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ORIGINAL ARTICLE

Impact of COVID-19 on physiotherapy for patients with multiple sclerosis in Spain: Adaptation and challenges in the implementation of telerehabilitation

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KEYWORDS
COVID-19;
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Abstract
Introduction: The COVID-19 pandemic, declared in March 2020, had a profound impact on health services in Spain, especially on physiotherapy for people with multiple sclerosis (PwMS). The health reorganization forced the suspension of rehabilitation services, affecting millions of people with disabilities in Europe.
Objective: To evaluate the impact of the pandemic on the clinical practice of the Physiotherapy Collective (CF) specialized in multiple sclerosis (MS) in Spain, highlighting the changes in interventions and the use of telerehabilitation (TRHB).
Materials and methods: An international survey was designed and disseminated in Spain through MS associations. The sample included 32 physiotherapists. The statistical analysis was performed with IBM SPSS, with a significance level of $p \leq 0.05$.
Results: A total of 78% of physiotherapists worked with PwMS before the pandemic, and the use of TRHB increased to 29.24%. A reduction in face-to-face interventions, especially in manual therapies, was observed, mainly affecting patients with severely impaired mobility (SIM). However, 81.3% kept aerobic training sessions online. The main barriers were the lack of devices and the difficulty in conducting adequate assessments.

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Conclusions: The pandemic not only underscored the importance of TRHB but also exposed key limitations. Future research should focus on improving its feasibility and providing appropriate training to optimize care for PwMS.

PALABRAS CLAVE
COVID-19;
Telerrehabilitación;
Fisioterapia;
Esclerosis múltiple

Impacto de la COVID-19 en la fisioterapia para pacientes con esclerosis múltiple en España: Adaptación y desafíos en la implementación de la telerehabilitación

Resumen
Introducción: La pandemia de COVID-19, declarada en marzo de 2020, tuvo un impacto profundo en los servicios de salud en España, especialmente en la fisioterapia para personas con esclerosis múltiple (PcEM). La reorganización sanitaria forzó la suspensión de servicios de rehabilitación, afectando a millones de personas con discapacidad en Europa.
Objetivo: Evaluar el impacto de la pandemia en la práctica clínica del colectivo de fisioterapeutas (CF) especializado en esclerosis múltiple (EM) en España, destacando los cambios en las intervenciones y el uso de la telerehabilitación (TRHB).
Metodología: Se diseñó una encuesta internacional, difundida en España a través de asociaciones de EM. La muestra incluyó 32 fisioterapeutas. El análisis estadístico se realizó con IBM SPSS, con un nivel de significancia de $p \leq 0,05$.
Resultados: El 78% de los fisioterapeutas trabajaba con PcEM antes de la pandemia, y el uso de TRHB aumentó al 29,24%. Se observó una reducción en las intervenciones presenciales, especialmente en terapias manuales, afectando principalmente a pacientes con movilidad severamente alterada (MSA). Sin embargo, un 81,3% mantuvo las sesiones de entrenamiento aeróbico de forma online. Las principales barreras fueron la falta de dispositivos y la dificultad para realizar evaluaciones adecuadas.
Conclusiones: La pandemia subrayó la importancia de la TRHB, pero también expuso limitaciones clave. Futuras investigaciones deben centrarse en mejorar su viabilidad y proporcionar formación adecuada para optimizar la atención a PcEM.

Introduction

On March 11, 2020, the World Health Organization (WHO) officially declared COVID-19 a global pandemic.[1] In response to this situation, on March 15, the government of the Spanish State decreed strict confinement with the aim of controlling the spread of the disease, forcing the population to stay in their homes and interrupt their daily activities.[2] Spain, with a rate of 1,300,000 cases in November 2020, became one of the European countries most affected by the pandemic.[3]

The health crisis had a significant impact on the organization of health services, which led hospitals to suspend activities considered non-urgent, prioritizing the creation of front-line treatment units to care for COVID-19. As a result, non-acute care services, including rehabilitation services, were canceled,[4] as the aim was to prevent the spread of the virus and ensure the care required by infected people.[5] The closure of rehabilitation services affected between 1.3 and 2.2 million people with disabilities in Europe.[6] This situation forced the Physiotherapy Collective (CF) to relocate to other units,[7–9] evidencing the limited interaction they had previously had with other health professionals before the pandemic.[7]

