for people with disabilities to maintain healthy habits and a physically active lifestyle.

Keywords: COVID-19 pandemic; caregivers; health behaviors; people with disabilities; physical activity; sedentary behaviors.

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Introduction

The importance of physical activity for health and wellbeing is widely recognized and it is strongly recommended that people at all ages and with all abilities and disabilities practice regularly (Warburton and Bredin, 2017; World Health Organization, 2010; 2020). This importance has been clearly stated by several Organizations and authors also during the COVID-19 emergency. Since the beginning of the pandemic, for example, the World Health Organization (WHO, 2020) encouraged people of all ages to “be active and stay healthy at home”, so to counteract the detrimental consequences of the restrictions imposed for controlling the spread of the virus. Research reports that meeting physical activity guidelines is related to a reduced risk for severe COVID-19 outcomes among infected adults and that physical inactivity is associated with a higher risk for severe outcomes (Sallis *et al.*, 2021).

Unfortunately, for many people being regularly physically active is really complicated, and it has been resulted particularly challenging during the COVID-19 pandemic. The year 2020 marked the beginning of a very critical period of life for most people worldwide, permeated by uncertainty, anxiety and fear caused by the pandemic itself and by the health measures adopted. For many people, physical distancing, social isolation and the difficulties generated by mobility restrictions and the economic crisis were particularly painful, bringing consequences on both their physical and mental health (United Nations, 2020). Specifically, for people with disabilities, who have historically experienced more barriers and difficulties in their social participation, this period has brought additional challenges, triggering changes in their routines and, in many cases, further reducing the opportunities to carry out important activities for the maintenance of their quality of life and health (Turk and McDermott, 2020).

Due to the extent of the pandemic and the lack of a short-term perspective to end the situation, the difficulties experienced in this period by people with disabilities have become a major issue for public health, given the impacts they are bringing and still will bring into the lives of this group of population (Tsibidaki, 2021). As an aggravating factor, in many cases people with disabilities experience more chronic diseases and conditions in comparison to the general population and are most at risk of severe illness for the COVID-19 (Embregts *et al.*, 2020).

Among the changes imposed during the pandemic period, the restrictions for physical activity practice deserve to be highlighted. For people with disabilities, the difficulty to access physical exercise and sport programs is not a recent issue (Kamyuka *et al.*, 2020). Although some progress can be observed in recent years, professional and volunteers training, facilities accessibility,

lack of programs and material resources continue to represent significant barriers, which hinder the adherence of people with disabilities to a physically active lifestyle (Bossink, van der Putten and Vlaskamp, 2017; Rimmer *et al.*, 2004).

The obstacles caused by the COVID-19 pandemic made participation even more complicated. In addition to the barriers experienced directly by people with disabilities, the increased burden on caregivers should also be emphasized. Due to the imposed physical distancing and social isolation, many parents or legal guardians have been faced grueling routines, often without any external support (Reilly, Muggeridge, and Cross, 2021).

The aim of this study was to explore the impact of the COVID-19 pandemic on physical activity practice of people with disabilities. In particular, the perspective of caregivers on perceived changes in relation to the physical activity practice of the people they are caring for will be presented and discussed.

The COVID-19 pandemic and people with disabilities

It is estimated that 15% of the world population has some kind of disability and that 80% of them live in developing countries. With regarding to the age distribution, data indicate that among children around 10% have some type of disability, while among the elderly the occurrence would be much higher, close to 45% (United Nations, 2020). Given the high prevalence, especially among the elderly, and the greater concentration of this population in poorer countries, the situation of people with disabilities during the COVID-19 pandemic has become a prominent public health issue.

Over the years, the concepts and paradigms related to disability have undergone several changes which have directly impacted on how health services turned their attention to this audience. Initially, the medical model considered disability as the condition responsible for the non-full social participation of people who have it. In this model, disability was conceived as a condition to be prevented, treated and, preferably, cured (Mello and Nuernberg, 2012). More recently, the social model has been gaining recognition, understanding that improving the lives of people with disabilities would require both the removal of the social barriers that oppress them and the development of social policies which can facilitate full social inclusion and citizenship (Smith and Bundon, 2018). In this perspective and considering how people with disabilities for various reasons have suffered the consequences of the pandemic more intensely, the need to direct public health actions and

policies that privilege this segment of the population has emerged more strongly.

Due to the lack of official data, assessing the situation of people with disabilities during the pandemic and understanding the impact of the COVID-19 on this population is particularly difficult. Indeed, many countries do not have accurate data on the number of people with each type of disability and there is no specific count of the number of disabled people who have been infected or died from this virus. Existing data have primarily come from specific institutions assisting this population, which perpetuates the exclusion of people with disabilities from health policy discussions and also reduces the possibility of having an accurate overview of the current situation (Reed, Meeks and Swenor, 2020).

People with disabilities belong to a segment of the population that has a higher prevalence of multiple chronic conditions, many have low socioeconomic status and poor access to health services, and some still live in therapeutic institutes or homes. Moreover, many of these people have difficulty accessing and/or understanding the available materials on the COVID-19 prevention, symptoms and treatment. Overall, these factors make the disability community more vulnerable to viral infections and disease worsening (Turk and McDermott, 2020).

Landes *et al.* (2020) conducted a study in the State of New York founding that people with intellectual disabilities had many more occurrences of the COVID-19 infection and also higher mortality when compared to the general population (7.8/100000 versus 1.9/100000 and 15% versus 7.9%, respectively). According to the authors, some conditions associated with intellectual disability (e.g. Down syndrome) may predispose to a greater worsening of respiratory and other infectious conditions, placing this group in the high-risk category for the disease. Especially those living in therapeutic homes present a greater risk of contagion due to both the difficulties in achieving social isolation and the daily contacts with various supporting professionals.

As pointed out by Senjam (2020), the COVID-19 presents a greater risk also for people living with visual disabilities/impairment. This finding is particularly worrying considering that this population corresponds to more than 250 million people in the world, predominantly at older ages and living in poorer countries. This greater vulnerability would be due to many factors, namely the lack of adequate information material suitable on the disease, the frequent need for support to carry out daily activities (e.g. crossing the street and shopping), the difficulty in maintaining adequate hygiene and prevention habits (e.g. washing hands correctly, wearing masks) and the increased reliance on touch for position. Furthermore, people with visual impairments are more susceptible to falls, thus becoming even more exposed to health problems.

In addition to the greater vulnerability to the COVID-19, people with disabilities have also been experiencing particularly difficult situations during the pandemic. The restrictions caused by social isolation and the blockade imposed in several countries have affected the worldwide population, with even more pronounced effects on people with this condition. For instance, some studies reported that it is more difficult for people with disabilities to maintain an adequate diet, a good sleep routine and sufficient physical activity during this period (Turk and McDermott, 2020; Embregts *et al.*, 2020). Especially among those with intellectual disabilities and autism spectrum disorders, changes in routines and restriction of treatment have been a further problem, causing drastic changes in behavior and placing an even greater burden and stress on their caregivers. What is more, the anxiety caused by home isolation led these individuals to seek comfort in overeating, which, together with sedentary behavior, caused an increase in the prevalence of overweight and obesity (Bailey, Hastings and Totsika, 2021; Pronvenzi *et al.*, 2021; Reilly *et al.*, 2021; Tsibidaki, 2021).

For people with disabilities who historically suffer from exclusion and marginalization, the impact of social isolation could be particularly severe and profound. Considering the generally limited opportunities for social interaction for these people, there is growing concern in many governments that the ongoing pandemic may further exacerbate and aggravate situations of segregation. Exploring the experiences of people with a mild intellectual disability during the COVID-19 lockdown in the Netherlands, Embregts *et al.*, (2020) reported that the major difficulties raised were related to changes in routine, loneliness, loss of social contacts and the impossibility of having people around. It is worth noting that during this period the feeling of loneliness also extends to caregivers and that this situation can worsen their physical and mental health (Kamyryra *et al.*, 2020; Reilly *et al.*, 2021).