Physiotherapy staff from rehabilitation services were redeployed and integrated into other units related to COVID-19 control.[10] In the specific case of physiotherapists dedicated to the neurorehabilitation of people with multiple sclerosis (PwMS), they were forced to develop new modalities of telematic care due to the impossibility of carrying out face-to-face sessions.[11] This abrupt change in working conditions had a profound emotional impact on health professionals, who were forced to implement other therapeutic alternatives[12] and face new challenges within their profession.[13,14]

During the first wave of the pandemic, these professionals experienced a sense of disorientation as they were not clear about their new role in these units. However, in a short time, they began to work as interdisciplinary teams, actively participating in decision-making and improving communication and cooperation between all team members.[7] The CF was integrated into support teams, where they applied respiratory physiotherapy techniques, progressive mobilization, neuromuscular recovery and pain control until discharge of the people treated.

In people with chronic, neurological, or musculoskeletal disorders, lack of regular access to rehabilitation services

can accelerate disease progression, lead to further functional impairment, and lead to psychological distress.[4,15] For these individuals, the adverse effects of social distancing can be even more severe, as they require regular follow-up to mitigate the impact of their condition.[16] During the COVID-19 pandemic, health systems were forced to restructure their services to prioritize the provision of safe care, resulting in a significant reduction in outpatient services.[17] In response to this challenge, an innovative approach was designed and implemented: telerehabilitation (TRHB).[7] The WHO defines TRHB as the procedure that uses Information and Communication Technologies (ICTs) to provide health care services in rehabilitation. As advantages, it should be noted that it should allow accessibility without the need to travel and in real-time (synchronous) and deferred (asynchronous) TRHB modalities. The asynchronous modality guaranteed flexibility in the programming of interventions, which should contribute to the reduction of the person's stress and increased adherence to therapeutic treatment plans and comfort. Within this concept, telephysiotherapy appears as a digital health modality that uses ICTs to offer physiotherapy services at a distance, ensuring that the people treated obtain support for the prevention, diagnosis and treatment of their pathologies without the need to travel to a physical treatment center.[18] Although not very widespread in Spain at the time, TRHB emerged as a promising solution[19] that physiotherapy professionals quickly adopted as a therapeutic tool.[14]

The CF was forced to acquire skills and knowledge in TRHB in a short period of time, due to the lack of previous training and experience in this field, both in Spain and in other countries.[16] However, international organizations such as the Canadian Physiotherapy Association or the Finnish Occupational Therapy Association managed to publish practice guidelines for the implementation of TRHB.[10]

Multiple sclerosis (MS) is a chronic, inflammatory and demyelinating disease of the central nervous system (CNS) of unknown etiology. This makes it a complex pathology that requires both pharmacological treatment and neurorehabilitation to prevent complications and improve mobility.[11] The COVID-19 pandemic generated a state of considerable uncertainty due to limited evidence on its impact on people diagnosed with MS.[20] Initially, they were considered to be part of the high-risk group, largely due to immunomodulatory treatments that receive a high percentage. It was not until mid-2020 that the Multiple Sclerosis International Federation (MSIF) published the first recommendations for this population. These guidelines not only addressed the preventive measures to be taken but also emphasized the importance of continuing rehabilitation guidelines and maintaining an active life.[20] In January 2021, MSIF published a quick guide highlighting additional criteria for an increased risk of developing severe forms of COVID-19, such as progressive forms of the disease, older age, a high degree of disability according to the Expanded Disability Status Scale (EDSS) greater than 6 or being male.[21]

Objective of the study: To collect and analyze information on the changes in the clinical practice of CF specialized in MS in Spain, as a result of the COVID-19 pandemic, in order to evaluate their impact on the profession and propose specific interventions, including the introduction of new therapeutic resources such as TRHB.

Materials and methods

The Special Interest Group in Mobility (SIG Mobility) working group of the European Network for the Best Practice and Research in Multiple Sclerosis (RIMS) designed an international multicenter study to assess the impact of the COVID-19 pandemic on physiotherapists specializing in neurorehabilitation of people with MS. A survey was developed in several languages to collect data from the participating countries. In Spain, the survey was disseminated electronically through the dissemination lists of the main associations dedicated to the care of PwMS: Fundació Esclerosi Múltiple (FEM), Asociación de Esclerosis Múltiple de Bizkaia (ADEMBI) and Esclerosis Múltiple España (EME). The surveys were open for 6 weeks, between March and May 2021, after obtaining the approval of the Ethics Committee of the Vall d'Hebron University Hospital (Reference: PR(AG)143/2021).

Statistical analysis

IBM SPSS software, version 28, was used for data analysis. A descriptive analysis of the sample and qualitative variables related to changes in the intervention, organizational framework and quality of life before and during confinement was performed. Quantitative variables that did not present a normal distribution, according to the Shapiro–Wilk test, were compared using nonparametric tests. A 95% confidence interval (CI) was established and was applied, with statistical significance defined as $p \leq 0.05$.

Results

A total of 32 physiotherapists (27 women and 5 men) participated in the survey, with an average age between 31 and 50 years. A total of 78% of professionals worked mainly with PwMS in 2019, with a dedication range of 76–100%. Of these, 93.6% attended to people on an outpatient basis. In addition, 40.6% of the participants have more than 20 years of experience as a physiotherapist, and more than half (53.1%) work in a rehabilitation center or hospital. Also, 90.6% of the participants expressed agreement with the protection regulations in their workplace, including the use of personal protective equipment and data security in sessions carried out online. At the time of the survey, 18.8% had contracted COVID-19. The characteristics of the sample are presented in supplementary material.

The average number of sessions before and after confinement, their average duration and the level of satisfaction with accessibility are shown in Table 1. The average percentage of use of TRHB to perform the sessions was 29.24 ± 23.41%.

Before the pandemic (2019), 65.6% of the CF were part of an interdisciplinary team, a figure that increased to 71.9% during 2020. Only 1 physiotherapist began to work independently during that year.

The interruption of face-to-face care had an average of 3.94 ± 2.89 months, starting in March for 90.63% of cases. Complementary activities, such as research and student training, were also interrupted, with a mean of 5.26 ± 4.52

Table 1 Characteristics of sessions and access during the years 2019 and 2020.

	2019 mean (SD)	2020 mean (SD)	*P* (CI = 95%)
Team	11.56 (4.27)	11.5 (4.49)	0.810
Session time (min)	53.28 (14.57)	49.69 (6.47)	0.118
Session per week (n)	2.08 (0.82)	1.82 (0.71)	**0.021**
Total sessions (n)	43.91 (50.39)	36.38 (30.71)	0.075
Effectiveness (s/10)	8.72 (1.20)	8.2 (1.67)	**0.048**
Accessibility (community) (s/10)	8.52 (1.55)	6.41 (2.73)	**<0.001**
Accessibility (hospital) (s/10)	6.63 (2.76)	4.17 (2.82)	**<0.001**
% TeleRHB 2019–20	29.24 (23.41)		

SD: standard deviation; CI: confidence index; min: minutes; n: number; S/10: out of 10; %TeleRHB: percentage of telerehabilitation use.