To address these considerable issues, some governmental and non-governmental agencies have developed support materials for people with disabilities, their families and other caregivers about strategies to prevent the COVID-19 infection and how to maintain a healthier life during the pandemic period (Pan American Health Organization, 2020; United Nations, 2020). In a manual published in May 2020, the World Health Organization (WHO) has already focused attention on the most vulnerable situation highlighting, for instance, the greater discrimination that these people may suffer when seeking medical care or to obtain priority for highly complex care (e.g. intensive care, ventilators). WHO also highlights the socio-economic consequences of the pandemic for this specific population, with serious impacts on professional and school life, on health support services and on the growing risk of domestic violence.

The challenges of maintaining a healthy lifestyle in people with disabilities during the Covid-19 pandemic

«The COVID-19 pandemic is strongly impacting all domains of (...) healthcare systems» (Leocani *et al.*, 2021, p.e50). In particular, regarding health-related behaviors, both people with disabilities and their caregivers reported lack of access to medicines, routine medical consultations, health care and prevention services (Pronvenzi *et al.*, 2021; Reilly *et al.*, 2021). Indeed, with the worsening of the pandemic, a number of services, including therapeutic ones, have been interrupted and many health workers and facilities have been relocated. The interruption or postponement of several scheduled medical procedures along with factors such as home isolation and reduced physical activity, pose an imminent risk for the onset of a range of health problems for disabled people with a potentially dramatic impact at the end of the pandemic.

Leocani *et al.* (2021) reported some concerns regarding health behaviors by people with disabilities. For instance, despite in some case remote technologies can alleviate the situation, the lack of access to these technologies and the difficulties in understanding the instructions transmitted reduced their widespread use. Additionally, authors pointed out the relevance of personal contact in the process of healing, highlighting how the impossibility of attending stimulating and social environments could bring irreparable consequences, especially for children and adolescents.

Physical activity is a crucial element for health and wellbeing promotion (Marquez *et al.*, 2020), but people with disabilities have always faced several barriers to the practice of physical activity, such as the lack of accessibility, transportation, trained professionals and social support (Bossink, Van Der Putten, and Vlaskamp, 2017). There is no doubt that the COVID-19 pandemic has exacerbated inequalities in opportunities for practicing physical and sports activities. Reduced physical activity, in addition to predisposing to a greater risk of comorbidity, is a cause for concern due to increased problems of social loneliness, social isolation and mental stress in people with disabilities. These factors, in turn, can make it difficult their return to participation after the pandemic ends, creating a vicious circle (Hall *et al.*, 2020).

Aiming to understand how disabled people have been impacted by the pandemic with regard to their participation in sport or physical activity, Kamyuka *et al.* (2020) interviewed people with disabilities who practiced recreational physical activity and parathletes, comparing the conditions of practice before and during the pandemic. Interestingly, some participants reported the use of creativity to find new and innovative ways to adapt physical activities in their lives. However, the overall finding revealed a drastic

reduction in the practice of physical activities among people with disabilities. A similar trend has been observed also among parathletes, who lost sponsorships compromising their sporting future. Respondents emphasized how their disability was more exacerbated, as they felt more limited and restricted in their activities. They indicated an increase in feelings of loneliness and noted a lack of alternatives for remote care for physical activity at home.