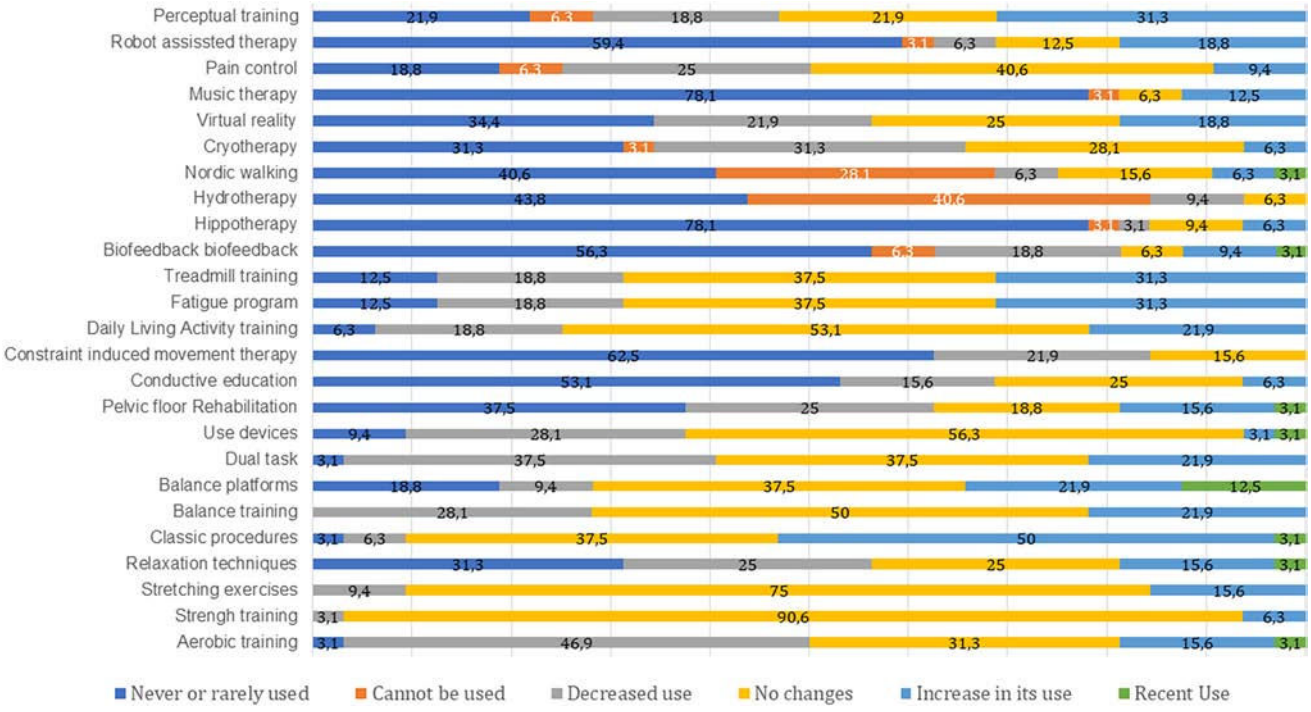
and 9.32 ± 4.77 months, respectively (it can be found in the supplementary material).

Physiotherapy interventions

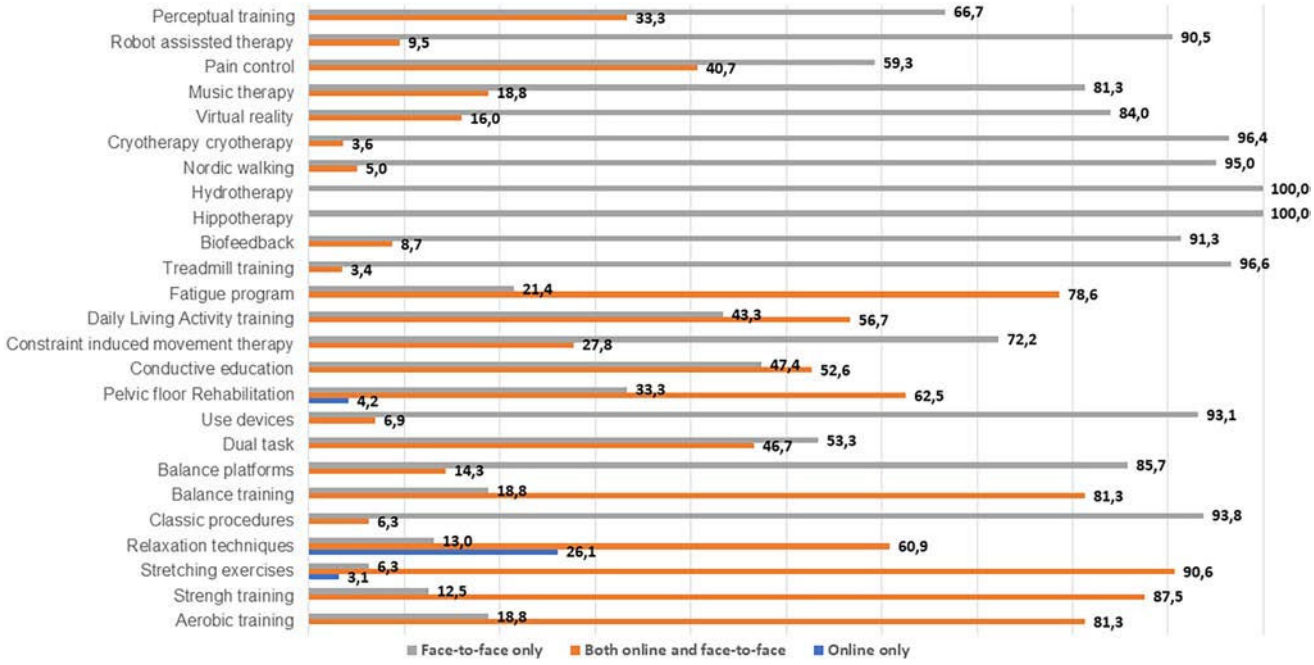
The frequency of aerobic training decreased in 46.9% of cases, although more than three-quarters of the CF (81.3%) managed to maintain this activity online. The intervention that underwent the least changes was resistance training, which maintained its frequency unchanged at 90.6%, followed by stretching (75%), training with orthoprosthetic devices (56%), activities of daily living (ADLs) (53%) and balance (50%) (see Graph 1).

In contrast, 50% of respondents reported having increased the use of "classic procedures" during the pandemic, with 93.8% of these activities being carried out in person. Outdoor activities were interrupted due to the restrictions. Graph 2 shows the activities carried out online and in person, whereas Graph 3 shows the differences in the use of technology before and during the pandemic.

Manual therapy (MT) was the predominant intervention in people with severely impaired mobility (SIM) before the COVID-19 pandemic, accounting for 70.63 ± 19.5% of interventions. On the other hand, verbal instruction (VI) was the most common action in people with lightly impaired mobility (LIM) with 43.87 ± 19.61%. The MT experienced a statistically significant decrease in people with SIM (p = 0.007) and moderately impaired mobility (MIM) (p = 0.009). On the other hand, the VI and the demonstration suffered a significant increase for the group of people such as SIM (p = 0.010) and MIM (p = 0.035). Although VI decreased significantly in people with LIM (p = 0.036), the increase in the use of the demonstration was not notable enough to reach statistical significance (see Table 2).



Graph 1 Frequency of physiotherapy interventions during the pandemic (2020) (%).

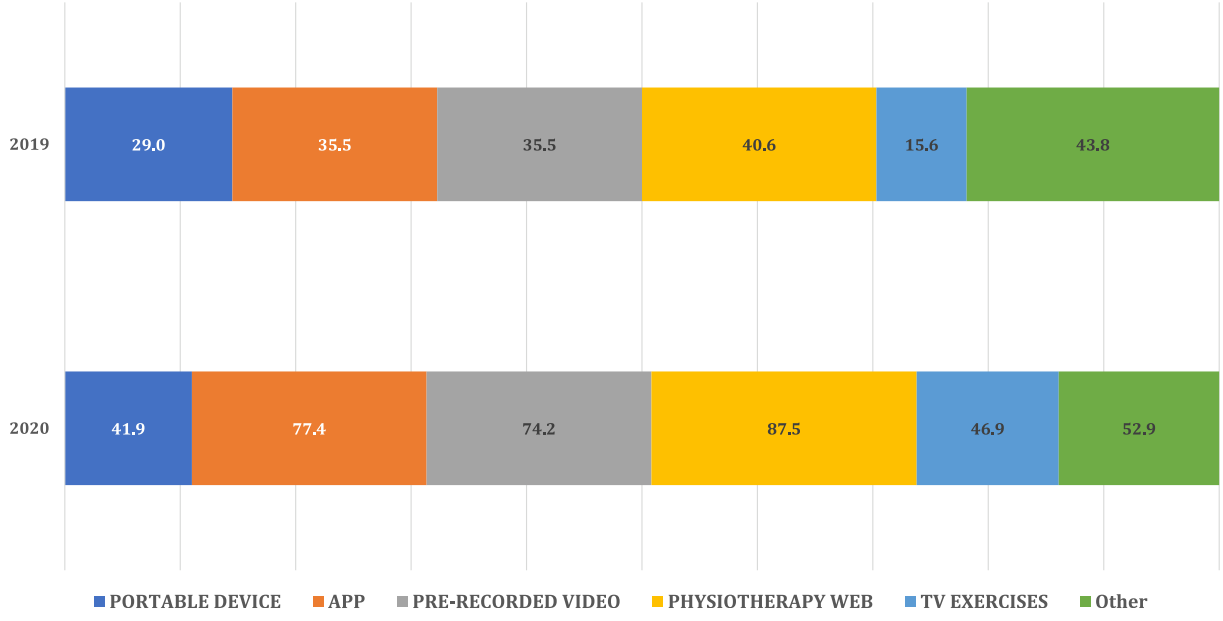


Graph 2 Modalidad intervenciones de fisioterapia durante la pandemia (2020) (%).