In order to obtain information about the changes occurred during the pandemic, Ahulló *et al.* (2021) assessed the practice of activity of 20 men with thoracic spinal cord injury before and during the lockdown in Spain. Comparing the two periods, only housework activities did not change. Conversely, participants showed a significant reduction in recreational, occupational and total physical activities especially in moderate and vigorous ones. According to the authors, people with spinal cord injuries usually face several barriers and demotivating factors for the practice of physical activity, such as lack of accessibility, transportation and adequate materials. Considering the greater adverse health consequences of the low level of physical activity among this population and the risk of comorbidity, it is particularly important to monitor the situation and plan specific strategies (e.g. implementation of new technologies) to counteract the decreased levels of physical activity observed during the pandemic. A major concern raised in the study remains how to bring these people back to physical activity after the end of the pandemic.

Despite the pessimistic scenario, some alternatives emerged during the pandemic in order to mitigate the situation and maintain an adequate level of physical activity by people with disabilities. Kowk (2020) pointed out that, at the same time as the restrictions occurred, new technologies were developed so that people could keep in touch and perform a series of activities. In fact, during the period of the pandemic, the number of online channels to encourage physical activity at home has grown worldwide. Although most of these channels have not focused on people with disabilities, some initiatives in this regard can be highlighted, such as remote synchronous and asynchronous classes promoted by institutions providing assistance to people with disabilities. For instance, the Brazilian Paralympic Committee released videos with suggestions for physical activity sessions to be held at home, planned according to each type of disability (CPB, 2021). However, it should be noted that, especially in asynchronous classes, the lack of feedback and interaction with the instructor could be highly demotivating. Moreover, the feasibility of remote sessions depends on adequate access to technology, which is not always a reality for many people with disabilities.

Undoubtedly the pandemic unleashed by the Coronavirus has led to changes in the life of the worldwide population. People with disabilities has been particularly affected by restrictions and isolation imposed with damaging

consequences, some of which will certainly extend even after the pandemic is over. Therefore, the behavioral health needs of this population should be carefully analyzed by developing strategies and planning initiatives to maintain, as far as possible, healthy habits and a physically active lifestyle.

The perspective of caregivers

Caregivers' perspective is important to have a more comprehensive understanding of the impact of the COVID-19 on the physical activity practice of people with disabilities during the pandemic. Such perspective has been investigated through structured interviews with 30 mothers of children and adolescents with disabilities in southern Brazil.

Brazil is one of the countries most severely affected by the COVID-19 pandemic and the lack of effective prevention policies has led to a very high number of cases and deaths from the disease. The situation of people with disabilities in Brazil is particularly critical. Although a strict lockdown has not been imposed in any region of the country, during the pandemic all support services were interrupted and most people with disabilities opted for home isolation because of the fear of contracting the virus. Especially among children and adolescents with disabilities the situation is even more problematic, since regular and special schools have been closed since March 2020, offering exclusively online activities.

The structured interviews with the mothers consisted of a set of questions about their children's practice of physical activity during the pandemic, the changes occurred in the practice and whether any form of remote supervision was being offered. Mothers who agreed to participate were interviewed after receiving and signing informed consent. The average age of the mothers was 42.8 + 5.4, 13.7 + 3.3 years the one of their children. Twenty-two mothers were married, 8 were divorced. The disabilities presented by their sons were severe cerebral palsy ($n = 11$), autism spectrum disorder ($n = 9$), Down syndrome ($n = 7$) and intellectual disability ($n = 3$).

All participants reported that their children were isolated at home, leaving only in case of urgency, since their conditions and / or comorbidities put them at a greater risk for the COVID-19. The first question concerned possible changes in children's physical activity patterns during the pandemic. All mothers stated that their children drastically reduced the practice of daily physical activity. Some highlights:

«Despite the difficulties, before we were able to walk in the park, she participated in physical education classes at school. Now she just stays at home, on television ...».

«Since last year, he has practically only stayed at home, on his cell phone or on TV. It has been very difficult to maintain motivation ...».

«M ... gained a lot of weight. He is super anxious and just wants to eat and stay in front of the TV. He is always nervous and agitated. Some days he eats without stopping and do not want to do anything else ...».