Quality of life

All participants (100%) reported experiencing some form of difficulty during TRHB sessions. The most commonly cited barriers were the lack of necessary devices, challenges in delivering instructions through a rehabilitation platform, and limitations in conducting proper assessments, with an average of 46.4% across all categories. The most significant concern was online security and privacy, mentioned by 53.6% of respondents. Additionally, just over one-third of participants identified difficulty in detecting disease progression as a relevant issue (see Graph 4).

As for the emotions experienced during the year 2020, negative feelings predominate. However, almost half of the people surveyed (43.8%) said they felt optimistic. Just over half of the participants said they had experienced stress, while 18.8% said they felt relieved. None of the respondents reported feeling sad or depressed (more details are shown in the supplementary material).



Graph 3 Use of technology before and during the pandemic (%).

Table 2 Comparison of the modalities of intervention during the years 2019 and 2020.

	LIM			MIM			SIM		
	2019 mean (SD)	2020 mean (SD)	*P* (CI = 95%)	2019 mean (SD)	2020 mean (SD)	*P* (CI = 95%)	2019 mean (SD)	2020 mean (SD)	*P* (CI = 95%)
Manual therapy	29.38 (21.69)	25.52 ± 24.14	0.247	40.97 ± 18.86	35.00 ± 20.97	**0.009**	70.63 ± 19.50	62.90 ± 27.23	**0.007**
Verbal instruction	43.87 ± 19.61	46.74 ± 20.18	0.305	59.69 ± 130.84	44.84 ± 18.05	**0.036**	25.81 ± 22.18	34.19 ± 26.93	**0.003**
Demonstration	32.26 ± 24.59	38.00 ± 22.80	**0.035**	29.69 ± 22.93	33.87 ± 20.44	0.124	9.20 ± 25.55 PM	24.62 ± 24.70	**0.010**
Other	27.14 ± 27.01	21.54 ± 20.76	0.334	29.09 ± 27.37	21 ± 24.244	0.102	22.31 ± 28.03	20.77 ± 28.42	0.564

SD: Standard deviation; CI: confidence index; SIM: slightly impaired mobility; MIM moderately impaired mobility; SIM: Severely Impaired Mobility.