In general, mothers reported that their sons started to show much more sedentary behaviors with the pandemic and that, in many cases, they use food to cope with anxiety. With the exception of children with cerebral palsy, all others children gained a large amount of body weight, in some cases reaching obesity levels. As previously mentioned, especially for those with intellectual disabilities or autism spectrum disorder, changes in routine and restrictions imposed by home isolation have led to increased anxiety and stress levels, leading in many cases to overeating (Tsibidaki, 2021).

People with disabilities in general exhibit a greater tendency towards a sedentary lifestyle, in general presenting an insufficient level of physical activity (Rimmer *et al.*, 2004). It is possible that this trend started even in childhood, especially due to the few opportunities for social interaction and leisure activities experiences. Thus, this prolonged reduction in physical activity levels among children and adolescents is potentially harmful with possible long-term impacts on their lives and an increased risk of comorbidities related to physical inactivity.

The second question addressed whether and how the children were practicing physical activity and whether any remote guidance was being offered in this regard. Eighteen mothers (60%) reported that their children had not been practicing any regular physical activity since the beginning of the pandemic, 8 (26.7%) stated that their children received online guidelines for physical therapy sessions at home twice per week, the remaining 4 (13.3%) said that, as they had a leisure area in the building where they lived, they visited the swimming pool with their children at least once a week.

With regard to online supervision for activities, only the 8 mothers whose children were being guided to physiotherapy stated that they received some specific instruction. All the others reported not receiving any support or remote supervision for physical activities. When asked about the possibility of carrying out activities under remote supervision, 16 mothers (53.3%) stated that they did not have access to adequate technology (e.g. equipment, internet connection) and 4 of them (13.3%) reported that they would not have adequate time conditions and/or space to carry out the activities. Among the 8 mothers who received online support for their children's physiotherapy (all with sequelae of severe cerebral palsy and wheelchair users), the major difficulties pointed out were in relation to the insecurity to perform the exercises and doubts about the most appropriate way to help children with activities. Some highlights:

«I have three children and only one cell phone with an internet connection. I am unable to follow D... 's remote activities».

«In physical therapy, the therapist says what we have to do, but I don't know if I'm doing it right. I'm afraid to hold my daughter in the wrong way and hurt her ...».

«I tried to find videos about physical activity to get ideas of what to do. But I never have time and he has no desire to do anything. Only television ...».

From the mothers' interview it emerged that there are no online monitoring initiatives with guidance on physical activity for their children. The few activities available are related to physical therapy, specifically for children with cerebral palsy. In general, even if this service was offered, the challenges would be related to the lack of technology, lack of time and insecurity to carry out the activities without the instructor's feedback. Furthermore, the increased burden of caregivers during the pandemic, as well as the presence of other children in the same family following remote school activities, has led to even fewer opportunities for children with disabilities to maintain an inactive life during this pandemic period.

Conclusion

The COVID-19 pandemic has imposed a number of restrictions and drastic behavior change on the worldwide population. Even as the vaccination progresses, it is not yet possible to determine when the emergency situation will be alleviated, and perhaps many of the consequences of this period will be felt in the long term.

People with disabilities are considered to be particularly vulnerable to the COVID-19 infection and worsening of the disease. For this population, the impact of social isolation and lockdown policies has been particularly damaging, undermining a number of essential activities. Despite there are few reports available, it is possible to estimate that there was a significant reduction in the levels of physical activity of this population, which several physical, psychological and social consequences. In addition, their families and caregivers also have reported a significant increase in overload and stress levels, especially for people with intellectual disabilities or autism spectrum disorder.

Therefore, it is urgent that health services and policies turn their attention to people with disabilities and their caregivers during this atypical period. Even if a full return to normal activities is not yet possible, it is essential to allow the maintenance of remotely supervised activities and to prevent the consequences of the pandemic from causing permanent damage to people with disabilities' lives.

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