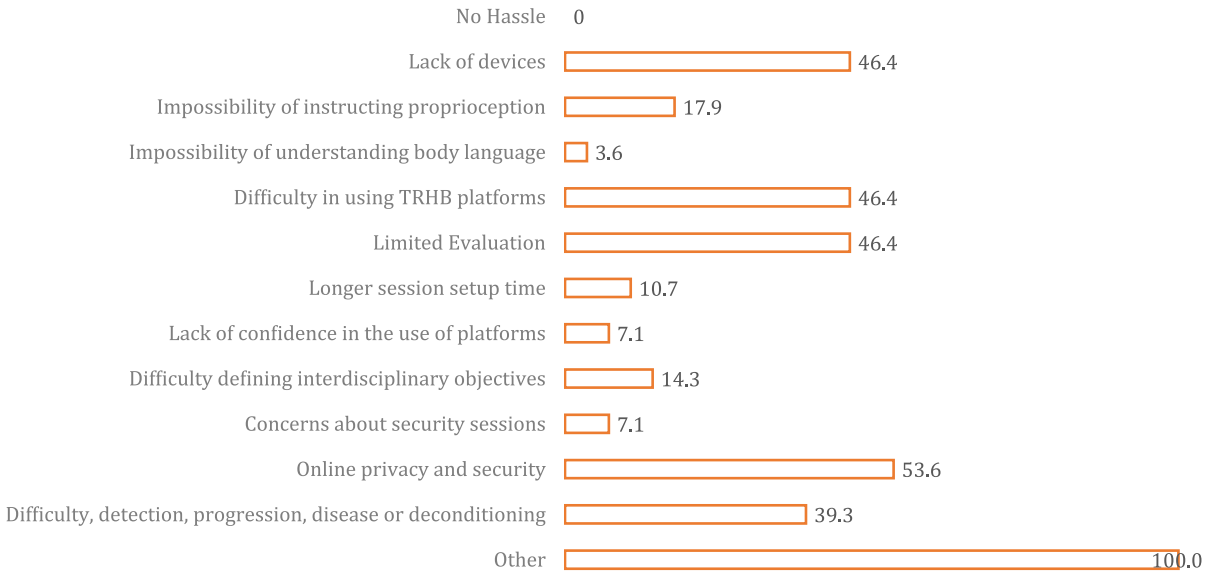
Discussion

The impact of COVID-19 on the daily practice of physiotherapy, due to the continuous restrictions, forced a modification of treatment modalities, the frequency of interventions and even the perception of their effectiveness. This survey aimed to analyze the perceived efficacy of CF[4,22] involved in the treatment of PwMS in Spain during the pandemic, as well as the challenges faced due to new intervention modalities.

According to the results of this survey, the 2020 lockdown had a negative impact on physiotherapy interventions for PwMS. Routine clinical practice was affected, to a greater or lesser extent, due to the restrictions imposed to prevent contagion, especially in the most vulnerable groups such as PwMS.[23] This approach may be supported by the recommendations of the Spanish Society of Rehabilitation and Physical Medicine (SERMEF) that prioritized the care of people admitted to intensive care units (ICUs) to reduce post-intensive care syndrome.[7]

The situation experienced by health personnel during the pandemic generated a very stressful emotional environment, in which symptoms such as anxiety or depression were frequent, even in the rehabilitation units for PwMS.[24] However, studies such as that of Kahraman et al. observed that despite the prevalence of stress and worry during the crisis, there was also a remarkable level of optimism and positivism among professionals.[8]

Although there are data on the safety and effectiveness of telemedicine (TMD) and TRHB, including in the context of MS[23,25,26] and the benefits related to the reduction of time and distance costs are recognized,[27] significant difficulties were evidenced in carrying out physiotherapy sessions during confinement and the following months. These difficulties were largely due to the uncertainty generated by the use of technology.[8,25,28] Limitations such as the interaction between the physiotherapist and the person, the difficulty in performing an accurate assessment and the lack of reliability in it have been problematic not only in our survey but also in other studies in the field of TRHB.[13,28,29]



Graph 4 Difficulties in using technology telerehabilitation (%).

It should be noted that, in Spain, there was no specific legal regulation governing TRHB and the regulations were the same as those of face-to-face attendance.[30] The implementation of TRHB represented a significant challenge, due not only to the perceived insecurity regarding remote connections, access to devices or computer programs,[26,31] but also to the uncertainty caused by the lack of face-to-face contact. Aspects such as the difficulty in carrying out an adequate assessment, the lack of training in the use of digital technology, and the complication in controlling the progression of the disease have been recurrent issues in the field of rehabilitation, including in the care of PwMS.[25,27,32–34] However, this type of intervention also brought with it benefits, such as the reduction of trips to care centers and the reduction of waiting times.[13,31,35]

The confinement forced many companies and health systems to implement the use of TMD and teleworking in an improvised way.[13,25,36] In our survey, no significant changes were observed in the work routine, although this was not the norm during the crisis.[25,28,37] The main problems faced by the staff were the lack of training in the use of technology and the insufficient resources available to companies.[28,36] A noteworthy aspect compared to other countries such as Ireland[37] or Australia,[25] was the concern for security and privacy during an internet connection, as well as the use of digital technology. While in these countries, the most used platforms for group or individual sessions were Zoom, Skype or WhatsApp,[25,37] in our survey, professionals in Spain mostly opted for specialized physiotherapy websites, followed by the use of mobile applications.

Although the introduction of TRHB was a fundamental advance for the care of PwMS, it also generated mistrust due to uncertainty about the level of security and privacy of the platforms used.[8,26,32,33] However, TRHB allowed key interventions, such as fatigue training, aerobic endurance or balance, to continue despite the limitation or suspension of outdoor activities.[8]

During the COVID-19 pandemic lockdown, significant changes occurred in physiotherapy interventions.[22] Although some activities, such as aerobic training, decreased in frequency, most physiotherapists were able to maintain them by using TRHB. Whenever personalized exercises were prescribed, both supervised exercises and those performed at home and controlled using TRHB methods demonstrated comparable effects in improving ADLs, health-related quality of life, and fatigue.[38]

However, activities that required direct physical interaction, such as manual therapies, experienced a significant reduction, which may have particularly affected PwMS with SIM. One of the predominant symptoms in this group is spasticity, which often requires direct TM for its management, among other treatments.[39] Despite these challenges, most physiotherapists were able to maintain continuity of treatment by implementing TRHB.

While TRHB emerged as a viable solution to maintain treatment continuity, CF faced several unusual obstacles in its daily practice. Among them, the lack of suitable devices and the difficulty in giving instructions effectively through virtual platforms were the most significant challenges. In recent years, various TRHB interventions have been investigated in PwMS; however, the evidence of its efficacy remains inconclusive.[40]

These difficulties may have contributed to a diminished perception of the efficacy of physiotherapy during the pandemic, especially with regard to treatment assessment and progression. TRHB emerged as an essential solution for maintaining therapeutic contact at a distance. Through virtual platforms and online communication tools, physiotherapists were able to provide guidance, supervision and personalized exercises, allowing them to maintain a minimum level of physical activity and rehabilitation in a context where access to health services was restricted.

However, despite efforts to ensure continuity of treatment, activities that required direct physical interaction, such as manual therapies, were significantly affected. These treatment modalities, which rely on physical contact, experienced a considerable reduction during lockdown. This may have negatively influenced the perception of the efficacy of certain treatments, especially among people with SIM.

The discontinuation of manual therapies could have had an especially noticeable impact on people with severe musculoskeletal conditions, for whom physical contact and direct manipulation are critical for pain relief and functional improvement. Lack of access to these interventions left these people with limited treatment options, which likely contributed to a reduced perception of the effectiveness of physiotherapy during lockdown.

Conclusions

In conclusion, the COVID-19 pandemic imposed unprecedented challenges on the practice of physiotherapy for PwMS in Spain. The need to restructure health services and prioritize the treatment of COVID-19 cases forced the suspension or reduction of face-to-face interventions, especially affecting patients with SIM, who depend on MT for the management of their condition. Despite these challenges, the rapid implementation of TRHB made it possible to maintain a minimum level of care, albeit with significant limitations in the assessment and follow-up of individuals.

The emotional impact on physiotherapy professionals was remarkable, due to the uncertainty about their role in the context of the crisis and the adaptation to new technologies. Although TRHB emerged as a valuable tool, its effectiveness was limited by a lack of expertise and adequate resources, as well as the need for physical contact in many key interventions.

The CF found in TRHB a tool to provide prevention, diagnosis and physiotherapy treatment services. All this allowed economic savings to avoid travel. On the other hand, certain limitations were detected, such as those related to the use of ICTs: the need for an optimal Internet connection, adequate technological devices and a certain level of digital literacy. It was also observed that it promoted less social interaction, as well as difficulties in the supervision of people with special needs.[18]

In the future, it is crucial to continue researching the feasibility and efficacy of TRHB for the treatment of PwMS,

as well as to ensure further training in the use of digital technologies. This will optimize remote care and carry out a more effective approach, ensuring that interventions can continue effectively even in health emergency situations.

We consider it essential that in Spain, the legal framework of health care is updated, and regulations are created for the regulation of MT that includes TRHB, following the example of other European countries that already contemplate it, such as France, Sweden and Germany. This renewal should include legal and financing aspects, as well as ethical aspects, of good practices of TRHB through the development of specific protocols and the guarantee of the confidentiality of the identification and health data of the person being treated.[18]

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Informed consent

The authors obtained informed consent from the physiotherapists described in the article. The informed consent documents are held by the principal researcher.

Ethical considerations

The authors declare that the procedures followed comply with the ethical standards of the relevant committee on human experimentation, the World Medical Association, and the Declaration of Helsinki. The authors observed their center's protocols for the publication of patient data.

Declaration of competing interest

There are no conflicts of interest related to this manuscript.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.neurop.2025.100188.

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